Keeping Pace:
An Evaluation of Maryland's Most Important Environmental Problems and What We Can Do to Solve them

Prepared for
Senator Brian Frosh

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Statement of Senator Brian Frosh
releasing
Keeping Pace:
An Evaluation of Maryland's
Most Important Environmental Problems and
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Last September, knowing that the General Assembly would face a deficit and a new administration when it returned to Annapolis, I asked the University of Maryland Environmental Law Clinic to conduct an assessment of the state's most important environmental challenges and how effectively we are dealing with them. Six student attorneys have spent hundreds of hours over the last four months researching written sources and interviewing some 40 representatives of the stakeholders. The legal team spoke at length with senior federal and state government officials, public interest advocates, and industry experts representing a range of private sector interests, including heavy manufacturing, real estate development, and agriculture.

With this statement, I am pleased to release the report.

The report shows that we have done a great deal in Maryland to protect our State's natural resources. And it shows that we still have a great deal to do.

Air quality in parts of Maryland is among the worst in the nation. If the State continues on its current track, Maryland will fail to meet federally mandated clean air requirements. We run the risk of losing millions in federal funds as a result.

Despite a huge investment in stemming the flow of nutrients from land, sewage treatment, and industry, the Bay continues to face serious problems. Significant portions of the State's nontidal rivers and streams are oxygen-starved dead zones that can't support aquatic life.

Despite nationally recognized anti-sprawl programs, development continues at an alarming rate outside the State priority funding areas.

Maryland's Governor and Legislature will be asked to solve these and other similar problems during the next 4 years. And we will be asked to do it in the face of stunning budget deficits.

Three conclusions that we can draw from the Report are especially pertinent as we confront this landscape.

First, we need to streamline our efforts. We need to consolidate duplicate functions and assign tasks to the agencies best able to carry them out. It is vital to get rid of what doesn't work, but it is just as important to build upon what does work

Second, we need to look for new sources of revenue, but we should give the people who pay the piper something in return. Permitting fees in many cases have remained the same for years, and in many cases they are far below the cost of writing the permits. We should think about raising the fees to something approaching the true cost of writing the permits and dedicating the money to getting the job done quickly with a minimum of hassle. Industry and the environment would both benefit.

Third, the report demonstrates we are at a critical point in our ability to enforce environmental laws. Right now the State has only forty-four inspectors to monitor 700 sources of water pollution. A mere 18 inspectors are responsible for 10,000 stationary sources of air

pollution. These enforcement programs are basic to Maryland's efforts to protect air and water. They are already crippled. Cutting them further will kill them.

I thank the many business people, environmentalists, and government officials who took time out of their schedules to talk thoughtfully with the researchers about Maryland's environmental future. And I thank the members of the law clinic and the Clinic's Director, Rena Steinzor for pulling it all together.

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SECTION ONE: EXECUTIVE SUMMARY

OVERVIEW

In the fall of 2002, State Senator Brian E. Frosh (D-Dist. 16) asked the Environmental Law Clinic at the University of Maryland to assess Maryland's progress in solving its most significant environmental problems. This report responds to that request.

After researching all readily available sources of data on the state of the environment, examining the programs implemented to protect public health and to improve environmental quality, and interviewing a cross section of key stakeholders involved in these efforts, we conclude that Maryland's efforts are a mixed picture of success, failure, and perhaps most important of all, lost opportunities. We aren't losing ground in most areas, but we aren't moving forward either, and our worst problems continue to grow.

The status of the Chesapeake Bay demonstrates this dilemma vividly. After years of dialogue and billions in expenditures, the Bay is no healthier than it was ten years ago. Our efforts are not insignificant, yet they are nevertheless just enough to keep the Bay from getting worse. The principal impairment is low dissolved oxygen, caused by the deposition of excess nutrients (nitrogen and phosphorus) into the Bay from point and non-point sources. The Bay is simply our most visible example. Across the state we have other examples of troubled waters: only 36.5% of estuarine waters, 42.5% of lakes and ponds, and 61.7% of non-tidal rivers and streams in Maryland fully support their designated uses as sources of potable water, food, or recreation.

In 1998, the General Assembly enacted a law that requires virtually every farmer in the state to prepare a nutrient management plan that would lower run-off from fields into the Bay. Those plans were due this month. Only 32% of covered farmers have actually completed the plans, with the rest either filing for an extension of time or ignoring the requirement. Equally as discouraging, preparation of a plan does not mean the plan will be implemented. The Maryland Department of Agriculture (MDA) has six people assigned to review plans for 12,000 farms, and no one assigned to ensure that plans are implemented properly.

When one considers the central importance of a vibrant and healthy Bay to Maryland's overall environmental quality and economic future, our failure to make steady progress is very troubling. More to the point, only a fundamental re-commitment to aggressive pollution control and conservation efforts will allow us to do more than, at best, maintain the status quo and, in the not-too-distant future, backslide, in many instances precipitously.

In other areas, the state has made significant gains only to find the gains undercut by other activities. Air quality demonstrates this problem. New models of cars and trucks produce significantly lower emissions, yet Maryland residents routinely travel longer distances and for longer times. Emissions reductions accomplished by gains in fuel efficiency are negated by the emission produced because people are driving more.

Baltimore was originally required to attain the health standard for ground-level ozone or smog in 1975 -- 25 years ago. Congress extended that deadline to 1982, then to 1987, and finally to 2005. The Baltimore metropolitan area is now ranked as the fifth worst ozone "nonattainment area" in the country. Maryland's air quality routinely fails to meet federal health standards. When new health standards for ozone and fine particulates go into effect, the state will fall even further behind. These problems are by no means limited to Baltimore and Washington. In fact, for reasons of climate and geography, Harford and Anne Arundel counties routinely register higher levels of air pollution.

Leading sources of these emissions are industrial plants, located both within the state and in upwind Midwestern states, and motor vehicles. Maryland has no direct control over pollution from aging power plants in the Midwest but it can make progress with respect to plants located in the state. However, only 20 inspectors are available to inspect compliance at some 10,000 facilities.

For all of these reasons, the state has not made significant progress in improving ozone levels in the last eight years. Indeed, most knowledgeable observers acknowledge privately that the state will not achieve attainment with the new ozone standard in 2005, exposing the state to loss of federal highway funds and construction bans. Again, we are doing only enough to maintain the status quo, which is far less than what we need to make the air safe to breathe.

These problems are exacerbated by land use patterns. Maryland's signature programs to combat sprawl and reclaim urban brownfields are among the most aggressive in the country, but remain embroiled in controversy. It is not clear whether the state will pursue those programs or whether the Smart Growth initiatives will be able to slow the rate of development outside priority funding areas (PFAs).

Forces of nature also play a role in both highlighting and obscuring the environmental challenges ahead of us. A severe drought offered some reprieve to the aquatic life and ecological health of the Chesapeake Bay because infrequent rain dramatically reduced run-off from fields and parking lots. Yet this unusual state of affairs also meant that sources of potable water failed in some areas of the state. Unfortunately, we lack the information needed to gauge whether drought conditions represent an ongoing, escalating problem or whether fresh water is ample if we manage available supplies carefully.

What can be done to move forward rather than running in place? This report seeks to answer that question by assessing our major problems and evaluating what we have and have not done to address them.

KEY FINDINGS

Government Performance

The Good News: The Maryland Departments of the Environment (MDE) and Natural Resources (DNR) are managed by senior civil servants who are highly skilled and extraordinarily committed to serving the public interest.

The Bad News: In too many areas, state government lacks the resources to fulfill its diverse statutory mandates in anything approaching a timely or effective manner.

Former senior officials familiar with the history of MDE estimate that its operating budget is 50% less than what is needed to implement federal and state statutory mandates. These shortfalls cripple crucial functions, especially enforcement, inadvertently rewarding chronic violators and penalizing the many businesses that work to comply with the law.

These problems are exacerbated by an outmoded, unduly rigid system of job classification that does not adequately compensate government personnel on the basis of their expertise and experience. MDE suffers from a perpetual revolving door at lower levels of its staff, and regularly loses employees not just to the private sector, but to more lucrative positions at the county level.

Similarly, MDA has been unable to implement the ambitious program to encourage farmers to reduce the use of fertilizers, the single largest source of nutrient loading in the Chesapeake Bay. Government officials knowledgeable about the program privately admit that it is a fiasco, costing money and alienating the farm community without producing results demonstrably different than the failed programs that preceded it.

At the same time that portions of the government become increasingly hollow, federal and state governments commit resources to pollution control programs that are duplicative. In no area is this problem more evident than the restoration of water quality in the Chesapeake Bay. As the chart presented in Appendix B illustrates, the same function is assigned and re-assigned to more than one agency.

Funding Sources

The Good News: DNR and MDE's most important work is supported in part by licensing, permitting, and similar fees that ask those who use government services to shoulder a significant portion of the cost of providing them. If implemented correctly, this approach should preserve their functional integrity during periods of tight budgets.

The Bad News: MDE's user fee structure is outdated and does not even begin to pay for the crucial functions the Department fulfills. As troubling, restrictions on federal funding and the use of special funds constrict MDE's ability to set appropriate priorities and get meaningful results.

Implications of Budget Cuts and Consolidation Proposals

The Good News: Although the state faces the worst budget deficit in its history, the existence of special funds to support the crucial work of MDE and DNR could mean that the costs of maintaining their essential functions will be paid by businesses that use those programs, as opposed to the general taxpayer, if those fees are set at appropriate levels.

The Bad News: To close the budget gap, it will be tempting to impose across-the-board budget cuts that would have a devastating impact on environmental enforcement programs, which already operate at levels far below what they need to be effective. Consolidating MDE and DNR is one proposal that has been made as the vehicle for accomplishing budget cuts. While consolidation may make sense depending on the principles that govern its implementation, it could have severe, negative effects if implemented wrongly.

Enforcement

The Good News: For the most part, MDE has the legal authority and expertise it needs to enforce environmental regulations with respect to pollution sources covered by federal environmental laws. The Department's attention to compliance assistance in recent years has educated many sectors of the economy regarding what the law requires.

The Bad News: MDE does not have anywhere near enough inspectors to track compliance at major sources of air and water pollution. As a result of this shortfall and policy decisions made by the Department's leadership over the last several years, MDE has de-emphasized traditional enforcement, creating a climate that does not effectively deter violations, especially in circumstances where compliance is costly. Further, MDE does not have direct enforcement authority over non-point, agricultural sources under the state Water Quality Improvement Act.

The General Assembly is understandably concerned about maintaining a favorable climate for business in Maryland. For years, business has asserted that excessive environmental regulation and enforcement is a major threat to this goal. This allegation is not supported by either the evidence or the candid views of the stakeholders we interviewed.

Transboundary Pollution

The Good News: Maryland has long recognized that, given the wide geographical range of air and water pollution, no state can afford to "go it alone" in protecting environmental quality. For example, MDE has served as a leader within the Ozone Transport Commission (OTC), a consortium of Northeast states, in pursuing stronger controls on "transboundary" pollution originating in aging power plants in the Midwest with poor pollution controls.

The Bad News: Policy changes at the national level are weakening controls on those same Midwest sources of ozone precursors, thrusting Northeast states into a worse dilemma than ever before. EPA is also falling behind on setting standards for hazardous air pollutants. Unless Maryland continues to work hard at the national and regional levels of government, we could find that we are unable to improve air quality for many more years.

Aging Infrastructure

The Good News: Under MDE's leadership, most of the publicly-owned treatment works (POTWs) having a direct impact on nutrient loading in the Bay have committed to installing biological nutrient reduction within the next several years.

The Bad News: Upgrading aging POTWs will cost billions of dollars over two decades. Costs for bringing the City of Baltimore's Patapsco plant into compliance alone are estimated to be $700 million. Federal funding to support this next wave of improvements has been phased out to a fraction of the levels available 30 years ago. Unless it is restored, state and local governments will be hard-pressed to accomplish these essential improvements.

Alternatives to Traditional Regulation

The Good News: Maryland is a nationally recognized leader in formulating innovative solutions to the most intractable problems. For example, by re-conceiving the harms caused by suburban sprawl as an affirmative need to undertake "Smart Growth," Maryland has made significant progress in persuading the public to accept profound changes in haphazard development. Maryland is poised to try another innovative approach to controlling non-point source pollution such as run-off from agricultural land: trading of pollution credits between sources that can reduce discharges for significantly lower costs.

The Bad News: Continuing the pursuit of innovative alternatives to ozone nonattainment and nutrient loading in the Bay will require a strong commitment of political will and fiscal resources. If these creative approaches are viewed as the opportunistic legacy of the last administration, we could easily squander the progress we have made.

Critical Information

The Good News: Maryland is also a leader among the states in gathering the data needed to make wise decisions about protecting human health and preserving the environment. Our programs for monitoring the ambient water quality throughout the portions of the Chesapeake Bay located in the State are exemplary.

The Bad News: Despite these outstanding efforts, crucial pieces of data are either missing or not readily available to the public, including:

1. ambient levels of air toxics in heavily industrialized areas of the state;
2. the details of budget proposals and final decisions, and how they compare to past funding levels;
3. the economic losses sustained by nutrient loading in the Chesapeake Bay; and
4. a comprehensive inventory of our water resources, threats to those resources, and projected future demand;

Integrated Solutions to Inter-connected Problems

The Good News: Maryland public agencies and universities have developed a very sophisticated understanding of the inter-relationships among our most important environmental problems and are in a position to take action without making matters worse.

The Bad News: Maryland may understand these inter-relationships, but has yet to persuade an adequate number of local governments to engage in planning processes that take into account the environmental implications of how they zone, subsidize economic development, build roads, provide public transportation, maintain conditions favorable to heavy industry, and encourage residential and light industrial land uses.

RECOMMENDED SOLUTIONS

The state is likely to face a significant deficit resulting in severe budget cuts throughout government, and environmental programs will not be exempt from this unfortunate reality. However, MDE's enforcement programs, already operating at levels far below what federal and state statutes intend, cannot sustain across-the-board cuts without severe damage to this core function.

To close the budget gap and preserve these vital functions, the General Assembly, in cooperation with the Governor, should increase outdated user fees for crucial MDE programs.

Enforcement programs, especially the number of inspectors available to review compliance at stationary, area, point, and non-point sources, must be brought up to a functional level.

The Governor should launch initiatives to upgrade the classification (and therefore the salaries) of key staff and to consolidate duplicative government programs.

To address stationary source air pollution, the General Assembly should pass, and the governor should sign, legislation requiring existing power plants to meet the technology-based standards that are applied to new power plants.

Maryland policy-makers, especially the Governor and the state's congressional delegation, should continue to advocate tighter controls on sources of transboundary air pollution, specifically power plants in the Midwest and neighboring states, and to resist efforts to weaken the Clean Air and Clean Water Acts.

To address nutrient loading in the Chesapeake Bay, MDE should be designated as the lead agency and given adequate resources to enforce both the Clean Water Act and the Water Quality Improvement Act. If MDE continues to be responsible for implementing nutrient management programs, it must have adequate resources to do the job effectively.

MDE should strengthen its capacity to assess water resources and help local jurisdictions plan for increased water usage.

Maryland's Rural Legacy Program should be continued.

Maryland should reinstate its Superfund enforcement program, providing a crucial incentive for responsible parties to participate in its Voluntary Cleanup Program.

SECTION TWO: METHODOLOGY

PRIORITY ENVIRONMENTAL PROBLEMS

At the request of Senator Frosh, we focused our investigation on the five most pressing environmental problems in Maryland:

Air:

Ozone, particulate and hazardous air pollution in the Baltimore/Washington, D.C. metropolitan area, and throughout the state.

Water Quality:

Nutrient loading in the Chesapeake Bay.

Water Resources:

The availability of potable water resources to meet the present and future demands of human consumption, aquatic life, and crop production and livestock.

Land Use:

The role of sprawl in exacerbating Maryland's environmental problems.

Brownfields:

Public and private efforts to reclaim urban brownfields for economic redevelopment, as well as the cleanup of contaminated land throughout the state.

We limited our focus to these priority problems because our time and resources were limited, as is the public's ability to focus on the good and bad news presented in this report. We do not mean to suggest, however, that problems we have not addressed are unimportant.

OTHER IMPORTANT ISSUES IDENTIFIED BY STAKEHOLDERS

A crucial component of this report was a series of interviews with key stakeholders representing the full range of constituencies affected by the issues addressed in this report. (A list of stakeholder organizations and people appears as Appendix A to this report.) We asked all of the stakeholders we interviewed what other problems they would identify as needing further investigation, and they offered the following suggestions:

1. toxic pollution of the Chesapeake Bay;

2. the vulnerability to terrorist attack of facilities using and storing toxic materials;

3. preservation of wetlands in the Chesapeake Bay watershed;

4. stormwater run-off from urban and suburban locations; and

5. the related issue of combined and sanitary sewer overflows.

We believe that all of these issues deserve further consideration although they are outside the scope of this particular report.

RESEARCH METHODOLOGY

We conducted our research in a step-by-step process designed to help us comprehend and evaluate large amounts of information within a relatively short period of time. As reflected in the following chart, we began with a review of print and cyber-based sources. We then moved on to interviews with a diverse group of stakeholders (again, see Appendix A for list). After analyzing this information, we formulated recommendations.

Steps	Strategy	Method	Report Components
Step One:	Characterize the nature and scope of the problems.	Historical and documentary research.	Scope of the Problem State of the Environment
Step Two:	Evaluate government response to problems.	Historical and documentary research.	Maryland's Response
Step Three:	Identify what most affected stakeholders think about the problems.	Extensive, in-person interviews.	Stakeholder Views
Step Four:	Assess stakeholders' comments and government programs.	Summary, analysis, and synthesis.	Recommendations

GROUND RULES FOR STAKEHOLDER INTERVIEWS

We were very concerned that stakeholders feel comfortable enough to give us candid views. Therefore, we adopted the ground rule of identifying the stakeholder by the interest group to which she or he belonged (government official, industry or business representative, and

public interest or environmental group). Stakeholders were assured that we would not use their names in characterizing their perspective beyond attributing it to these categories. We have extensive interview notes documenting what everyone told us, but do not intend to make those public.

ORGANIZATION OF THIS REPORT

The report is organized by environmental problem, culminating with a discussion of the cross-cutting budgetary and management issues that confound their resolution. Within each section we begin with a discussion of the scope of our investigation and the questions we sought to answer. We describe the status of environmental quality and its effect on public health. We explain the programs Maryland has adopted to address these problems. We then present stakeholder views on all of the above. We conclude with a series of recommendations on how Maryland may improve its response.

SECTION THREE: AIR QUALITY

SCOPE OF THE PROBLEM

Maryland's air quality consistently fails to meet federal health standards for ground-level ozone or smog. The Baltimore metropolitan area and adjacent counties are ranked as "severe" nonattainment, while the Washington metropolitan area and adjacent counties are now ranked as "serious" nonattainment, but will soon be downgraded to "severe." In fact, the Baltimore metropolitan area has the fifth worst air quality in the nation for ozone.

Smog has been linked to a wide range of adverse health effects, from respiratory diseases to headaches and nausea. Children, the elderly, and those with respiratory problems are especially at risk for ozone related respiratory problems. More than 1.6 million Marylanders fall into these high-risk categories.

Marylanders also face the emerging threats of hazardous air pollution and fine particulate matter (PM) pollution. EPA has given the Baltimore-Washington corridor the most dangerous ranking possible for risk of contracting cancer and non-cancer illnesses caused by unhealthy levels of toxic air pollutants. Although Maryland is currently in attainment for PM, both MDE and EPA expect that several Maryland counties will be designated as PM nonattainment areas once EPA's new fine PM standard is enforced. This result is significant because fine PM poses an even more serious health threat than ozone pollution. Fine PM easily reaches the deepest recesses of the lungs, where it can accumulate in the respiratory system and cause serious adverse health effects, including premature death.

This report seeks to answer the following questions:

1. **What are the major causes of Maryland's ozone, particulate and hazardous air pollution problems?**

2. **Are we doing everything appropriate to improve these aspects of Maryland's air quality?**

3. **What else should be done?**

STATE OF THE ENVIRONMENT

OZONE NONATTAINMENT STATUS

Ground-level ozone is a man-made gas that occurs when emissions of nitrogen oxides (NOx) and volatile organic compounds (VOCs) combine with oxygen, sunlight and heat. NOx and VOCs are therefore referred to as ozone "precursors."

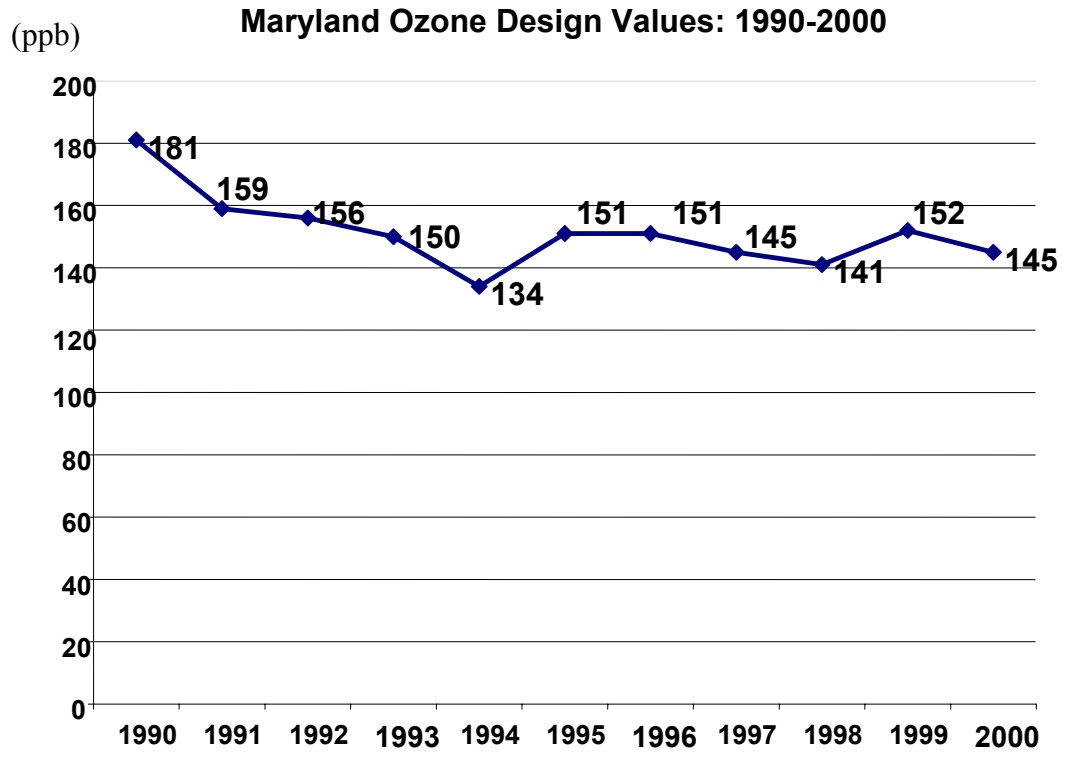
Ozone is one of the six most common and harmful "criteria" pollutants regulated by health-based National Ambient Air Quality Standards (NAAQS) under the Clean Air Act . Originally established in 1970, the ozone NAAQS dictates the minimum acceptable level of air quality. When an area exceeds this level, EPA designates it as a nonattainment area for ozone and requires the state to develop a State Implementation Plan (SIP) that will decrease ozone pollution to safe levels by a certain date. States may use a variety of techniques to reduce ozone levels, from requiring installation of more effective pollution control equipment, to requiring that emissions from new sources be offset by even greater reductions at other facilities.

Congress first set deadlines for urban areas to achieve compliance with the ozone NAAQs by 1977. These deadlines were extended twice**,** most recently in 1990. The Washington, D.C. metropolitan area was required to come into compliance by 1999, and the Baltimore metropolitan area is required to meet the ozone NAAQS by November 2005**.**

Over the past 15 years, Maryland's air quality has routinely exceeded federal health standards for ozone. Ozone exceeds safe levels "when its hourly concentration is equal to or exceeds 125 parts per billion (ppb)." *See* 40 CFR 50.9. This number is known as the "one-hour standard." Hourly concentrations are determined by sampling ozone levels over the course of an hour and averaging the results. EPA classifies days on which ozone exceedances of 125 ppb-204 ppb occur as "Code Red" or "unhealthy" air quality days and issues the following warning to all individuals in the region:

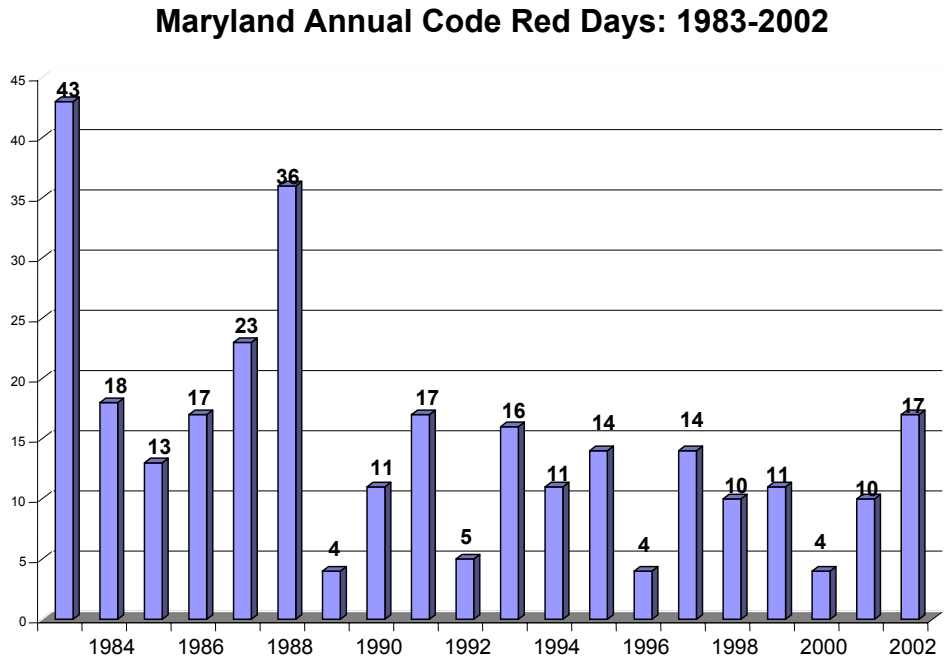
> Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
>
> U.S. EPA, *A Guide to Air Quality and Your Health*, http://www.epa.gov/airnow/aqibroch/aqi.html#2.

Unfortunately, as the figures below show, ozone levels in Maryland have not shown any consistent signs of improvement over the past eight years.

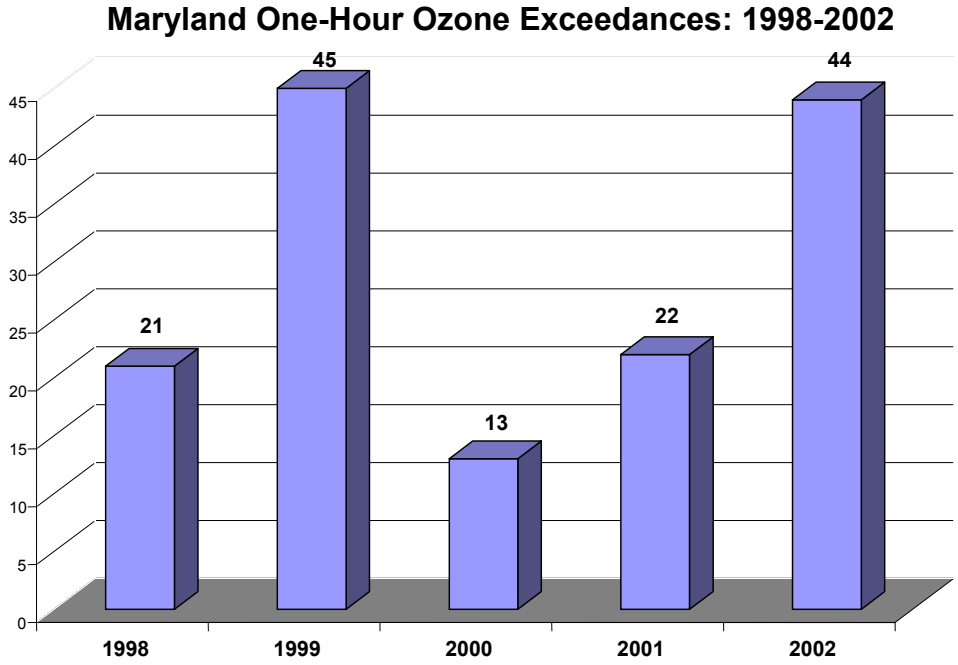


Source: EPA Region III Air Protection Division Staff (Nov. 25, 2002)
***Design values are ozone readings collected by MDE's air monitoring network. To ensure that the readings are representative, it excludes the three highest readings from each monitor. MDE uses these ozone levels as a reliable indicator of regional air quality.**

There were seventeen Code Red days during the 2002 ozone season. Please keep in mind when examining these figures that because Maryland's air quality often violates ozone standards several times in one day, the number of exceedances often surpasses the number of Code Red Days.



Source: MDE Seasonal Ozone Reports, 1995-2002



Source: MDE Air Quality Data Report (1998-2000); MARAMA (2001-2002)

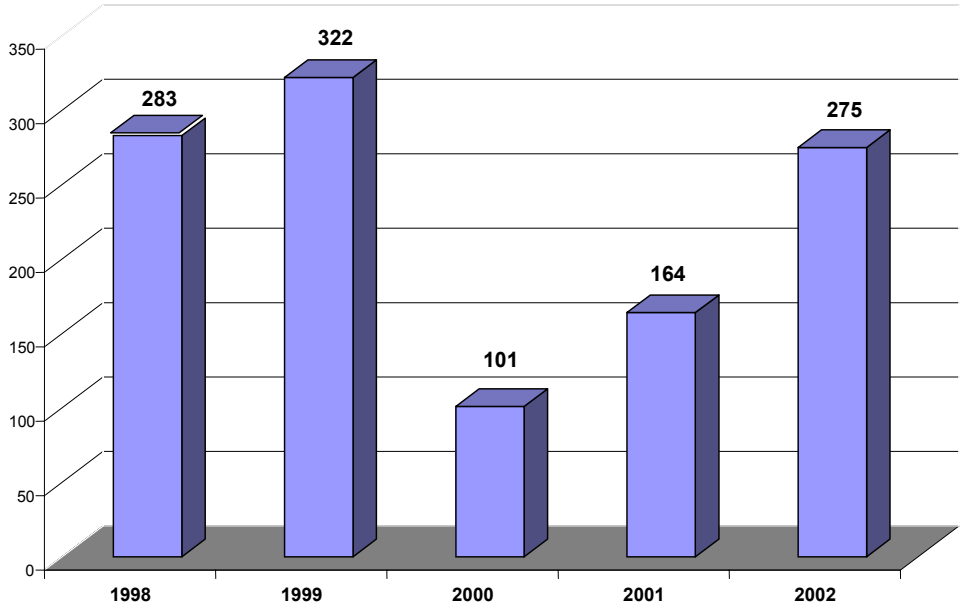
After completing its review of the one-hour ozone standard in 1996, EPA determined that the standard did not adequately protect the public's health. In July 1997, EPA announced a new, more protective standard for ozone. The new standard requires that ambient levels are not

permitted to exceed 80 parts per billion over an eight-hour period. This "eight-hour standard" is determined by monitoring ozone levels over an eight-hour period and averaging the results.

EPA is scheduled to designate nonattianment areas relative to the new ozone standards in 2004. State Implementation Plans explaining how the new standards will be met will be due a few years after that, as specified by EPA.

Although EPA has not yet required states to enforce the new standard, MDE monitors ozone levels under both the one-hour and eight-hour standards in anticipation of the new standard's implementation. Maryland's air quality consistently fails to meet the new eight-hour standard during the summer months. Under both the one-hour and eight-hour standards, Maryland has the fifth highest number of ozone exceedances in the United States.

Maryland Eight-Hour Ozone Exceedances: 1998-2002



HEALTH AND ENVIRONMENTAL EFFECTS

Ozone not only triggers asthma attacks in children with asthma, but also may cause the onset of the disease in children who live in areas with high ozone levels.

Maryland's nonattainment status for ground-level ozone affects the health of thousands of its citizens. Ozone causes airways to become swollen, inflamed and scarred, which reduces the amount of oxygen that is delivered to the body through each breath. The corrosive effect of exposure to ozone in the respiratory system increases susceptibility to bacterial infections. The young, old, and individuals with respiratory problems are the most at risk for immediate and long-term ozone related respiratory problems. However, even healthy adults can experience coughing, wheezing, shortness of breath, headaches, nausea, and irritation of eye and

throat tissues on Code Red days. The following figure indicates the large number of individuals in Maryland who are especially at risk when ozone levels reach nonattainment levels.

Vulnerable Populations in Maryland

County	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema
Anne Arundel	6,454	26,224	15,713	4,598
Baltimore	8,547	40,150	25,399	8,988
Calvert	1,135	3,782	2,286	662
Carroll	2,197	8,031	4,891	1,488
Cecil	1,267	4,390	2,658	807
Charles	1,934	6,227	3,637	969
Frederick	2,763	10,198	6,022	1,706
Harford	3,196	11,397	6,915	2,047
Kent	217	1,084	692	268
Montgomery	10,917	46,446	28,451	8,765
Prince George's	10,502	43,664	24,972	6,471
Washington	1,590	7,047	4,394	1,508
Baltimore City	8,597	34,316	20,826	6,779
Total	50,719	208,639	126,029	38,277

Source: The American Lung Association: *State of the Air 2002 Report*

Numerous health effect studies have found that ozone is associated with a variety of adverse health outcomes, ranging from relatively minor symptoms, to hospital admissions, chronic illness, and even death. For example, a number of studies have linked ozone pollution with more frequent emergency room visits, including one study showing a 26% increase in the

number of asthma patients admitted to New Jersey emergency rooms on summer days when ozone concentrations were high. A 10-year research project by scientists at the University of Southern California found that ozone not only triggers asthma attacks in children with asthma, but also may cause the onset of the disease in children who live in areas with high ozone levels.

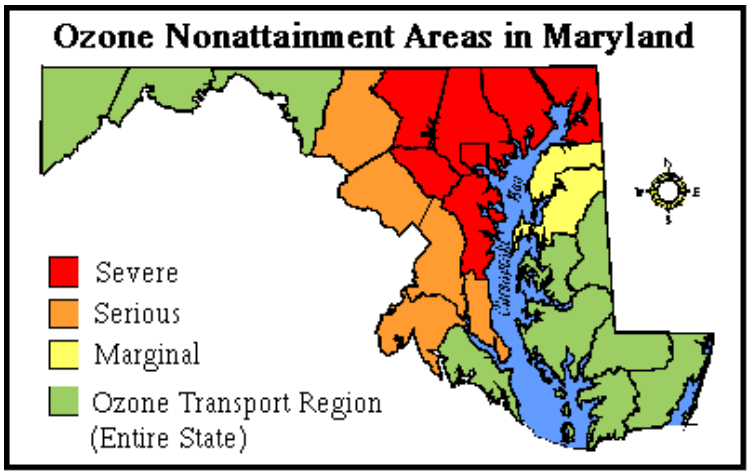
A 1988 EPA study found that ozone pollution reduced American crop yields by 3 billion dollars each year.

Besides harming human health, ground-level ozone is harmful to Maryland's environment. It interferes with a plant's capacity to produce and store food, and makes it susceptible to disease, infestation, pollution, and severe weather. Ground-level ozone damages foliage, reduces forest yields and ruins urban, park, recreation and forest landscapes because it retards photosynthesis and growth, accelerates aging and leaf drop. By distorting these processes in plants, ozone reduces yields of economically important crops like wheat, soybeans, and cotton. In addition, it is believed that the effects of long-term ozone exposure on trees are cumulative, eventually affecting entire forests and ecosystems. According to EPA, ozone can also adversely impact "ecological functions such as water movement, mineral nutrient cycling, and habitats for various animal and plant species." *See* U.S. EPA, http://www.epa.gov/air/urbanair/ozone/hlth.html. To track and assess these effects, MDE uses plants that are sensitive to ozone injury as "biological indicators (biomonitors) of air pollution stress in both urban and remote rural ecosystems." *See MDE End of Season Ozone Report*, http://www.mde.state.md.us.

AREAS AFFECTED

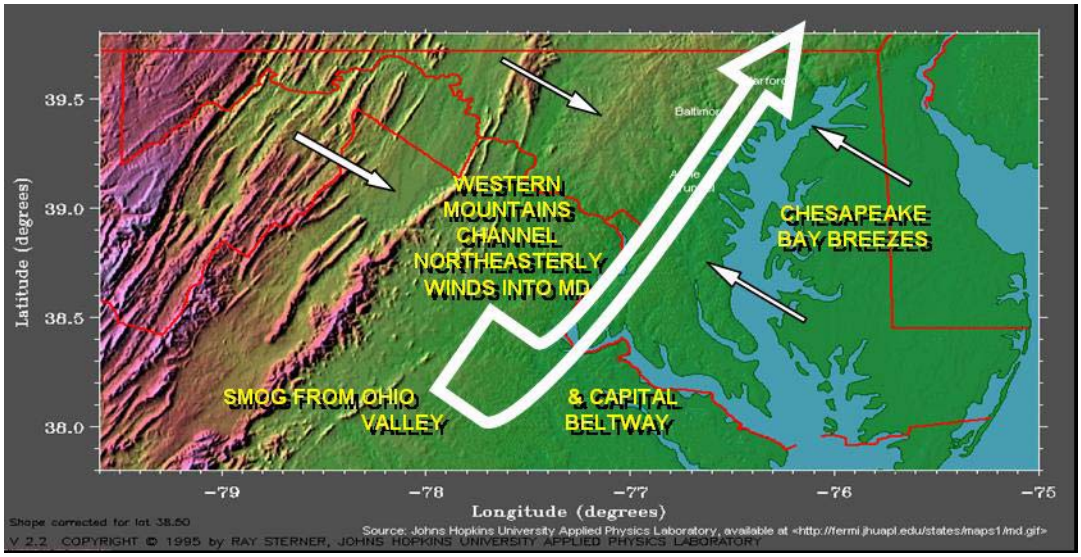
Maryland's high levels of ozone pollution are created primarily by vehicle emissions from the Washington, D.C. and Baltimore beltways, and power plants in Maryland, West Virginia, and the Ohio valley.

Maryland's central region (Baltimore City, Baltimore County, Anne Arundel County, Harford County, Carroll County, and Howard County), known as the Baltimore nonattainment area, is in severe nonattainment for the one-hour ozone standard. As part of the Washington, D.C. nonattainment area, Frederick County, Montgomery County, Prince George's County, Charles County and Calvert County are in "serious" nonattainment, while Kent County and Queen Anne's County are "marginal" nonattainment areas. EPA officials indicate that the Washington, D.C. metropolitan region's classification will soon be downgraded from "serious" to "severe."



Source: [http://www.mde.state.md.us/arma/Programs/Aqplan/ozone/facts.html.](http://www.mde.state.md.us/arma/Programs/Aqplan/ozone/facts.html)

Harford County has the worst air quality in Maryland for ozone (42 instances of high smog levels in 2001), and Anne Arundel County has the second worst (34 high smog level days). In fact, Anne Arundel County, home to Maryland's state capital Annapolis, has the fifteenth highest level of ozone pollution in the United States. "Smog from the Ohio Valley and the Capital Beltway is channeled into the county by mountains to the west and the Chesapeake Bay to the east. Summertime northeasterly winds push pollution toward the county, and the breezes off the bay hold it in." Tim Hyland, "County Air Getting Dirtier," *The Capital*, 9/18/02.



Source: Johns Hopkins University Applied Physics Laboratory, http://fermi.jhuapl.edu/states/maps1.md.gif**.**

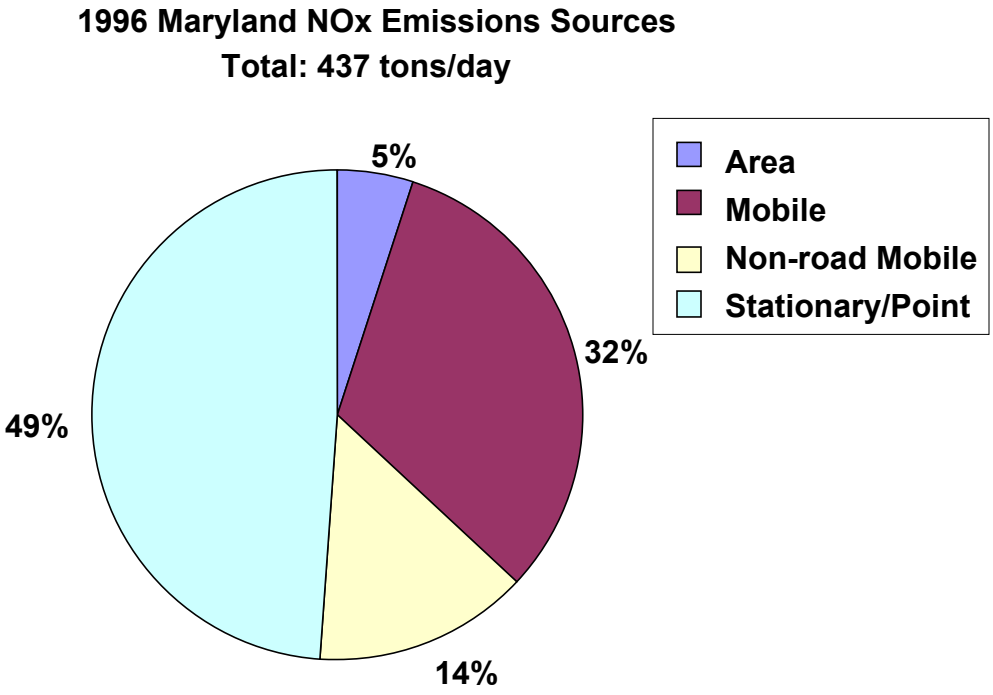
SOURCES OF POLLUTION

Nitrogen Oxides

The primary sources of NOx emissions in Maryland are:

1. Utilities
2. Light Duty Gasoline Vehicles
3. Heavy Duty Diesel Trucks
4. General Manufacturing
5. Construction Equipment
6. Light Duty Gasoline Trucks
7. Industrial Equipment
8. Heavy Duty Gasoline Trucks
9. Railroads
10. Farm Equipment

Both in Maryland and nationally, stationary sources contribute a greater percentage of NOx emissions than mobile sources. Stationary sources include major manufacturing facilities and power plants, while area sources include smaller facilities like dry cleaners.



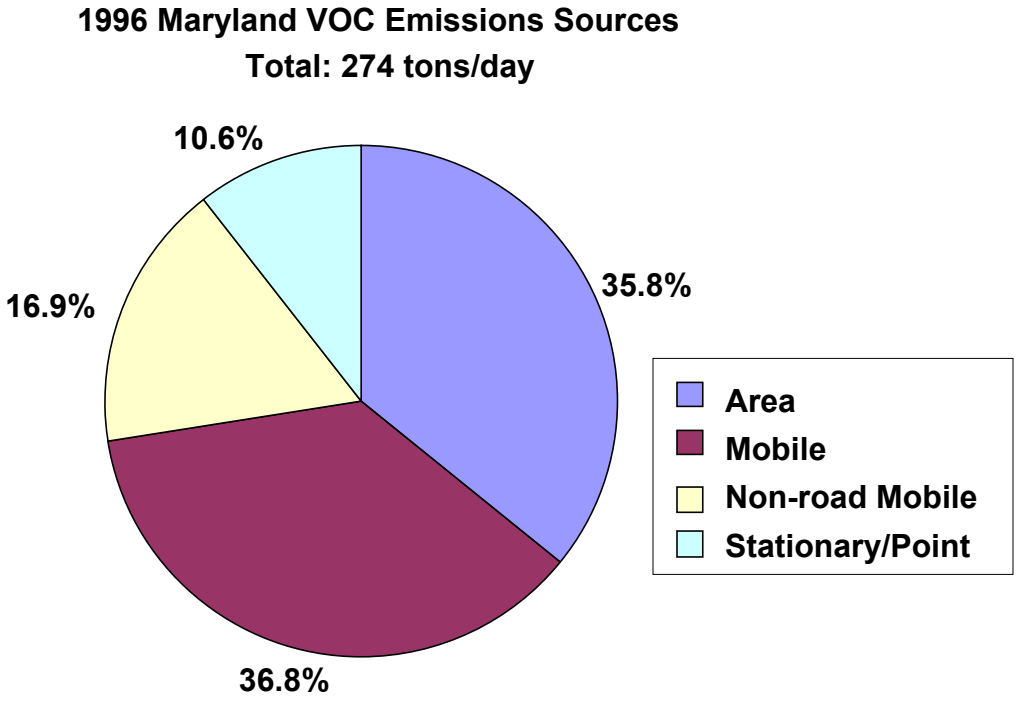
Source: MDE, *Determining Nonattainment Area Boundaries in Maryland for EPA's 8-Hour Ozone Standard* (1988)

Volatile Organic Compounds

The primary sources of VOCs in Maryland are:

1. Light Duty Gasoline Vehicles
2. Light Duty Gasoline Trucks
3. General Manufacturing
4. Paints and Coatings
5. Consumer Products
6. Lawn and Garden Equipment
7. Surface Coating Operations
8. Cold Cleaning Degreasing
9. Auto Refinishing
10. Petroleum Handling

In contrast, mobile sources contribute a greater percentage of VOC emissions than stationary sources.



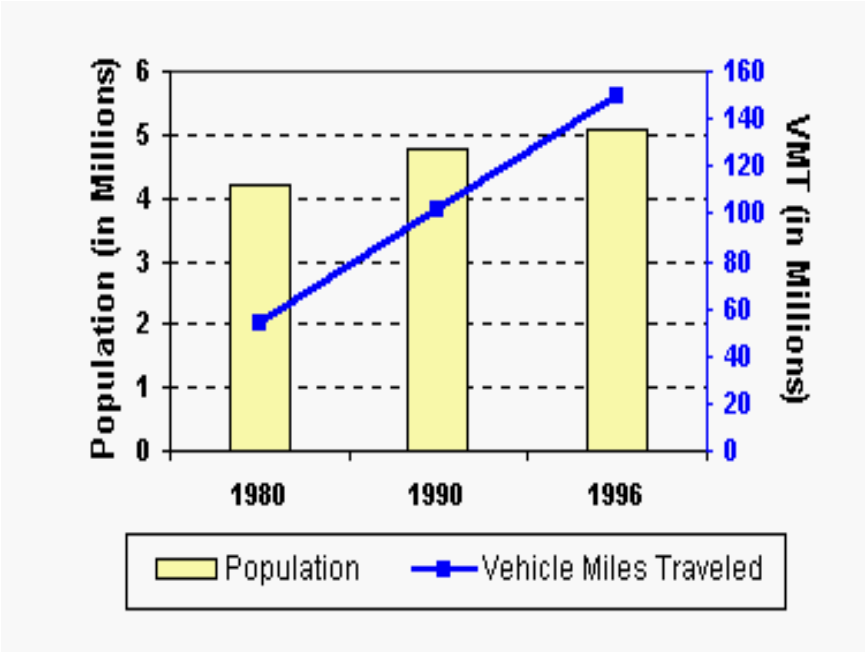
Source: MDE, *Determining Nonattainment Area Boundaries in Maryland for EPA's 8-Hour Ozone Standard* (1988)

MOBILE SOURCES OF GROUND-LEVEL OZONE

Vehicle population and vehicle miles traveled (VMT) are both growing at a faster rate than Maryland's population. Therefore, Marylanders are becoming more dependent on their vehicles and traveling greater distances in them than ever before. Technological advances and tighter regulatory controls have produced significant NOx reductions. However, the Maryland Department of Transportation (MDOT) estimates that between 2010 and 2015, vehicle emissions will once again increase due to the 65% rise in VMT.

Furthermore, MDOT projects that the number of trips per day made by each person will increase 42% by 2020, resulting in an additional 5.9 million trips per day. Lastly, the percentage of trips made by personal vehicles in the last decade has increased while the percentage of trips made by mass transit has decreased.

Vehicle Miles Traveled and NOx Emissions



Source: MDE, *Maryland Environmental Indicators Status Report*, Summer 1999, http://www.mde.state.md.us/enpa/2000_enpa/envi_indicators/air/airsum07.html.

Vehicles with lower fuel economy rates generate more VOCs and NOx than vehicles with higher fuel economy. Analysis of national fuel economy trends indicates that the average, new light vehicle fuel economy continues to decline. After peaking at 22.1 miles-per-gallon (mpg) in 1987 and 1988, average light-vehicle fuel economy has declined nearly 8% to 20.4 mpg for 2001, lower than at any time since 1980. This decline is primarily due to the increasing market share of less efficient light trucks, increased vehicle weight, and increased engine size and performance.

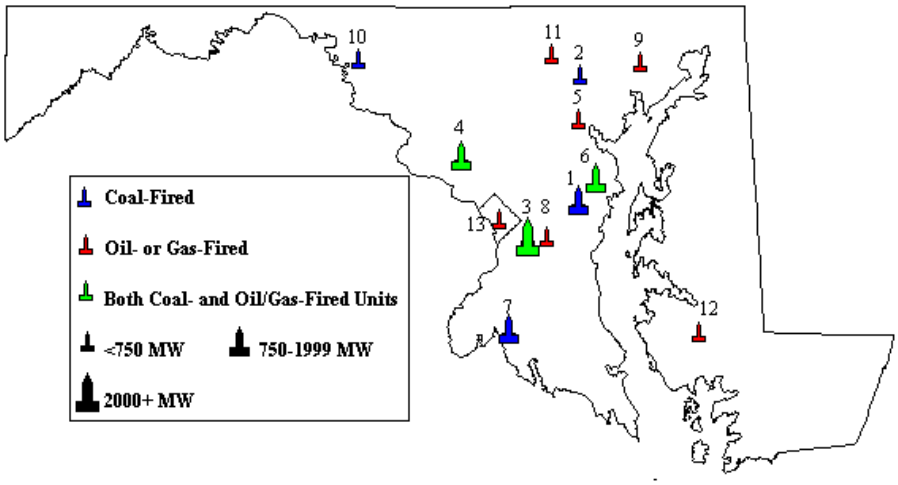
Specifically, sales of light trucks (SUVs, vans, pick-up trucks) have risen steadily over the last twenty years. As of 2001, they constituted nearly 47% of the U.S. light vehicle market. This is more than twice their 1983 market share. For model year 2001, cars averaged 24.2 mpg, vans averaged 19.3 mpg, SUVs averaged 17.2 mpg and pick-up trucks averaged 16.5 mpg. Therefore, as the number of light trucks on the road has increased, the average fuel economy of all vehicles on the road has decreased.

STATIONARY SOURCES OF GROUND-LEVEL OZONE

Roughly one-third of Maryland's ozone precursor emissions (NOx and VOCs) are from stationary sources (31.7%). These sources include coal, oil and natural gas-fired power plants, chemical plants, industrial boilers, cement kilns, and printers. In addition to NOx and VOCs, stationary sources also emit sulfur dioxide (SO_2), mercury (Hg), and carbon dioxide (CO_2). Maryland's largest stationary source contributors to ozone pollution are its 24 coal, oil, and natural gas-fired power plants.

Location of Maryland's Power Plants

(MW = Megawatts)



Source: U.S. EPA Clean Air Market Programs, http://www.epa.gov/airmarkets/picturethis/md/index1.htm.

The Maryland General Assembly passed energy deregulation legislation in 1999 and the Public Service Commission is developing new procedures for considering applications to site new power plants in the state. Utilities have asked approval to site eight natural gas units, which are among the cleaner power generating sources available.

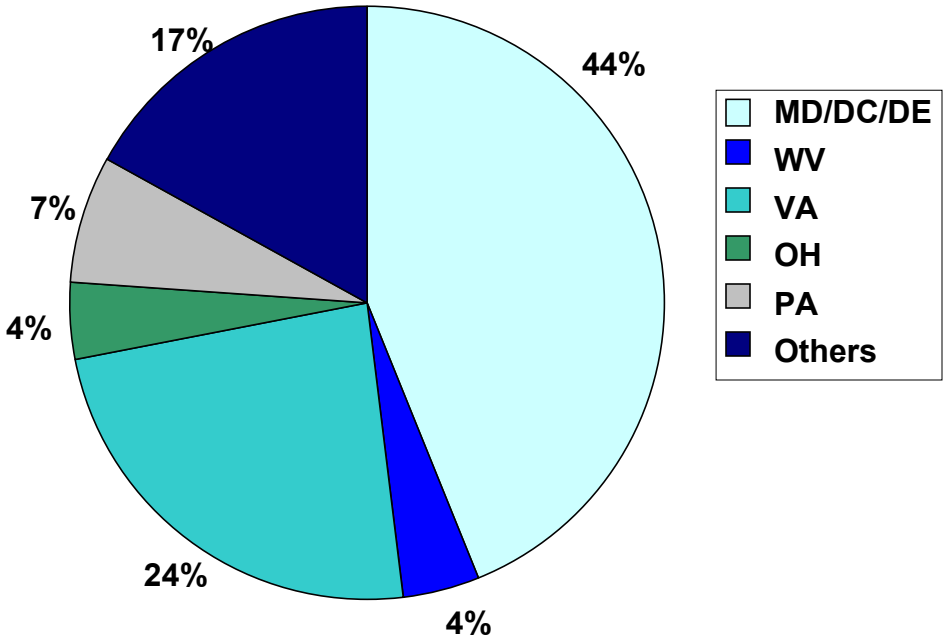
In addition to in-state power plants, stationary sources in other states (West Virginia, Virginia and the Midwest) are significant contributors of ozone pollution in Maryland. Ozone precursor gases may be emitted in one state, but because the chemical reactions that create ozone are not immediate, the highest ozone concentrations often occur in different states than the ones with the highest precursor emissions. According to the Mid-Atlantic Regional Air Management

Association (MARAMA), precursor emissions may drift hundreds of miles from their source, resulting in high ozone concentrations over different states.

In 1995, EPA commissioned the Ozone Transport Assessment Group (OTAG) to develop more accurate models to assess ozone transport and to devise new regional control measures to reduce interstate ozone. Following a two-year assessment of ozone transport and available options, OTAG submitted its findings to EPA in 1997. It concluded that transboundary pollution increases a downwind state's ground-level ozone levels and that upwind states should reduce their NOx emissions to help bring downwind states into attainment. Based on this information, EPA concluded that upwind states significantly contribute to ozone nonattainment in downwind states, and it required upwind states to reduce their NOx emission levels.

EPA modeling has determined that several states contribute to the Baltimore nonattainment area's ozone pollution. MDE has also conducted tests to determine the amount of interstate ozone that comes into Maryland from neighboring states.

Baltimore Nonattainment Area Ozone Contributors



Source: MDE, Determining Nonattainment Area Boundaries in Maryland for EPA's 8-hour Ozone Standard (1998)

HAZARDOUS AIR POLLUTION

Senior government officials interviewed for this report cited hazardous air pollution as a major emerging threat to public health in Maryland. For instance, Baltimore ranks fourth in the nation for the greatest

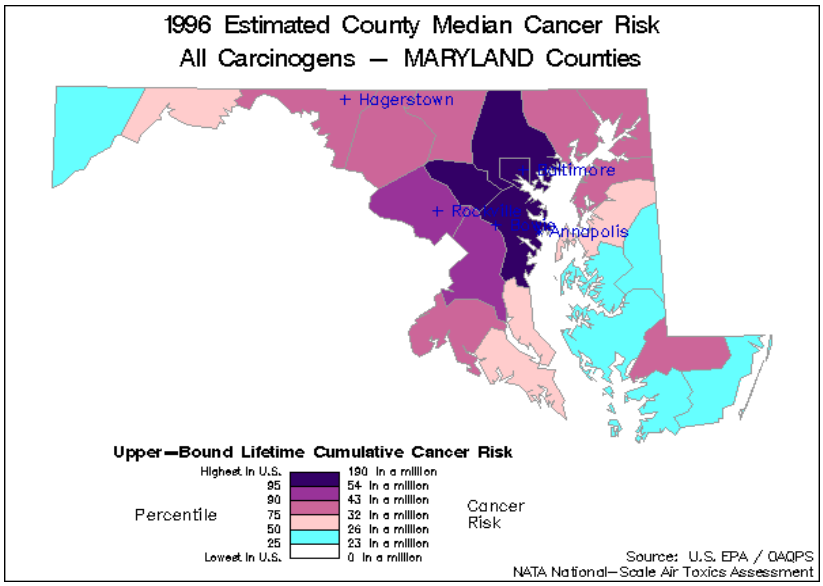
EPA gave the Baltimore-Washington corridor the most dangerous ranking possible for cancer and non-cancer risk of illness caused by unhealthy levels of air toxics.

added cancer risk from benzene exposure, equal to an 85% increased cancer risk for its citizens.

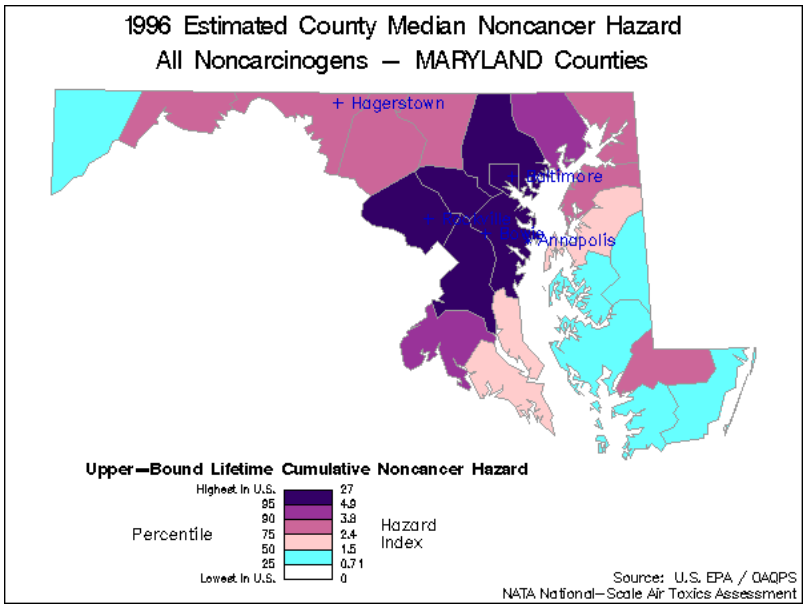
Hazardous air pollutants (HAPs), also known as toxic air pollutants or air toxics, are pollutants that can cause cancer or other serious health effects, such as reproductive effects or birth defects, neurological disorders or adverse environmental and ecological effects. HAPs travel through the ambient air as gases or are attached to fine particulate matter (PM), and include such substances as benzene, which is found in gasoline; perchlorethlyene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries.

In its *1996 National Scale Air Toxics Assessment*, EPA modeled the estimated risks for cancer and non-cancer illnesses that Marylanders face from diesel engine particulates and 32 of the most dangerous HAPs, many of which are also produced by mobile sources. Diesel particulate is not classified as one of the 188 HAPs listed under the 1990 CAA Amendments because it is a mixture of many particles of different chemicals that are components of diesel engine exhaust. Diesel particulate was, however, included in the study because it causes serious cancer and non-cancer health effects.

The assessment found that HAPs are concentrated at unhealthy levels in the Baltimore-Washington, D.C. corridor. The region ranked in the 95th percentile on EPA's Hazard Index, the most dangerous ranking possible, for both cancer risk and non-cancer risk of illness. For cancer risk, this equates to a 19 in 100,000 risk of contracting cancer due to the presence and concentration of the 32 HAPs and diesel particulate, a high level by regulatory standards. These statistics are especially troubling because they reflect modeled risks associated with only 32 out of 188 HAPs that EPA must regulate under the CAA. There is still no health risk data for 156 toxic and hazardous air pollutants.



Source: EPA Region 3, http://www.epa.gov/reg3artd/airquality/1hrareas.htm.



Source: EPA Region 3, http://www.epa.gov/reg3artd/airquality/1hrareas.htm.

PARTICULATE MATTER AIR POLLUTION

Because fine PM easily reaches the deepest recesses of the lungs, it can accumulate in the respiratory system and cause serious adverse health effects, including premature death.

Particulate matter (PM) consists of both solid particles and liquid droplets that are found in the ambient air. Manmade and natural sources can emit PM directly or can emit other pollutants that react in the atmosphere to form PM. Particles less than 10 microns in diameter create the greatest threat to human health because they can be inhaled, accumulate in the respiratory system, and worsen respiratory conditions like asthma.

Particles less than 2.5 microns in diameter are called fine particles. They result from combustion (power plants, motor vehicles, wood burning, etc.) and industrial processes, and pose the most serious threat. Because fine PM easily reaches the deepest recesses of the lungs, it can accumulate in the respiratory system and cause serious adverse health effects, including premature death.

Although Maryland is currently in attainment for PM, both MDE and EPA expect that several Maryland counties will be designated as nonattainment areas once EPA's new $PM_{2.5}$ standard, promulgated in 1997, is enforced.

MARYLAND'S RESPONSE

NAAQS AND NONATTAINMENT

As a delegated state, Maryland, acting through MDE, has the primary responsibility for air quality monitoring, permitting, inspections, and enforcement within its jurisdiction. EPA retains an oversight role, acting through its Region III office located in Philadelphia.

Under the CAA's statutory framework, EPA develops National Ambient Air Quality Standards (NAAQS) and then the states then determine how sources should be controlled. States develop these State Implementation Plans (SIPs) to meet NAAQS. When states do not have fully functional SIPs, EPA must impose sanctions. Emissions offsets and bans on federal highway funds are mandatory, but EPA may also impose restrictions on the grants it gives state agencies to run their air pollution regulatory programs. EPA must review and revise air quality criteria and NAAQS every five years "as appropriate." Until recently, the NAAQS for ground level ozone pollution was 125 ppb based upon a one-hour average, with no more than three exceedances allowed over a three-year period. However, EPA has issued a more restrictive standard of 80 ppb based on an eight-hour average.

Pursuant to the CAA, EPA designates areas of the country that persistently fail to meet NAAQS as nonattainment areas (NA). For ozone, these nonattainment designations are based on the different degrees of severity of an area's poor air quality. As mentioned earlier, the Baltimore metropolitan region is designated as "severe," while the Washington D.C. metropolitan area was just recently upgraded from "serious" to "severe." The CAA requires "severe" areas to achieve attainment by 2005.

NOX SIP CALL

States are required to amend their SIPs when additional emission reduction measures need to be implemented. CAA § 110(k)(5) further authorizes EPA to call for SIP revisions whenever it finds an existing plan is "substantially inadequate to attain or maintain the relevant [NAAQS], to mitigate the interstate transport of pollution, or otherwise to comply with the Clean Air Act."

EPA issued the most recent NOx SIP Call in 1998. It requires 22 states and the District of Columbia to revise their SIPs to employ stringent control strategies aimed at reducing NOx emissions. The rule gives each state an emissions target, but also gives it the flexibility to determine how to meet its reductions, so it can select the most cost-effective control options among its affected sources. All affected states are required to implement emissions controls by 2004, but Maryland, along with other Northeastern states, will begin in 2003. The SIP Call ultimately seeks to reduce NOx emissions by 1.2 million tons by 2007, and EPA estimates that it will reduce affected power plant emissions by 80%.

MONITORING AND ASSESSMENT

MDE's Continuous Air Monitoring Network electronically collects ambient air samples for criteria and hazardous air pollutants in order to give the state information about how it is actually doing in achieving attainment. In addition, MDE performs site inspections and collects emissions samples directly from stationary sources. MDE has enhanced its air toxics analysis and monitoring network in the past two years in response to EPA's national air toxics initiative. It has also developed a fine PM monitoring network of 20 collection stations in response to EPA's 1997 $PM_{2.5}$ NAAQS.

MDE also estimates the overall levels of pollutants in the ambient air from stationary, mobile, and area sources, compiling these estimates as an emissions inventory that serves as the basis for all planning and modeling efforts, as well as a resource for the permit and compliance staffs.

STATIONARY SOURCES

Technology Standards for New and Existing Facilities and New Source Review

Under the CAA, any new stationary source constructed in a nonattainment area must employ Lowest Achievable Emissions Rate (LAER) technology. In addition, the new emissions (for the nonattainment pollutant) must be offset by even greater emissions reductions from existing sources elsewhere in the area. In other words, emissions from one source are offset by reduced emissions at another location. As the degree of severity of nonattainment increases, the amount of required offsets increases. These amounts range from 1.15 to 1.3 times the amount of new emissions.

All existing major emissions sources in a nonattainment area must employ Reasonably Available Control Technology (RACT), installing a minimum level of pollution control technology. In addition, when existing major sources that were built many years ago make significant modifications to their facilities, they must upgrade to the technology-based standards that apply to new sources. This process is called "new source review" or NSR.

The definition of "major modification" has been the subject of heated debate among federal and state regulators, industry, and the courts because of the unexpected longevity of old, relatively dirty power plants across the country. The CAA originally exempted many of these plants from adding pollution control technology because it thought that they would close down within a reasonable timeframe. However, utilities have managed to keep such plants operating, often by making major modifications and repairs. Utilities resist the application of NSR to such modifications because installing pollution control technology is more expensive. Under the previous Administration, EPA brought an enforcement action against several utilities, alleging that they had illegally avoided NSR. However, EPA has just announced revisions of these policies that will substantially relax regulatory controls. As a result, power plants in the Midwest, a major source of transboundary pollution contributing to the Baltimore and

Washington, D.C.'s metropolitan areas' nonattainment status, will not reduce their emissions, compounding Maryland's nonattainment problems.

Permitting Programs

The CAA created a comprehensive permitting system for all major and minor stationary sources of air pollution. Major sources are distinguished minor sources solely on the basis of the total tons of emissions they release annually. In general, major sources emit more than 100 tons per year, and minor sources emit less than 100 tons per year, but in some nonattainment locations in Maryland, major sources are defined as sources emitting more than 25 tons annually.

Title V of the CAA establishes a new permitting program for major sources, which is designed to strengthen the accountability and enforceability of standards set under the Act. Because the regulations governing this program are contained in the Code of Federal Regulations (CFR) at 40 CFR 70-71, the programs themselves have become known as Part 70 (the section that applies to states that have received EPA approval to conduct the permitting) and Part 71 (the section that applies to programs run by EPA in states that do not have EPA-approved programs).

On December 1, 2001, because of a dispute over Maryland's law allowing citizens to appeal CAA permitting decisions, EPA Region III retracted Maryland's delegated authority to issue Part 70 operating permits, replacing them with its Part 71 federal operating permit program for major sources in Maryland. Based on assurance from the Governor that the legal problem would be addressed during the legislative session that was to begin the following month, EPA immediately turned around and delegated to the state of Maryland the authority to implement the federal requirements. EPA has since recommended return of the program to MDE.

MOBILE SOURCE PROGRAMS

With the notable exception of California, the CAA preempts individual state authority to require on-board controls for mobile sources. Vehicles are manufactured on a national or global level, making it cost and time-prohibitive for a state to require manufacturers to alter a vehicle's emission requirements based on individual state standards. Congress made an exception for California both because of that state's acute air quality problems and because the state's economy is large enough to make it reasonable for manufacturers to make cars that comply with more stringent state standards. The CAA allows states to "opt in" to these more stringent "California car" standards, and the Ozone Transport Commission (OTC), a consortium of Northeastern states that includes Maryland, has done so. Maryland has also taken other steps to curb these emissions, including encouraging use of national low emissions vehicles and reformulated gasoline, and enforcing a diesel smoke program, as described further below.

Federal law established to very different kinds of regulatory programs to control pollution from cars and trucks. The first is a series of transportation requirements that require states to establish budgets for total motor vehicles emissions budgets and require EPA to disapprove State Implementation Plans that authorize road-building that will result in emissions that exceeds these overall numbers. The second, issued and policed by EPA and its state counterparts, are a series of requirements that reduce emissions by regulating the content, burning, and dispensing of fuel,

either through on-board controls built into the vehicle (such as catalytic converters) or controls on gas pumps.

Transportation Regulations

When Congress amended the Clean Air Act in 1990, it finally came to grips with the fact that the repeated failure of urban areas to attain the ozone standard was due in large measure to annual increases in mobile source emissions. The 1990 amendments make an unprecedented effort to force the transportation sector to contribute to emissions reductions by imposing "transportation conformity" requirements. These provisions impose an affirmative obligation on federal, state, and local agencies to consider transportation plans, programs and projects in conjunction with the SIP's requirements, giving priority to those projects which would result in decreases in vehicle miles traveled, or otherwise create air quality benefits.

To implement these statutory mandates, EPA requires that the states propose, and it approve, motor vehicle emissions budgets (MVEBs) as the means by which transportation plans are reconciled with reductions in emissions promised in the SIPs. Once approved by EPA, MVEBs remain in effect until a subsequent SIP revision is required, or until the state submits a SIP revision that modifies the existing budget.

Local and federal transportation planning agencies use MVEBs to make a "conformity determination." This determination involves a comparison of the emissions that will be created by implementing the region's plans for new roads and development, called a Transportation Improvement Plan (TIP) with the emissions budget identified in the SIP.

The process can be analogized to everyday household budget and spending decisions: if the emissions in the TIP (the "spending" component) exceed the emissions in the MVEBs (the "budget" or "checking account" component), the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) must withhold a conformity determination, sending the state and local governments back to the drawing board to find more reductions until the two sides of the books are balanced. Alternatively, a state may increase the MVEB side of the books by submitting a SIP revision to EPA. If the MVEBs are increased, however, the increases need to be offset by equivalent reductions from other sources such as factories, power-plants, or small businesses.

Fuel Economy Program

Burning fossil fuels such as gasoline or diesel fuel adds NOx and VOCs to the earth's atmosphere. Vehicles with lower fuel economy rates generate more of these pollutants than vehicles with higher fuel economy. Fuel economy is defined as the average mileage traveled by a vehicle per gallon of gasoline.

In 1975, Congress established the Corporate Average Fuel Economy (CAFE) Program to require vehicle manufacturers to construct automobiles that burn fuel more efficiently. Beginning in model year 1985, Congress required the federal Department of Transportation to administer a program for regulating the fuel economy of new passenger cars and light trucks. The CAFE

program applies separately to each manufacturer's annual fleet of passenger cars and to its annual fleet of light trucks under 8,500 pounds. The values are obtained by combining the city and highway fuel economy test results and computing an average that is weighted by vehicle sales. Thus, if a manufacturer sells more Sports Utility Vehicles (SUVs) with lower fuel economy, it must work to achieve higher fuel economy for other vehicles in its overall fleet. Manufacturers perform their own fuel economy tests of new car models and submit the results to EPA. EPA is responsible for conducting its own tests or verifying the manufacturers' tests. In addition, EPA determines the procedures for calculating the fuel economy values for CAFE.

The CAFE standard for Model Year 1996-2003 passenger cars is 27.5 miles per gallon (mpg). The standard for light-duty trucks (SUVs, vans, and pickup trucks) is 20.7 mpg. The National Highway Traffic and Safety Administration (NHTSA) is permitted to established CAFE standards each year for passenger and light-duty trucks, but Congress has blocked recent efforts to strengthen these requirements.

NHTSA is responsible for enforcing CAFE standards and may impose a civil penalty of $5.50 for each tenth of a mpg by which a manufacturer's CAFE level falls short of the standard, multiplied by the total number of passenger automobiles or light trucks produced by the manufacturer in that model year.

In addition, a Gas Guzzler Tax is imposed on manufacturers on the sale of new model year cars (not minivans, SUVs, or pick-up trucks) whose fuel economy fails to meet certain statutory guidelines, to discourage the production and purchase of fuel inefficient vehicles. The fuel economy figures used to determine the tax are different from the fuel economy values in the CAFE standards. The tax is collected by the Internal Revenue Service and paid by the manufacturer. The amount of the tax is displayed on the vehicle's fuel economy label (the window sticker on new cars), so that consumers are aware it was imposed.

Federal Inspection and Maintenance Requirements

Tailpipe exhaust standards for cars are achieved by the installation of "on-board" pollution control equipment such as catalytic converters. New, more stringent limits included into the 1990 CAA Amendments were fully phased in with 1996 models. In December 1999, EPA announced more protective tailpipe standards beginning with the 2004 model year for all passenger vehicles, including SUVs, minivans, vans and pick-up trucks. This regulation marks the first time that SUVs and other light-duty trucks are subject to the same national pollution standards as cars. This standard equates to a 77% reduction in emissions from cars. Other types of vehicles weighing less than 6000 pounds will be phased in to this standard between 2004 and 2007. EPA estimates that when the new tailpipe and sulfur standards are implemented, Americans will benefit from the clean-air equivalent of removing 164 million cars from the road.

Inspection and Maintenance programs are required in both ozone and carbon monoxide nonattainment areas. EPA requires that all states apply On-Board Diagnostic (OBD) checks as a regular part of their Inspection and Maintenance programs. OBD can detect a system problem before the driver notices a drivability problem. It is a system of vehicle component and condition monitors controlled by a central, on-board computer running software designed to

signal the driver when conditions exist that could lead to the vehicle exceeding its emission standards. The OMB system alerts the driver by turning on a dashboard warning light and storing fault codes and engine operating conditions that repair technicians can access to diagnose and repair the vehicle. An OBD diagnostic test is performed when a vehicle receives its normal inspection test. By detecting these emission-related failures and alerting the driver to the need for potential repair, EPA hopes that vehicles will be properly repaired before emissions become a problem.

Federal OBD requirements are for vehicles below 8,500 pounds. For light-duty vehicles and light-duty trucks, OBD was required beginning in 1994. For vehicles between 8,500-14,000 pounds, requirements begin in 2004/2005, with differing phase-in schedules for diesel and gasoline-powered vehicles. There are no requirements for vehicles above 14,000 pounds.

Maryland's Vehicle Emissions Inspection Program (VEIP)

The program requires testing of vehicles every two years and repair of vehicles that fail to meet emission standards. The VEIP testing network consists of 87 testing lanes at 19 centralized inspection stations located in 13 counties and Baltimore City. On June 30, 2001, VEIP added a simple check to ensure that gas caps on vehicles are working properly. Properly sealing gas caps ensure that a vehicle's evaporative emissions control system can recover and use gasoline vapors. Gasoline vapors contain hydrocarbons which are harmful to breathe. If the gas cap is found to leak, VEIP inspectors encourage the driver to replace it with one designed for the specific vehicle make and model. In July 2002, the program began OBD testing of Model Year 1996 and newer light duty vehicles weighing less than or equal to 8,500 pounds. By 2012, emissions reductions achieved through inspection and maintenance as a percent of total potential emissions rise to 15.4% for acetaldehyde, 40.8% for benzene, 45% for 1,3-butadiene, and 15.2% for formaldehyde.

Diesel Engines

On October 6, 2000, EPA issued a final rule for the first phase of its two-part strategy to significantly reduce harmful diesel emissions from heavy-duty trucks and buses. In the first phase, EPA is finalizing new diesel engine standards beginning in 2004 for all diesel vehicles over 8,500 pounds. Additional diesel standards and test procedures in this final rule will begin in 2007. Heavy-duty gasoline engines will be required to meet new, more stringent standards starting no later than the 2005 Model Year. The new standards require gasoline trucks to be 78% cleaner and diesel trucks to be more than 40% cleaner than today's models. The second phase will reduce air pollution from trucks and buses by another 90%.

On January 18, 2001, EPA established a comprehensive national control program that will regulate the heavy-duty vehicle and its fuel as a single system. As part of the program, new emission standards will begin to take effect in Model Year 2007, and will apply to heavy-duty highway engines and vehicles. The standards are based on the use of high-efficiency catalytic exhaust emission control devices or comparably effective advanced technologies. Because these devices are damaged by sulfur, EPA is also reducing the level of sulfur in highway diesel fuel by 97% by mid-2006. As a result, diesel vehicles will achieve gasoline-like exhaust emission

levels. This program will reduce particulate matter and NOx emissions from heavy duty engines by 90% and 95% below current standard levels, respectively. By 2030, EPA estimates that this program will reduce annual emissions of NOx, nonmethane hydrocarbons, and particulate matter by a projected 2.6 million, 115,000 and 109,000 tons, respectively.

Reformulated Gasoline

Reformulated gasoline (RFG) is gasoline blended to burn cleaner and reduce smog-forming and toxic pollutant levels. Methyl Tertiary-Butyl Ether (MTBE) or ethanol is often added to gasoline to meet RFG. The 1990 CAA Amendments required that RFG be used in the most severe ozone nonattainment areas of the country. The first phase of the RFG program began in 1995 in Cecil, Anne Arundel, Baltimore, Carroll, Hartford, and Howard Counties along with Baltimore City. In 2000, Phase II of the RFG Program began. The new program will remove an additional 41,000 tons of smog-forming pollutants from the air, which is like taking 6 million cars off the road. The new program will cut the release of VOCs by 27% and reduce NOx emissions by seven percent. A 1997 study concluded that RFG's retail price has been about three cents per gallon more than conventional gasoline.

Onboard Refueling Vapor Recovery Program

This vehicle emission control system captures fuel vapors from the gas tank during refueling. The gas tank and fill pipe are designed so that when refueling the vehicle, fuel vapors in the gas tank travel to an activated carbon packed canister, which absorbs the vapor. When the engine is in operation, it draws the gasoline vapors into the engine intake manifold to be used as fuel. The program is required on 40% of 1998 model year cars, 80% of 1999 model year cars, and 100% of 2000 model year and later cars. Light-duty trucks have a six-year phase-in period, starting in model year 2001. EPA estimates that when the program is fully phased in, an average of 78 million gallons of gasoline per year will be saved and the amount VOCs in the air will be reduced by approximately 300,000 to 400,000 tons per year nationwide.

National Low Emission Vehicle Program

In 1998, nine Northeastern states, including Maryland, and 23 manufacturers voluntarily opted into EPA's voluntary National Low Emissions Vehicle (NLEV) program. This program was created in response to the deed for the ozone-plagued Northeastern states to secure significant ozone precursor emissions reductions by adopting more stringent controls. As a result, in Model Year 1999, new cars and light-duty trucks were required to meet tailpipe standards that were more stringent than EPA could have mandated prior to the 2004 Model Year. Motor vehicle manufacturers agreed to enter into the program if EPA and Ozone Transport Commission states agreed to certain conditions, including providing manufacturers with regulatory stability and reducing regulatory burdens by harmonizing federal and California motor vehicle emission standards.

Beginning in Model Year 2001, the program went national and all vehicles were required to meet these new tailpipe standards. The program provided substantial emission reductions to all

states that otherwise would only be available through individual state-by-state adoption of California's motor vehicle regulations.

Alternative Fuels in Maryland

The CAA stopped short of mandating the sale or use of alternative fuels. Alternative fuels include electricity, ethanol, methanol, methane, and propane. However, EPA encourages the states to develop their own alternative fuel programs by giving them credit toward compliance with the overall emissions levels established in their State Implementation Plans. The federal government offers tax credits to those who purchase an alternative fuel vehicle or to those who convert their vehicle's engine to be compatible with alternative fuels.

Maryland offers tax credits to alternative fuel vehicle owners whose vehicles weigh less than 26,000 pounds as follows:

Vehicle Weight	State Tax Credit
0-5,000 lbs. (i.e. sedan)	$800
5-10,000 lbs. (i.e. van)	$1,600
10-26,000 lbs. (i.e. heavy truck)	$2,000
Electric Vehicles	$1,600

Green Vehicle Guide

This guide helps consumers choose the cleanest and most efficient vehicle that meets their needs. The guide rates cars and trucks according to their emissions and fuel economy performance and provides consumers with information on how to make environmentally-informed choices when purchasing a vehicle. Consumers can select a vehicle model, determine how clean it is relative to other vehicles, and comparison shop for similar vehicles.

Maryland's Diesel Vehicle Emissions Control Program

On July 10, 2000 Maryland State Police began testing heavy-duty diesel vehicles for exhaust smoke opacity. Diesel trucks and buses with a gross combination or gross vehicle weight rating of over 10,000 pounds are subject to testing of the vehicle's exhaust emissions. Proper maintenance of the vehicle can prevent excessive smoke. Smoke opacity is representative of the amount of particulate matter present in diesel exhaust.

OZONE TRANSPORT COMMISSION

As mentioned above, another approach to reducing ozone levels is through regional efforts like the Ozone Transport Commission (OTC). Comprised of state environmental commissioners and secretaries and air pollution control officials from eleven Northeast and Mid-Atlantic states including Maryland and the District of Columbia, the 1990 CAA Amendments created the OTC to address the transboundary pollution that plays such a central role in causing nonattainment. Congress recognized that ozone travels freely across state lines and for the first time mandated by statute that regional approaches be used to reduce ozone levels.

For the past twelve years, the OTC has been actively working to reduce NOx and VOC emissions from stationary and mobile sources in the Northeast and Mid-Atlantic region. The OTC's most significant contribution to date in reducing interstate ozone pollution from stationary sources occurred in September 1994, when it adopted a Memorandum of Understanding (MOU) signed by all member states (except Virginia) to reduce NOx emissions from utilities and large industrial boilers. In early 1999, a significant phase of the MOU was put into motion with the initiation of the NOx Budget Program, which helped member states reduce NOx emissions through a cap and trade program. The OTC's 2001 NOx Budget Compliance Report revealed that during the 2001 ozone season, NOx emissions for affected sources decreased by more than 60% from 1990 levels. As described above, the OTC has also taken action to reduce motor vehicle emissions by implementing the California Low Emission Vehicle (LEV). In both instances, the OTC's regional approach helped states muster the necessary leverage to achieve significant emissions reductions.

The OTC's LEV efforts have not only benefited member states, but ultimately led to a national LEV Program. In 1998, EPA issued a final rule requiring all vehicle manufacturers to implement the LEV Program by Model Year 2001. EPA estimated that LEV vehicles would be 70% cleaner than earlier models.

The OTC routinely files comments on EPA regulatory initiatives. For example, in January 2002, it submitted comments to EPA on its proposed non-road engine rule covering large spark ignition, recreation, and marine diesel engines. The OTC strongly urged EPA to establish technology-forcing standards that would adequately protect public health and move toward cleaner engines. In September 2002, EPA adopted first-time emissions standards for these sources, adopting most of the OTC's suggestions.

HAZARDOUS AIR POLLUTANTS

Hazardous air pollutants include such toxic and dangerous chemicals as cadmium, lead, dioxin, and mercury. EPA struggled to set "safe" levels of such pollutants for many years after the CAA was passed in 1970, but made little progress. Congress addressed this issue in the CAA Amendments of 1990 by requiring EPA to establish technology-based controls for HAPs, known as Maximum Achievable Control Technology (MACT) standards. MACT standards are intended to abate the adverse effects of HAPs by reducing levels of HAPs in the air. The CAA requires EPA to do a risk assessment following implementation of MACT standards and to take further steps to control HAPS if any residual risk remains after pollution control technologies are installed.

The 1990 Amendments also instruct EPA to address emissions of air toxics from motor vehicles and their fuels. In March 2001, EPA issued a final rule that identified 21 mobile source air toxics requiring controls. In addition, the rule set new gasoline toxic emission performance standards. The performance standard for gasoline ensures that refiners maintain their average 1998-2000 gasoline toxic emission performance levels. Lastly, the rule set out a Technical Analysis Plan to continue to conduct research and analysis on mobile source air toxics. Based on

the results of that research, EPA will conduct a future rulemaking with a projected deadline of July 1, 2004.

STAKEHOLDER VIEWS

OZONE

All stakeholders agree that ozone nonattainment is the leading air quality problem in Maryland, although they disagree about what sources could and should be controlled more rigorously to address this problem.

Stakeholders also agree that transboundary pollution is a major source of Maryland's air quality problems. Government officials estimate that on Code Red days, interstate transport is responsible for as much as 70% of Maryland's ozone. They further agree that the solution to these problems must be accomplished at a national or regional level, through EPA or multi-state organizations like the Ozone Transport Commission.

Government officials, industry, and environmental groups believe that Maryland must take a multi-pollutant approach to improving air quality. They argue that it is not enough to focus only on ozone and its precursors, especially because fine PM poses even greater health risks than ozone. Government and industry representatives cite the economic and planning advantages to retrofitting/installing pollution controls once, rather than repeatedly as each new pollutant-specific regulation is promulgated. They stress the importance of long-term capital budgeting, and the negative impact that a lack of predictability has on business planning. However, many industry stakeholders oppose any attempt by Maryland to "jump out ahead of a federal program that is already eventually coming."

Overall, government and industry stakeholders agree that stationary source NOx reductions are being accomplished sufficiently (or will be once scheduled control programs are implemented). While environmental groups support these NOx reduction efforts and agree that interstate transport and increased temperatures contribute to high ozone levels, they believe local precursor reductions must also continue. Some industry leaders agree with environmental groups to the extent that they blame area sources (e.g., small and mid-sized businesses such as dry cleaners, gasoline stations, and auto body shops) for a large part of the problem. Industry stakeholders said that major stationary sources are highly regulated and continually achieve emissions reductions but that area source emissions are regulated much less stringently. But, they say, MDE does not have an effective enforcement program for area sources.

Government ozone monitoring data in Maryland currently ranges from 130 ppb -149 ppb, well above the mandatory attainment standard of 125 ppb. While the Clean Air Act requires Maryland's SIP to demonstrate that it will achieve 115 ppb by 2005, some government officials acknowledge that it will be very difficult for the state to achieve attainment by the 2005 deadline. In addition to interstate ozone transport and increasing VMT, government officials cite the delayed implementation -- until 2004 -- of regional NOx SIP Call reductions as a factor that will contribute to Maryland not meeting its 2005 ozone attainment deadline. They also acknowledge that when the more stringent eight-hour ozone standard is implemented, Maryland will fall even further behind in reaching attainment.

HAZARDOUS AIR POLLUTANTS

Regarding Maryland's high concentrations of toxic air pollutants, government officials note that MDE lacks sufficient inspectors for the thousands of dry cleaners and 1,500 gas stations and small boilers that emit NOx, VOCs, and HAPs. They also view toxic air pollutants as a mobile source problem, based on 1996 EPA National Air Toxics Assessment (NATA) data. This data demonstrates that Maryland's elevated HAPs cancer risk comes primarily from mobile sources (diesel particulate and benzene), and that it is an emerging air quality issue for Maryland that will come to the forefront in the next few years. Although industry stakeholders agree that HAPs are an emerging problem, they oppose any effort to make Maryland's requirements more stringent than federal requirements.

TITLE V PERMITTING AUTHORITY

Although Maryland is the only state to have had its Title V program delegation withdrawn by EPA, business representatives believe Maryland's program is fine and is back on track. Government stakeholders anticipate that the program will soon be returned to Maryland.

Industry sources say the most frustrating part of Maryland losing its delegation has been having to "flip-flop from Part 70 to Part 71 permits." Some industry representatives believe Maryland has no incentive to issue Part 71 permits because such permits only contain federal requirements. Industry stakeholders also indicate that many facilities are still waiting for MDE to approve both Part 70 and Part 71 permits.

Aside from the Part 70/Part 71 permit confusion, business and industry stakeholders complain about MDE's long permitting lag-time. They point to this problem as a critical issue for new facilities, because uncertainty is a major issue in business development and planning decisions. Because the permitting process is much faster in other states such as Pennsylvania, they say that capital growth may begin to move out of Maryland.

Environmental stakeholders complain about lax enforcement, and one industry stakeholder agrees, noting that MDE inspectors have a reputation for "handing violators a permit application" when they discover that new sources have been constructed without a permit, as opposed to taking an enforcement action. Some government officials, however, believe this approach is theoretically acceptable as long as the SIP can absorb the additional emissions.

Environmental groups are further troubled by the reputation of Maryland's permit approval process for new power plant as rubber stamp "one-stop shopping" (air permits, water permits, construction permits, etc.). Government officials, however, point to "one stop permitting" as an example of efficiency. They liken it to the "cumulative impacts" of construction or "area of influence" approach supported by environmental groups.

While they may not agree on the diligence of Maryland's permit process, government officials and environmental groups agree that MDE's inspection and compliance assurance/enforcement functions have been severely hampered by budget cuts that continually

decrease the Department's number of full-time positions. With only 18 inspectors for verifying the compliance of Maryland's 10,000 stationary sources of air pollution, MDE's air program faces an uphill battle.

Government officials, industry representatives, and environmental groups believe that both the federal and state governments must communicate as much data to the public as possible. For instance, environmental stakeholders recommend a clean energy campaign that ties resources and behavior to environmental and economic effects, and that underscores the compatibility of economic and environmental improvements. They point out that during times of budget crises, incentive based programs like tax credits and disincentive programs like increased penalties should include economic stimuli to "do the right thing." Industry sources recommend continuing and expanding public alerts, like broadcasting ozone alerts on Code Red and Ozone Action days.

MOBILE SOURCES

Although the quickest, cheapest interstate emissions reductions might be achieved by controlling stationary sources more stringently, all stakeholders agree that to make a real difference, significant emission reductions must come from mobile sources. Industry representatives voice special frustration that stationary sources have been regulated more stringently over recent years, but that federal and state governments have not taken adequate action to control mobile source emissions.

All stakeholders agree that each year individuals are driving in their vehicles for longer distances than ever before. This increase in vehicle miles traveled (VMT) leads to a yearly increase in the amount of air pollution from vehicles. Government officials stated that current data shows vehicle emissions will continue to decrease until 2015, due to fuel and emission-reduction technologies currently in place. Beginning in 2015, however, officials explained that air pollution from vehicles will start to increase once again because of the continuing trend in increased VMT. Any emissions reductions achieved from technology will be counteracted by the increase in VMT.

All stakeholders further agree that it is very difficult for Maryland to reduce vehicle emissions on its own. First, it is difficult to change public behavior. Driving has long been thought of as an individual activity and one that the government should not be allowed to restrict. Second, stakeholders say that the federal government must take the lead in continuing to implement regulations that would reduce vehicle emissions.

Environmental organizations state that the increase in VMT is primarily due to urban sprawl. New housing developments lead to new roads, which, in turn leads to increased VMT. Government officials point out that new houses and businesses are often constructed before roads have been built to the new area, and that state agencies are pressured into building new roads. Often, it is not the new road that increases urban sprawl, but the new development that presented the need for the road. Government officials stress that there must be more of a balance between jobs and housing. It is impracticable to build houses away from existing urban areas. There needs to be a movement towards more dense development.

Environmental groups assert that building new roads is not the solution to reducing pollution from motor vehicles. While traffic congestion may cause increased levels of certain pollutants, other pollutants are generated when vehicles travel at higher speeds. The environmental groups point to data revealing that while VOCs may increase when vehicles idle or operate at low speeds, NOx emission increases directly correspond to increased vehicle speeds.

Government officials agree with this data and stress that Maryland is attempting to increase its level of public transportation. Under the Glendening administration, the capital transportation program made key investments to reach its goal of doubling transit ridership by 2020.

All interviewed stakeholders agree that vehicle pollution not only negatively affects air quality, but also degrades water quality. They estimate that 25-35% of the nitrogen compounds that enter the Chesapeake Bay are deposited from the air.

Government officials point out that there are three plans of attack to reduce air pollution from motor vehicles. First, the officials are confident that federal regulations and programs will continue to reduce vehicle emissions. They explain that for over 20 years, federal laws and regulations have spurred manufacturers to reduce emissions through new technologies, and they are convinced that the federal government will continue to pass new rules maintaining this progression. They point to the recently enacted Tier 2 emissions standards (effective 2004), which for the first time will subject SUV's to the same national pollution standards as cars. They also believe that changes in CAFE standards would be useful.

Second, officials state that Maryland's commuter choice programs must continue to operate. These programs include mass transit and carpooling, and decrease VMT. Officials want the Maryland Legislature to continue funding these programs on a state, rather than a local level.

Third, officials note that Maryland must stay in conformity with the federal CAA and Transportation Equity Act, which requires states to establish motor vehicle emissions budgets. If those budgets are not met, new roads cannot continue to be constructed without some emission reduction measures being taken to bring transportation-related mobile source emissions in line with the allowed budget. They worry that Congress will consider rolling back these provisions.

Senior officials believe EPA should encourage increased consumer purchasing of alternative fuel and low-emission vehicles. They suggest that state and federal tax credits, along with reduced vehicle prices, would help encourage citizens to purchase these vehicles. In addition, officials suggest that distributing more data to the public detailing the harmful effects of vehicle pollution would help decrease VMT and increase alternative vehicle purchases. Lastly, officials think that real-time ozone monitoring posted on government and media web sites helps the public to better understand where and when ground-level ozone is formed.

Industry representatives state that Maryland needs to increase its incentive programs for purchasing alternative fuel and low-emission vehicles. They think that the technology currently

exists to mass-produce low-emission vehicles, and that the state should do more to encourage citizens to purchase them. They also believe that increased tax incentives are the best method to increase sales of low-emission vehicles. They add that the Maryland Legislature should study California's extensive mobile source emissions reduction plan and implement some of its most effective regulations and programs.

Environmental groups argue that balanced land use will alleviate a significant percentage of Maryland's vehicle emissions. Each of the state's counties should have a detailed plan, they explain, that limits residential development to certain priority areas. This will limit the amount of urban sprawl that results in increased VMT. In addition, these priority areas should consist of mixed zoning. Residents should be within walking distance of stores and places of employment to reduce their miles spent driving to these locations. The public's driving habits must change. Too many citizens are driving their cars to work each day instead of taking mass transit, due to Maryland's lack of sufficient public transportation. For example, it is extremely difficult to travel from Baltimore to Annapolis using mass transit.

Environmental groups explain that the easiest solution to reducing vehicle emissions is to require manufacturers to produce more fuel-efficient vehicles, by raising CAFE standards and reducing the acceptable amount of tail-pipe emissions. However, they point out that it is very difficult for Maryland to pass these regulations without the backing of the federal government. It would be cost- and time-prohibitive for an individual state to require manufacturers to tailor vehicles to individual state standards. In addition, such state standards could be pre-empted by existing federal laws.

Lastly, environmental groups stated that the linkage between urban sprawl and increased air pollution must be demonstrated to the public. State and non-profit organizations should distribute information and conduct television ads discussing urban sprawl issues, along with techniques to reduce the amount of air pollution.

In response to these concerns, government officials point out that a number of incentive programs currently exist. For example, state agencies have carpool programs and offer incentives to employers if their employees use public transportation when traveling to work. In addition, High Occupancy Vehicle (HOV) lanes may be constructed on major highways, which low-emission vehicles are in some instances permitted to use. However, government officials state that these programs are not widely used because the public is not aware they exist. Increased public education is needed for these programs to be effective.

RECOMMENDATIONS

As previously discussed, millions of Marylanders breathe unhealthy air that does not meet federal air quality standards. The 1990 CAA requires severe nonattainment areas to come into compliance by November 15, 2005. If the area fails to do so, the CAA triggers drastic penalties, including penalty fees for all major stationary sources, reduced federal highway funds, mandatory offsets and construction bans.

Because the Baltimore metropolitan area was designated as a severe nonattainment area, Maryland has attempted to reduce its ozone levels through a number of different programs and regulations. However, recent data indicates that although Maryland has held its own in the face of population increases, the state has not made steady progress in reducing ozone levels. Consequently, it is unlikely that Maryland will reach attainment for ozone by 2005.

It is far from clear whether Congress will amend the CAA of 1990 to extend Baltimore's 2005 attainment deadline. Deadlines for urban areas like Baltimore have already been extended twice, and any further extension is likely to provoke a lengthy, contentious debate. The 1990 Clean Air Act Amendments set strict compliance deadlines for nonattainment areas and do not permit EPA Administrator to grant extensions for nonattainment areas, no matter how hard they have tried to achieve attainment. Therefore, it is likely that sanctions will be imposed against Maryland after November 2005. With this background in mind, it is critical for Maryland to redouble its efforts to reduce stationary, area, and mobile source emissions and for the federal government to address emissions from out-of-state sources. The following recommendations are provided to assist Maryland in achieving those reductions.

Maryland must stay actively involved in the Ozone Transport Commission (OTC).

Because a significant portion of Maryland's ozone nonattainment results from nitrogen oxides (NOx) and volatile organic compound (VOC) emissions drifting across its boundaries, and because Maryland acting alone does not have sufficient political or economic clout to force out-of-state emissions reductions on its own, only a regional approach to reducing interstate ozone transport has proven effective. The OTC's success in shaping regional and national policy results from the cumulative economic and political clout of its members.

Maryland should exert all of its influence (alone and through the OTC) to prevent the federal government from delaying enforcement and proposing rollbacks to the Clean Air Act.

On November 22, 2002, EPA announced a final and a proposed rule that effectively roll back the CAA's New Source Review (NSR) program by relaxing air pollution control rules for 18,000 industrial sources. NSR requires older facilities to install modern pollution controls when making major modifications that substantially increase pollution, and its enforcement is critical to maintaining Maryland's air quality. It is in Maryland's best interests to actively pursue any avenues (including multi-state litigation) that will prevent these rollbacks from being implemented.

Maryland must continue to actively oppose utility industry litigation seeking delayed implementation of the NOx SIP Call.

The Northeastern and Mid-Atlantic states have long recognized that unless EPA requires Midwest power plants to reduce NOx emissions, interstate pollution will make it nearly impossible for affected states to reach ozone attainment. The OTC has done an excellent job calling attention to the situation, and was influential in bringing about the NOx SIP Call, which requires twenty-two states and the District of Columbia to implement NOx emissions controls for major stationary sources by 2004. The NOx SIP Call is projected to reduce NOx emissions by 1.2 million tons by 2007, and power plant emissions in affected states by 80%. In the summer of 2002, utility and industry groups attempted to derail the NOx SIP Call by bringing a lawsuit challenging EPA rules governing its implementation. To uphold the rules and protect its interests, Maryland and nine other states quickly intervened in the litigation. Maryland must remain active in any attempts by industry groups to delay the NOx SIP Call or other programs aimed at reducing interstate pollution. For Maryland to achieve ozone attainment, it is critical that interstate pollution be drastically reduced.

In addition to pursuing a regional approach to air pollution, Maryland should take a multi-pollutant approach to improving its air quality.

Because many of the same sources emit NOx, VOCs, particulate matter (PM), sulfur dioxides (SO_2), and hazardous air pollutants (HAPs), a piecemeal approach to air quality by regulating one pollutant at a time is inefficient. Business and industry stakeholders believe it ultimately costs less to plan, budget for and implement pollution controls in a coordinated manner than to face new control requirements for different pollutants every few years.

For Maryland to realize any significant air quality improvement in the near term, it should pass multi-pollutant air quality legislation requiring emissions reductions from Maryland's largest stationary sources of NOx, VOCs, PM, and HAPs.

The CAA does not require power plants operating or in construction before 1977 to meet the same pollution standards that modern plants must meet. Facilities grandfathered under this loophole were expected to retire at the end of their 30-year projected lives. However, they continue to operate today, releasing four to ten times more pollution than new power plants. A number of states have passed legislation to close this loophole, including Massachusetts, Connecticut, New Hampshire, and North Carolina.

In Maryland, 12 out of 16 coal-fired power plants are over thirty years old. In 2000, 242,855 tons of SO_2 and 76,620 tons of NOx were released from Maryland's power plants, with 193,155 tons of SO_2 and 56,937 tons of NOx coming from grandfathered power plants. Although interstate pollution significantly increases Maryland's ozone levels, multi-pollutant legislation remains a necessary step in the fight to improve Maryland's air quality, and should require grandfathered power plants to install modern pollution controls by a specified date.

Maryland must improve its enforcement of air quality standards by increasing the number of inspectors in MDE's Air and Radiation Management Administration (ARMA).

If the state considers raising the gasoline tax to fund road-building projects, a significant share of that revenue should be committed to programs that will improve the prospects of achieving attainment because failure to reach those goals is likely to result in a loss of federal highway funding.

Maryland has only 18 inspectors to monitor compliance at over 10,000 stationary sources. MDE does not have enough inspectors to adequately inspect sources for criteria pollutant emissions, NSR violations, and especially HAPs emissions from area sources. For instance, in FY 2001, air quality inspectors visited only 1,402 of Maryland's 10,000 sites, bringing only seventeen penalty actions. Because of Maryland's alarmingly high risk levels for cancer and non-cancer illnesses caused by toxic air pollution, the lack of personnel to inspect its thousands of area sources is especially critical. EPA has identified hazardous air pollution as an emerging issue for Maryland. Maryland should increase its deterrence-based enforcement, increase penalties for violators, and increase permit fees to cover MDE's true costs of monitoring, inspection and enforcement.

Maryland should oppose congressional efforts to cut back on the requirements that states set and meet stringent Motor Vehicle Emissions Budgets when Congress reauthorizes transportation statutes.

Without these requirements, there are no easily accessible methods for federal and state environmental agency officials to compel their transportation counterparts to consider the adverse environmental effects caused by road building.

Maryland should increase public education about the effects of mobile source pollution.

The public often does not make the connection between buying certain vehicles and negative environmental impacts. For example, several surveys indicate that the public overwhelmingly supports a cleaner environment. However, each year the percentage of individuals driving light trucks (SUVs, vans, pick-up trucks) increases. If citizens were better informed about light trucks' poor fuel economy, they might change their vehicle buying habits and purchase a greater percentage of cars.

In addition, a greater amount of public education demonstrating the connection between land use and air pollution is needed. When new residences or businesses are built away from existing metropolitan areas, the public is required to drive farther to reach them. This leads to increased vehicle miles traveled and increased air pollution. If future home owners were informed that their choice of location could lead to increased air pollution, they might decide to live closer to existing homes and businesses.

Finally, more information needs to be distributed to the public describing the connection between consumer choices and health effects. The majority of the population does not connect driving vehicles with poor fuel economy to increasing asthma rates. Stressing that personal choices affect individual health might sway the public to make lifestyle changes.

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SECTION FOUR: WATER QUALITY

SCOPE OF THE PROBLEM

The Clean Water Act (CWA) requires each state to:

- designate uses for its water bodies (for example, recreational boating, fishing, swimming, shellfish harvesting, and drinking);
- determine if waters are too polluted – or, in the language of the statute – "impaired" to support their designated uses;
- adopt standards to restore water quality; and
- enforce those standards by requiring pollution sources to reduce their water discharges until acceptable levels are reached.

Only 36.5% of Maryland's estuarine waters and 42.5% of its lakes and ponds fully support their designated uses. The Chesapeake Bay itself is also listed as an impaired water body. The chief cause of impairment is run-off from agricultural land, categorized as "non-point source" pollution under the CWA. Nutrient run-off, produced primarily by rainfall, washes fertilizer, soil, and animal waste into surface waters, overloading them with nutrients, especially nitrogen and phosphorus, and causing algal blooms that block essential sunlight from filtering into aquatic habitats. (Another cause of impairment is sediment loading from urban run-off and stormwater mismanagement, but those subjects are beyond the scope of this report.)

The Chesapeake Bay contributes an estimated $31.6 billion to the Maryland and Virginia region. Given the Bay's economic and cultural importance to Maryland, this report seeks to answer the following:

1. **What goals have we established for restoring the health of impaired waters throughout the state?**
2. **Will we meet those goals in a timely fashion?**
3. **What further action should we take?**

STATE OF THE ENVIRONMENT

HEALTH AND ENVIRONMENTAL EFFECTS

MDE identifies seasonally poor aquatic habitat conditions in the Bay's deeper portions, as well as in its small, shallow tributaries, as the state's most extensive water quality problem. Low dissolved oxygen, caused by excess nutrients, is the principal cause of those impairments.

Nutrients such as nitrogen and phosphorus harm water quality because they feed algal blooms. The overgrown blooms then cloud the Bay waters, blocking the sunlight necessary for healthy underwater grass growth (also known as "submerged aquatic vegetation"), disrupting the habitat of aquatic ecosystems. When algae die, they settle to the Bay's bottom and decompose, a process that consumes oxygen. Low dissolved oxygen levels drive fish and blue crabs from their preferred habitat. Low oxygen levels also kill clams, worms, and other small bottom organisms on which crabs feed.

The principal cause of impairment to the Chesapeake Bay is low dissolved oxygen, which is caused in large part by excess nutrients in the Bay.

In 2000 and 2001, the abundance of mature female blue crabs was at historical lows. In the 1950s, 35 million pounds of oysters were harvested per year. Current oyster harvest levels are less than three million pounds per year. Even after a good year for Bay grasses, ironically due to the drought, the total acreage is still 20% below the interim target and just a fraction of historic levels.

Low oxygen levels also create an environment that is highly conducive to *Pfiesteria*, an organism which, in its toxic form, produces catastrophic fish kills. Some studies have also shown that human exposure to the *Pfiesteria* toxin irritates the respiratory system and can cause severe neurological damage.

"The blue crab is one of the most important commercial species in the Chesapeake Bay and has the highest value of any commercial fishery. . . ."

Chesapeake Bay Program,
The State of the Chesapeake Bay 2002 Report

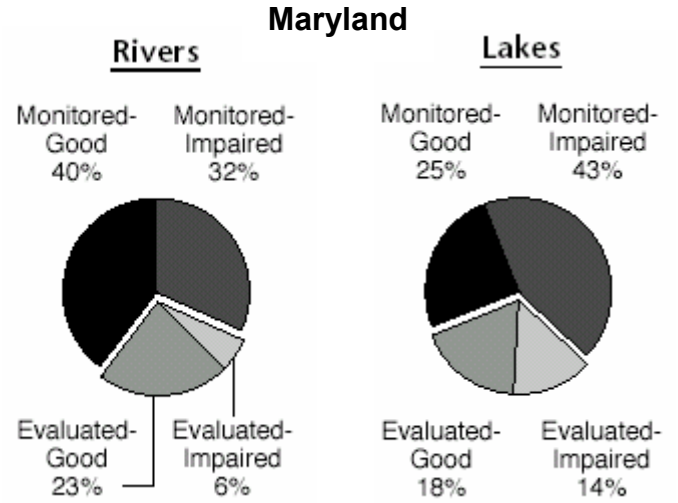
Compounding these concerns, DNR recently found *Chattonella* in Maryland's coastal bays. *Chattonella* is a type of algae that also becomes toxic and has caused large fish kills in other areas of the world. *Chattonella* is one example of the many types of toxic algae that can become over-abundant in the Bay because of nutrient excess. Others include dinoflagellates such as the potentially toxic *Prorocentrum minimum* and *Karlodinium micrum* that color the water reddish-brown (also known as "mahogany tides").

IMPAIRED WATERS

Maryland has assessed 100% of its stream miles (approximately 17,000 miles) to determine whether they meet the minimum designated use – that is, whether they are fishable or swimmable. However, the state has only assessed 39.3% of stream miles to determine whether they support the higher standard o adequately supporting aquatic life. Approximately 6% of those assessed do not meet this designated use.

The state has only assessed about 25% of the total lake acreage. Of this number, only 37% meets the highest use.

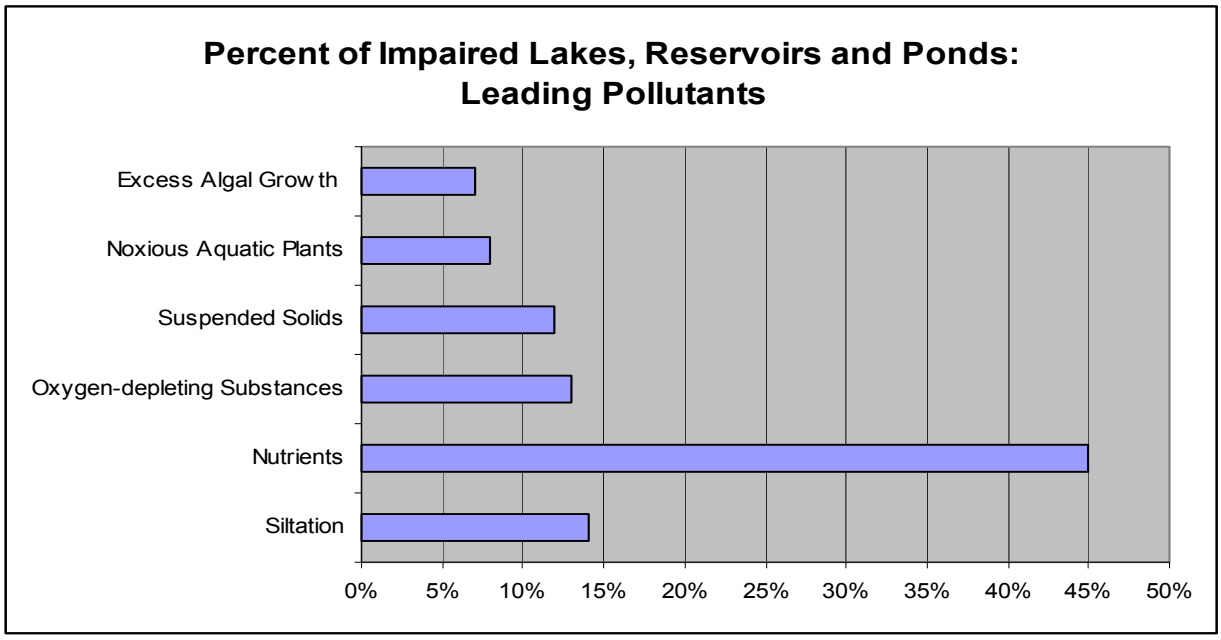
The state has assessed most of its 2,478 square miles of estuarine waters. Only 55% of the 2,459 square miles from the estuaries assessed support aquatic life. With respect to the higher shellfish designated use, 1,839 square miles have been assessed (74% of Maryland's total estuarine waters). Eight percent of these waters fail to support a population of shellfish free of toxins and pathogens that could pose a health risk to human consumers. Low dissolved oxygen levels contribute to the impaired status of 87.2% of estuarine waters, and 98.5% of impaired river waters.

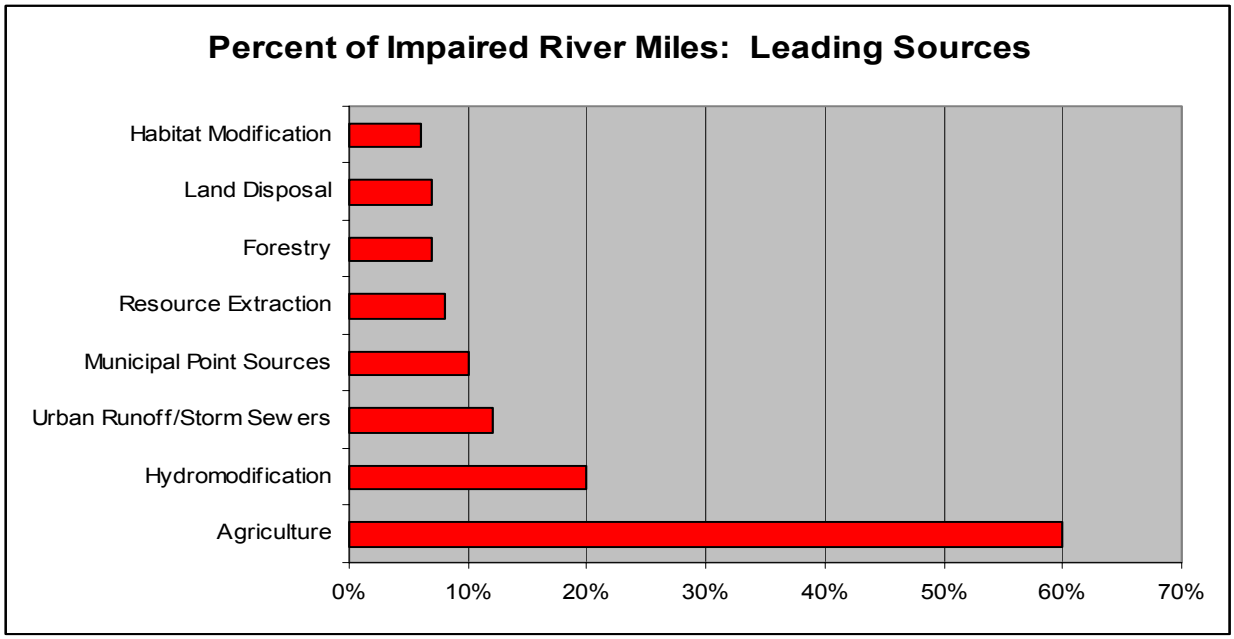


Source: 2000 National Water Quality Inventory Report to Congress, 18-19.

The Gunpowder-Patapsco watershed has the most impaired water bodies, with 49 water bodies listed as impaired on the state's 303(d) or impaired water bodies list. The Patuxent and Chester-Sassafras watersheds follow in number, with 23 and 22 water bodies on the impaired list respectively. Because non-point sources are the primary cause of impairment for the majority of Maryland's streams listed as impaired, most of the TMDLs established so far have been for nutrients and sediments. Of the 35 water bodies for which MDE has completed a TMDL, 26 are listed as impaired by nutrients.

The state must revise its impaired water bodies' list every two years. This year, the state has proposed to list 566 impairments to a total of 235 water bodies as impaired (this includes waters previously listed). The majority of the new listings are biological (31.4%), nutrient (22.1%), and sediment (18.2%). Biological listings are those that indicate waters where the biological community has degraded but the impairing substance is unknown.



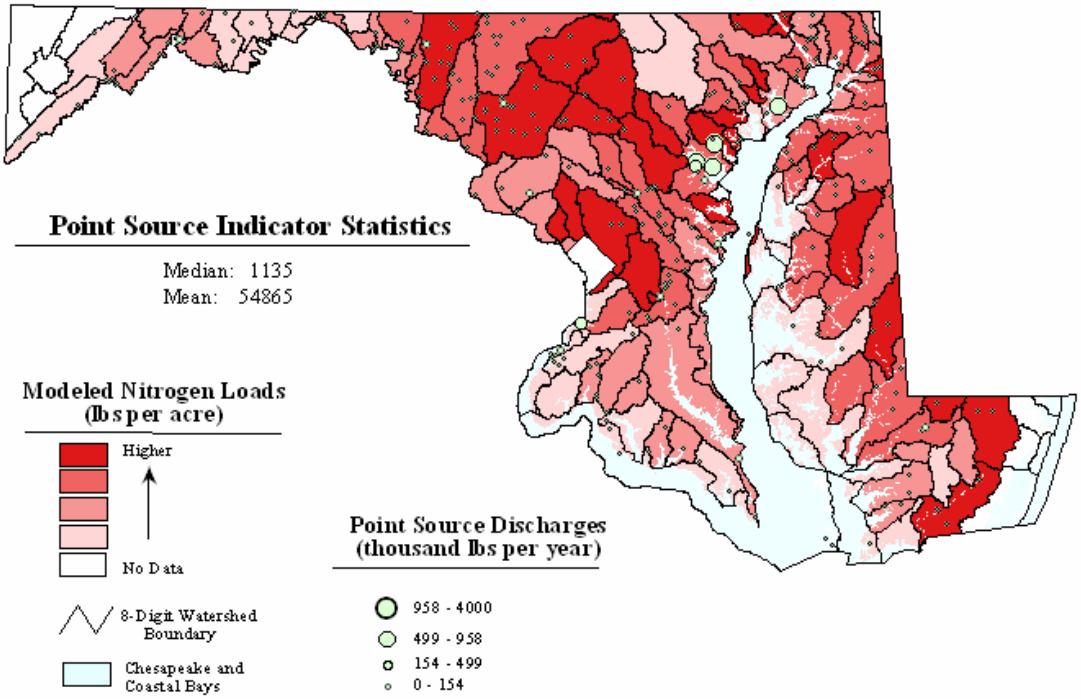


Source: ***Chesapeake Bay Program.***

SOURCES OF POLLUTION

The state focuses on two sources of pollution affecting quality of the state's waters: "point" and "non-point." Point sources have pollutant discharge that is discernible, discrete, and confined, generally from a pipe or similar structure. Non-point sources of pollution are those that produce discharges when rain water runs over large surface areas such as parking lots and crop fields washing contaminants into surface waters.

As the following figure illustrates, excess nutrients, predominantly nitrogen and phosphorus from agricultural run-off, are Maryland's primary source of non-point source pollution. These nutrients move downstream into tidal rivers, many of which ultimately accumulate in the Chesapeake Bay.



Source: Maryland Department of Natural Resources, Statewide Indicators, March 2000

CHESAPEAKE BAY AGREEMENTS

The 1987 Chesapeake Bay Agreement established a nutrient reduction goal of 40% by 2000. Established on a baseline of 6.895 million pounds per year of phosphorus and 52.910 million pounds of nitrogen, these goals should have resulted in a reduction to 4.137 million pounds per year of phosphorus and 31.746 million pounds of nitrogen per year by the year 2000. These goals were revised in 1992 on the basis of new data on the baseline loadings. Under the new allocations, Maryland was required to reduce nitrogen loads by 22.7 million pounds per year and reduce phosphorus loads by 2.11 million pounds per year by the year 2000.

In spite of many efforts throughout the 1990s, EPA found that the Chesapeake Bay was not meeting water quality standards. EPA listed the Bay in 1998 as an "impaired water body" under the Clean Water Act. As a result, a TMDL will be required for the entire bay unless it meets water quality standards before 2011. In response, Chesapeake Bay states drafted and signed the Chesapeake 2000 Agreement. The Agreement established 2010 as the target date to remove the Bay from the list of impaired waters under the Clean Water Act. While it also retained the 40% reduction goal from 1987, additional reductions will be needed.

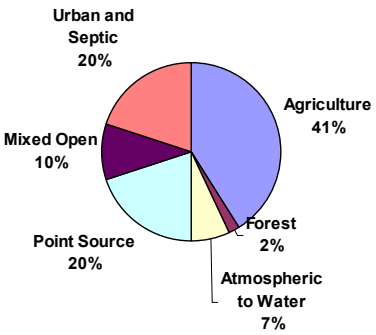
Some progress has occurred in reducing nutrients in the Bay. In 1985, nitrogen base loads were estimated at 206.7 pounds per year. Phosphorus base loads were 21.4 pounds per year. Phosphorous loads deposited in the Bay declined by an average of 8 million pounds per year from 1985 to 2000, although this reduction fell short of the target established in the 2000 Chesapeake Bay Agreement by 2.3 million pounds per year. In the same way, although nitrogen loads declined by 53 million pounds per year, this reduction fell 24 millions pounds short of the 40% goal annually. As a result, from the 1985 baseline figures, we have reduced phosphorus loads by approximately 37% and nitrogen loads by approximately 25%.

Chesapeake Bay Agreement 2000 Nutrient Loads			
Reduction goals per million pounds per year	**1985 Total Nutrient Loads**	**40% Reduction Goal 2000 Bay Agreement**	**Actual Reductions Md, Va, and Pa**
Nitrogen Reduction Goal	**206.7 lbs/yr**	**77 lbs/yr**	**53 lbs/yr**
Phosphorus Reduction Goal	**21.4 lbs/yr**	**10.3 lbs/yr**	**8 lbs/yr**

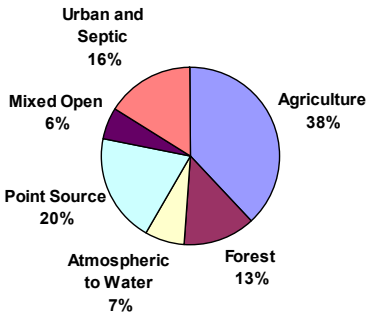
In spite of these gains, nitrogen loads are increasing in the Susquehanna and Potomac Rivers. One of the suspected causes for this increase is growing farm animal populations and the associated waste. Although the acreage of active cropland is decreasing, remaining farms are larger. The Susquehanna River drains some of the most productive agricultural land in the United States and provides approximately 50% of the bay's fresh water.

Sources of Nitrogen and Phosphorus Loads to the Chesapeake Bay

Phosphorus



Nitrogen



Source: The State of the Chesapeake Bay: A Report to the Citizens of the Bay Region, Chesapeake Bay Program, July 2002

As the charts below indicate, Maryland is doing a better job than any of the other states that are signatories to the Chesapeake 2000 Agreement. With that said, Maryland's efforts to reduce non-point source pollution have not met the 40% reduction goal with respect to nitrogen or sediments. If these trends continue, it is unlikely that the Chesapeake Bay will be removed from the impaired water bodies list by the 2010 deadline.

Loads Delivered to the Chesapeake Bay			
Jurisdiction	**Nitrogen** Million lbs/yr 2000	**Phosphorus** Million lbs/yr 2000	**Sediment** Million TONS/yr 2000
PA	112.7	3.48	1.094
VA	78.1	9.61	2.437
MD	56.9	3.83	.936
NY	19.2	.98	.149
WV	7.5	.55	.365
DE	5.4	.53	.057
DC	5.0	.14	.006

Nitrogen Reductions by State	
PA	6%
VA	15%
MD	30%
NY	Not available
WV	0%
DE	9%
DC	40%

Phosphorus Reductions by State	
PA	22%
VA	29%
MD	43%
NY	Not available
WV	Not available
DE	Not available
DC	Not available

Sediment Reductions by State	
PA	12%
VA	10%
MD	25%
NY	Not available
WV	Not available
DE	Not available
DC	Not available

Source: ***EPA, Region 3***

MARYLAND'S RESPONSE

OVERVIEW

MDE and DNR are the two agencies most responsible for protecting Maryland's water quality. The two agencies have the same goals, but use very different methods. MDE is primarily a regulatory agency that tells sources how to control pollution and then takes enforcement action against them if they do not comply. DNR is primarily a resource management agency that maintains Maryland state parks, protects wildlife by issuing hunting and fishing licenses, and promotes safety in outdoor recreational activities. DNR has authority to prosecute people who violate their licenses, but does not get involved in controlling industrial pollution. This split reflects the traditional division between regulatory and living resource management agencies that is found in many states.

As was true with EPA, MDE's efforts to control water pollution focused first on point sources, such as discharges from publicly-owned treatment works (sewage treatment plants or POTWs), because point sources are the easiest to identify and control. The challenge for the state now is to also find the best ways to address diffuse, non-point sources, such as run-off from agricultural land, that are far more difficult to evaluate and manage.

Our explanation of Maryland's response to water quality problems first considers the regulatory and administrative tools available to address the problem, as well as the way the state has organized its response, using these tools, from a management perspective. We then consider the Clean Water Act's overriding requirement that states set Total Maximum Daily Loads (TMDLs) for impaired water bodies. We explain the regulation of point sources that discharge nutrients to Maryland waters. We then consider the 1998 Water Quality Improvement Act, passed in the wake of a severe outbreak of *Pfiesteria* in an effort to better control agricultural, non-point sources of pollution.

NUTRIENT MANAGEMENT TOOLS

Maryland's approach to water quality is wide-ranging and multi-faceted. Key findings of this report are that these activities are diffuse, dispersed, and duplicative, and that the state should work to consolidate and streamline them, making implementing agencies more accountable. To assist the reader in understanding the nature and scope of this problem, we have prepared a list that establishes broad categories among the programs. These categories are set out below, and also used in the chart that appears as Appendix B.

Standard-setting. S

Under the Clean Water Act, MDE is required to establish water quality standards for the state. According to Maryland regulations, "a water quality standard is comprised of a designated use for a particular body of water and the water quality criteria established to protect that use." Designated uses include drinking water, fishing, swimming, and recreation.

Monitoring and Assessment. MA

Both MDE and DNR monitor the quality of the state's surface waters. MDE also receives monitoring reports from private permit holders. DNR monitors water quality primarily for the purpose of managing living resources. Other state agencies, such as the Department of Agriculture, Maryland Environmental Service, and Department of Transportation, and local governments also monitor water quality, as do some academic institutions and non-profit organizations. The Maryland Water Monitoring Council was established in 1996.

Planning. PL

The state plans its water quality activities through several agencies. Under the Clean Water Act, MDE is responsible for developing the Water Quality Management Continual Planning Process, which establishes how the state intends to deal with its water quality problems. Maryland's Tributary Teams, under DNR, also provide some planning guidance. MDA's Program Planning and Development staff plan nutrient management and soil conservation programs.

Regulation. REG

MDE's water quality regulatory activities include granting permits specifying the conditions under which point sources, primarily publicly-owned treatment works and industrial facilities, may discharge waste effluent to surface waters. MDE also issues permits for ground and surface water withdrawals and mining activities. MDE supervises the approval of erosion/sediment control and storm water management plans; storm water permits; and dam permits.

Other agencies, most particularly the MDA, also have regulatory authority over water quality issues. In particular, under the Water Quality Management Act of 1998, MDA is the agency responsible for approving nutrient management plans prepared by farmers.

DNR also conducts regulatory activities related to water as it issues fishing and boating licenses. It does not directly regulate water quality, however.

Enforcement. ENF

MDE has the authority to obtain injunctions against violators of both federal and state environmental laws, and to impose civil and criminal penalties under federal and state environmental laws. State enforcement efforts are based on self-monitoring reports submitted by regulated entities, compliance sampling, and inspections. MDE's enforcement authority extends primarily to regulated entities.

DNR also has enforcement authority, although, in this context, its focus is directed toward water safety rather than water quality. DNR's primary roles are to assist in the

protection of life and property, promote boating, fishing, and hunting safety, protect wildlife, serve as the primary search and rescue agency on the state's waters, preserve the peace, and assist in the prevention of crime.

Reporting. REP

The Clean Water Act requires the state to submit several water quality reports to EPA including the Section 303(d) list of impaired waters submitted by MDE every two years, the Section 305(b) Water Quality Report, which is submitted by DNR and reports on the status of Maryland surface and ground waters, and the Continuing Water Quality Planning Process, which is submitted by MDE and describes the processes the state uses to administer its water quality programs.

Infrastructure Development. INF

In addition to regulating and monitoring water, the state also encourages investment in water-related infrastructure.

By means of the State Revolving Funds program, MDE's Water Quality Financing Administration (WQFA) provides low interest loans to finance capital projects to upgrade wastewater collection and treatment systems and address non-point source water pollution problems. The fund total for 2002 was $117.8 million.

Some of the wastewater point source projects that qualify for inclusion on the priority list include:

- new, expanded, or rehabilitated treatment plants, including the addition of biological nutrient removal technologies;
- replacement or rehabilitation of sewers; and
- water treatment plant filter backwash and sludge treatment.

Non-point source projects are funded under the Linked Deposit Program, which provides below market rate of interest loans through a network of private lending institutions for eligible private non-point source projects. Some of the types of eligible projects include:

- waterbody restoration (stream bank stabilization, drainage erosion, and sediment control);
- aquatic habitat restoration and protection projects; and
- agricultural biological nutrient removal projects such as grade control structures, sediment control ponds, stream protection, and manure storage facilities.

Resource Management. MGT

DNR's Chesapeake & Coastal Watershed Service has the primary responsibility for developing and supporting watershed and waterway resource management strategies. DNR's Resource Assessment Service collects and interprets scientific and economic data to direct restoration and protection efforts. Some of DNR's water resource programs include:

- Watershed Restoration Action Strategy Partnership Program;
- Tributary Teams;
- Waterway Improvement Fund;
- Chesapeake Bay National Estaurine Research Reserve System;
- Stream ReLeaf; and
- Chesapeake Bay Monitoring Program.

MDA also supports several important resource management programs designed to improve Maryland's water quality. Some of these include:

- Conservation Resource Enhancement Program;
- Agricultural Water Management Program; and
- Agricultural Nutrient Management Program.

Education & Public Involvement. EDU

The state conducts a variety of programs designed to educate the public about environmental problems. For example, DNR's Bays and Streams Education Program provides educators, concerned citizens, and children with information about the Bay. MDE, DNR, and MDA also work to educate their constituents about the programs they implement, using the Internet, mass mailings, and public meetings.

Grant/Funding Programs. $

The state also provides funding, by means of grants and loans, to support environmental protection efforts. MDA's Cover Crop Program, for example, pays farmers to plant cover crops such as oats, barley, rye and wheat on fields after the fall harvest of other crops in order to "soak up" nutrients that would otherwise end up in the Bay.

Policy/Coordination. P/C

The Governor's Council on the Chesapeake Bay, also known as the "Chesapeake Bay Cabinet," is the primary interagency group that attempts to coordinate water policy for the state.

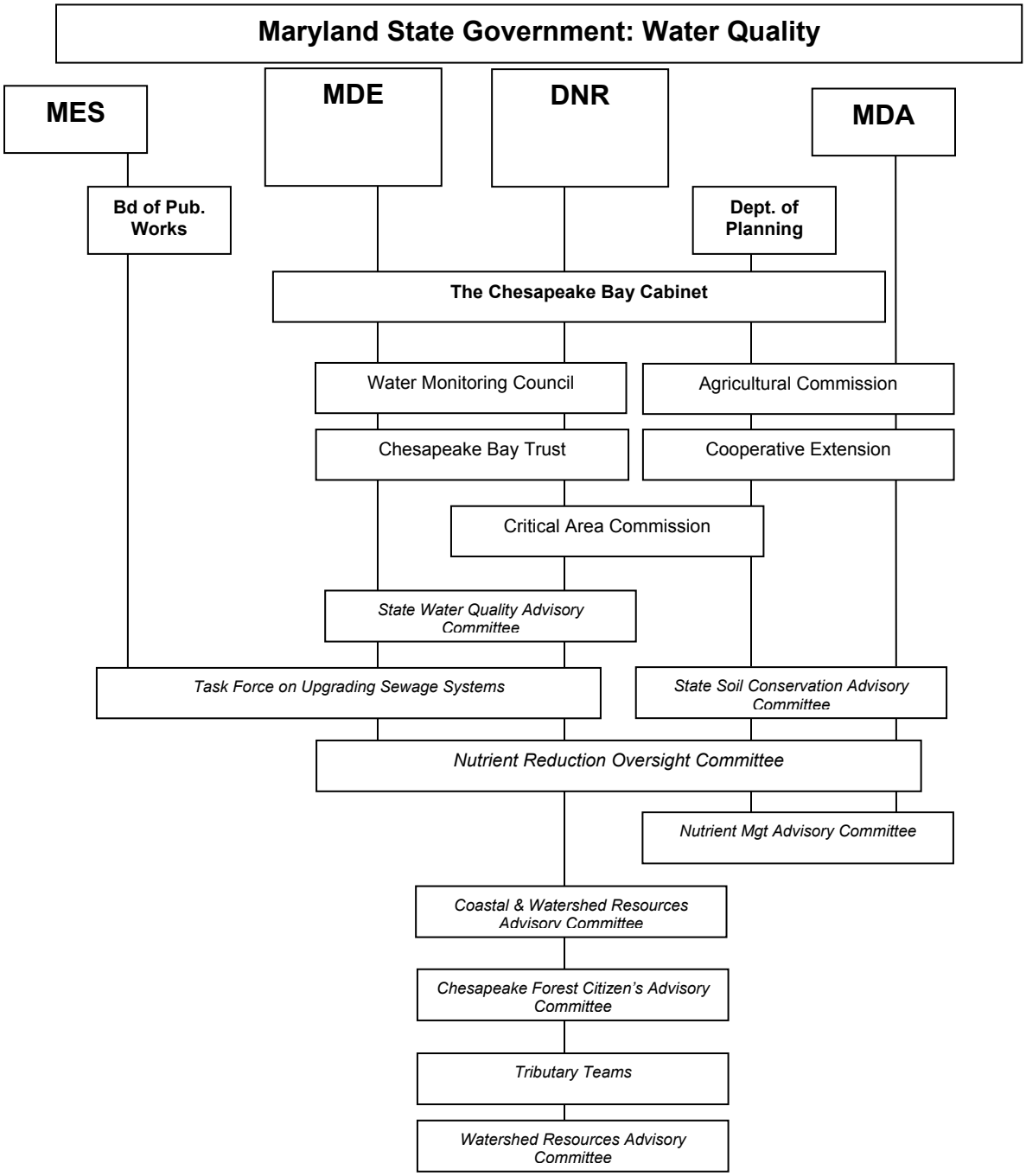
Research. RES

The state undertakes scientific and technological research, often funded by the federal government. For example, the Animal Waste Technology Fund supported innovative projects designed to handle the state's poultry manure problem.

By using these broad categories to identify the general function of a state program, this report seeks to understand the state's water quality priorities. Of course, many state programs include several of these categories.

ORGANIZATIONAL CHART

The following schematic, prepared for this report, portrays how the various bureaucracies relate to each other. The primary agencies responsible for water quality are listed at the top. Commissions, councils, committees and task forces created with representation from those primary agencies or within those agencies are listed below. The groups listed beneath the primary agencies do not necessarily report to those agencies; rather, they may advise the agencies or include representation from one or more of the primary agencies.



As explained above, the programs administered by these various agencies and teams are presented in the chart that appears as Appendix B to this report. The chart is organized by government entity and then by program. Each program is then broken down by source of authority, status, budget, and a brief description. The programs are then keyed to the categories defined in the section above.

The chart is extensive for several reasons. First, water quality has been a concern in Maryland for many years. The number and diversity of programs reflect this lengthy history. Second, some programs developed in response to water quality "emergencies." The best examples are the various nutrient management programs that emerged after the *Pfiesteria* scare in 1998. Third, many of the programs are in response to federal mandates and/or federal funding opportunities. MDE, for example, must enforce the Clean Water Act while MDA's Conservation Resource Enhancement program was created in response to a federal funding opportunity.

The chart illustrates that Maryland has a plethora of monitoring, reporting, and research programs, many of which overlap in purpose. Not only are these efforts duplicative and wasteful, they drain resources that could be better spent on standard-setting and enforcement. The next two sections describe in more detail the state's water monitoring and assessment and reporting activities.

MONITORING

MDE and DNR conduct various water quality monitoring activities that seem remarkably similar to each other. While MDE's water monitoring programs generally address regulatory issues such as TMDLs and permit compliance and DNR's programs generally address aquatic resource issues, several government stakeholders agree that water monitoring was an area where there was unnecessary overlap.

Released in December of 2000, the Maryland Water Monitoring Strategy Report, developed by both MDE and DNR, critiques the state's current approach to water monitoring. It explains that water monitoring efforts have been complicated by the state's move toward a "watershed approach" to managing water quality. According to the report, the watershed approach represents the appropriate method to address complex, interrelated problems like non-point source pollution.

While the watershed approach is appropriate, it is different from existing water quality approaches that focus on water bodies instead of watersheds. The report notes that, in addition to traditional state efforts to monitor water bodies, there are a large number of water-monitoring efforts by local and federal government agencies, academic institutions and volunteer groups. "Somehow," the report states, "information from these programs should be integrated as part of a statewide water monitoring strategy." In short, as the state moves toward a more comprehensive water monitoring strategy, the need for a more centralized water monitoring entity grows more important if the most useful data is to be collected in the most efficient way.

REPORTING

Many of the agencies are required either by state or federal law to submit reports on a annual or biannual basis. Most of the reports we found, in fact, were in response to legislative mandates. In addition, an array of task forces, commissions, and councils generate environmental reports. Because many of the task forces include representatives from agencies such as MDE, DNR, or MDA, agency personnel are typically given the job of staffing those groups. The following chart lists some of the water quality reports that each agency or group generates:

Responsible Agency or Group	Water Quality Report
MDE	Water Quality Financing Administration: Intended Use Plan
MDE	Stream Response Report
MDE	Enforcement Compliance Report
MDE	Environmental Indicators*
MDE	Solid Waste Management Annual Report
MDE	TMDL Report
MDE	303(d) Impaired Waters List & Report
MDE	Water Quality Management Continuing Planning Process Report*
MDE & DNR	Maryland Water Quality Monitoring Report*
MDE & DNR	State's Water Quality Report (305b Report)*
MDE & DNR	Environmental Partnership Report*
DNR	Coastal Zone Management Program: CZMA §309 Assessment*
DNR	Nonpoint Source Program: Annual Report (§319 Report)*
DNR	Chesapeake Bay National Estuarine Research: Annual Report
DNR & Tributary Teams	On-site Sewage System Task Force Report
DNR & Stream Waders	Maryland Stream Waders Sample Year 2001 Report
MDA	Nutrient Management: Annual Report
Dept. of Planning	Maryland Coastal Bays: Alternative Futures Project
Cooperative Extension	Nutrient Management Annual Report
Inter-agency Nutrient Reduction Oversight Committee	Biennial Report to the Governor and General Assembly
Watershed Resources Advisory Committee	Reducing the Nutrient Impacts from On-site Sewage Disposal Systems
Septic System Advisory Committee	Septic System Advisory Committee, Final Report, 2000
Task Force on Upgrading Sewage Systems	Task Force on Upgrading Sewage Systems: 2002 Report
Maryland Water Monitoring Council	Maryland Water Monitoring Strategy Report
Chesapeake Bay Trust	Chesapeake Bay Trust: Annual Report

**** Reports required by the federal government.***

TOTAL MAXIMUM DAILY LOADS

The CWA requires Maryland to develop Total Daily Maximum Loads (TMDLs) for impaired water bodies. A TMDL is the upper limit of the amount of pollutant allowed in a "water quality-limited segment." Once a TMDL is established, the state must revisit the permits of all the facilities that discharge into the water body, ramping down the amount of waste

allowed each entity. Thus, if a water body can only assimilate 1000 pounds of nitrogen, MDE will have the task of assigning X pounds to point sources and Y pounds to non-point sources. Because MDE has no first-line responsibility for designing nutrient management plan standards, and only gets involved in non-point controls when MDA has failed to assure implementation, MDE will find it very difficult, if not impossible, to carry out these crucial responsibilities.

Like most other states, Maryland was painfully slow in designating waters as impaired and in developing TMDLs. Several environmental groups sued EPA, asking a federal judge to order EPA to take over. Although the judge dismissed the suits, they prompted EPA Region III and MDE to enter into a Memorandum of Understanding (MOU) requiring MDE to establish TMDLs for all impaired water bodies by 2008. The Baltimore Harbor, one of the most impaired water bodies, will take many years to study. For this reason, a TMDL will not be developed for the harbor for many years. A special committee will oversee the TMDL development for the harbor.

Maryland currently has 196 water bodies listed on its impaired water bodies' list, and it has committed to establish 371 TMDLs for these impaired waters. Up to 2002, Maryland has completed 59 TMDLS, and 28 are due by the end of 2003.

MANAGING POINT SOURCE POLLUTION

Under the CWA, a point source is required to have a permit to discharge into a water body. These permits, called National Pollutant Discharge Elimination System (NPDES) permits, are written by MDE. They are issued for publicly-owned treatment works (sewage treatment plants or POTWs), industries, and municipal stormwater discharges.

Some 95-98% of sewage flow that affects the Bay watershed comes from 66 POTWs. Approximately 37 of these plants have biological nutrient removal systems, with ten more having nutrient removal systems constructed. Sixty-five out of 66 have signed biological nutrient removal agreements.

The state has spent approximately $140 million to fund upgrades of POTWs as part of the biological nutrient removal program to upgrade sewage plants. Although a lot of money has been put into building new sewage infrastructure, many plants are aging and are ready for a new round of maintenance and upgrading. The Task Force for Upgrading Sewage Systems has estimated that $4.3 billion is needed throughout the state. In particular, Baltimore City's Patapsco Plant is a critical funding need because it may cost upwards of $700 million to upgrade the plant in accordance with a federal consent decree. Some estimate that upgrading the plant with biological nutrient removal equipment alone will cost $220 million.

Although these needs are daunting and cannot be ignored, MDE's TMDL analyses indicate that Maryland point sources are no longer the primary source of nutrient loading. Maryland's efforts to incorporate biological nutrient removal systems in major wastewater treatment plants has significantly reduced nitrogen and phosphorus loadings from those plants. As long as adequate funding is provided to implement these agreements – admittedly a major

issue in a period of unprecedented budget deficits, point sources will gradually be placed under appropriate controls.

MANAGING NON-POINT SOURCE POLLUTION

Water Quality Improvement Act

As explained above, the General Assembly passed the Water Quality Improvement Act (WQIA) in 1998. The WQIA is designed to address excess nitrogen and phosphorus levels in the Chesapeake Bay by limiting nutrient run-off from agriculture. It specifically focuses on poultry integrators (large chicken producers that provide chicks to growers and process, package, distribute and market chicken), poultry growers, and crop producers.

The Maryland poultry industry, which is primarily concentrated on the Eastern Shore, produces approximately 287 million broilers per year. As a result, approximately 200 tons of poultry litter is generated in Maryland every year. Poultry litter has high phosphorus levels. The WQIA attempted to address this problem by:

- requiring integrators to use phytase in chicken feed instead of phosphorus supplements;
- requiring crop producers to apply nutrients, both chemical fertilizers and manures, according to a nutrient management plan prepared by certified planners;
- requiring poultry growers to dispose of manure in an acceptable manner.

The phytase requirement has been relatively easy to implement in comparison to nutrient management and manure transport. Large poultry integrators, in particular, generally have the resources necessary to change their feed production lines. For this reason, this section will focus on Maryland's nutrient management plans and poultry manure disposal programs.

MDA is the lead agency in implementing these requirements, with responsibilities extending to three crucial functions:

- assisting farmers to prepare NMPs;
- receiving and reviewing the adequacy of the NMPs; and
- inspecting to ensure the NMPs are being implemented.

The WQIA required farmers with agricultural operations grossing $2,500 or more annually or with livestock operations with more than eight animal units to develop NMPs. The WQIA requires that NMPs be updated every three years.

The NMPs must be developed by nutrient management consultants who are certified and licensed by MDA. The plans must include specific information as defined by MDA, including a MDA Reporting Form with operation information, a map or aerial photograph of the farmer's operation, soil and manure test results, and a summary of nutrient recommendations with references to field locations. The Cooperative Extension develops plans for free, as it has done so for more than twelve years. Given the demand and the Extension's limited resources, however, many farmers have had to use private consultants. MDA provides cost sharing assistance for up to 87.5 % of the cost to develop a plan. According to MDA, Extension consultants prepared 74% of the plans submitted thus far.

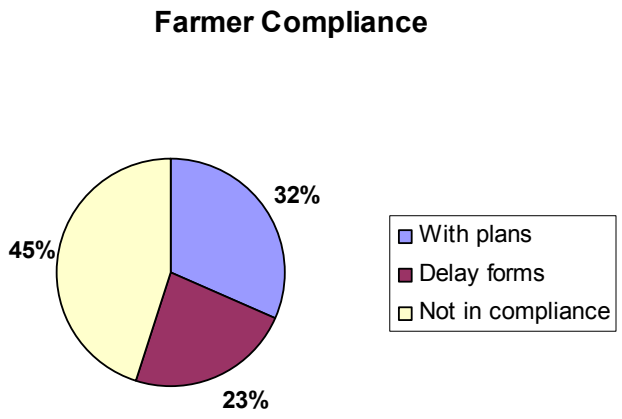
Four years after the Water Quality Improvement Act, approximately 61% of agricultural acreage is not yet covered by a Nutrient Management Plan.

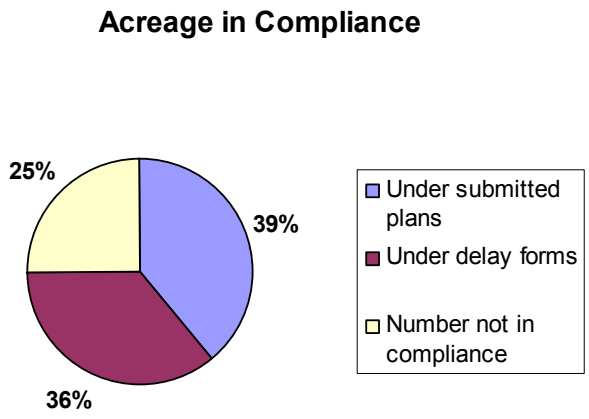
Farmers who fail to develop a plan may be penalized with a warning for a first violation and an administrative penalty not to exceed $250 for subsequent violations. Failure to implement a plan will result in a warning and fines of up to $100 for each occurrence, not to exceed $2,000 per farmer or operator, per plan, per year. The deadline for submitting the plans is December 31, 2002. Farmers who fail to comply with the WQIA following a third citation by MDA will be referred to MDE for further action.

MDA defined farmers in compliance as those who have either submitted a plan or a "justification for delay" form. At the time of the writing of this report, MDA reported the following compliance figures.

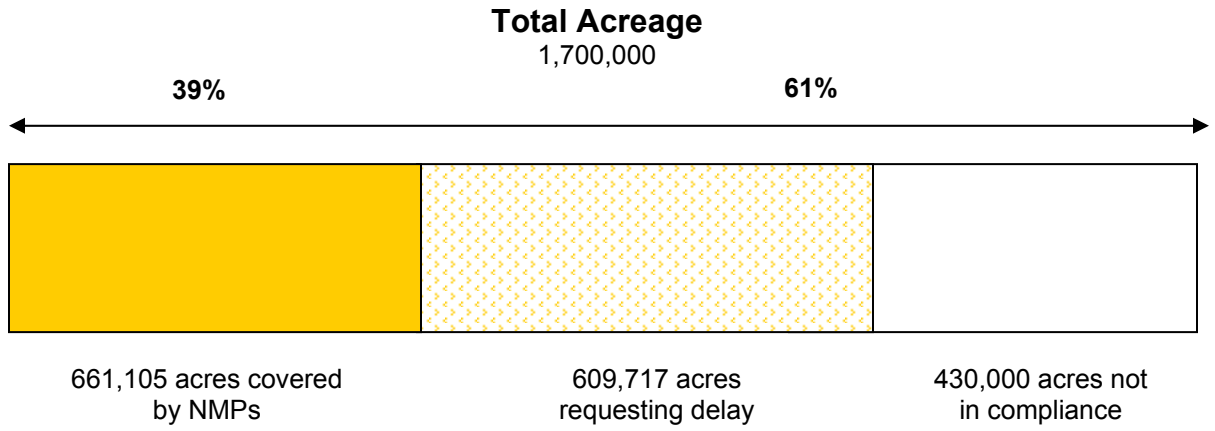
Farmer Plan Submission Rates		Acreage Covered	
Farmers with plans	3,826	Under submitted plans	661,105
Farmers with delay forms	2,825	Under delay forms	609,717
Number not in compliance	5,433	Number not in compliance	430,000
Total number of farms	12, 084	**Total acreage**	1,700,000

A little more than half (55%) of the approximately 12,000 farmers in Maryland falling under the WQIA requirements are in compliance. Because compliance figures include delay forms, however, this means that only 32% of Maryland farmers have submitted an actual plan. Approximately 23% have submitted delay forms.





Of the 1.26 million acres that are owned by farmers who are in compliance, approximately half of those acres are covered by a plan and half are covered by a delay form. In short, four years after the Water Quality Improvement Act, 1.038 million acres or 61% of total acreage, are not yet covered by a plan.



The low rate of completed NMPs may be attributed to several factors. First, farmers think the program is heavy-handed and that they are being unfairly blamed for causing a problem when they were just following government advice. Before the WQIA, farmers had developed plans for better managing nutrients on a voluntary basis for many years. The scientific community during that time did not consider phosphorus to be a problem for the Bay and told farmers to use poultry litter as fertilizer. Unfortunately, the phosphorus from the litter saturated the soil to such an extent that phosphorus began to threaten the Bay watershed. When the WQIA transformed a voluntary program to a mandatory program, and instructed farmers to take action to reduce phosphorus, many farmers felt blind-sided.

Second, MDA and the Cooperative Extension have been over-burdened with farmers needing assistance with developing their plans. Consequently, the development of many plans was delayed. In 2002, the General Assembly increased MDA's funding for the Nutrient Management Program by $1 million in order to help the agency address administrative delays.

Finally, some farmers of small operations still may not realize that the plans apply to their operations. Because the number of acreage not in compliance is diminishing, however, it appears that the MDA and Cooperative Extensions are making slow progress in educating the farm community about the NMP requirement.

40 million chicken carcasses are either buried or incinerated on the Delmarva Peninsula every year.

MDA has six staff members responsible for ensuring that NMPs are implemented. Located in different regions across the state, these staff members will begin their evaluations in 2003. In addition, there are three MDA staff members responsible for ensuring that the plans meet technical standards. Assuming the 3,826 plans submitted thus far meet technical standards, arguably an overly optimistic assumption, even dividing that number between six staff members responsible for monitoring implementation suggests not only the enormity of the task but the virtual certainty that implementation will not be supervised by the government in an effective manner. ***Even at the level of 32% compliance, each staff person will be responsible for ensuring that approximately 637 plans are implemented.***

In addition, it is obvious that evaluating implementation will be difficult. If the evaluation process is simply one that reviews a farmer's paperwork, then it will mean little. MDA has the authority under the WQIA to enter onto farmers lands to take objective measurements -- an authority, it should be noted, that farmers strongly protest. However, MDA lacks the resources to conduct on-site evaluations of more than a handful of regulated farms.

Recognizing that even with adequate resources, reaching the point of punishing farmers who do not comply with these requirements would be very difficult for MDA, MDA regulations assign enforcement responsibility to MDE under a "three-strikes-and-you're-out" scheme. Operators who fail to comply following three MDA citations will be referred to MDE for further enforcement action. Consequently, the state's primary environmental enforcement agency, MDE, is relatively far removed from implementing the program in the field, but in theory will be brought in to punish wrong-doers.

MDE's water quality enforcement program has 44 inspector positions, 33 of which are filled. This staff must inspect some 1200 point source facilities, along with any activities affecting wetlands.

In sum, at this point, it is unclear which state agency will be held ultimately responsible for making sure that non-point source pollution is actually reduced. By placing the nutrient management program under MDA, at least one Administrative Law Judge has found that the General Assembly has sent the message that the primary regulatory agency for non-point source water pollution is MDA. *See In re* Tyson Foods, Inc., Maryland Office of Administrative Hearings, August 23, 2002 (finding that "the Legislature assigned enforcement authority of the WQIA to MDA" and that the "Legislature expressly rejected language in the WQIA which would have given MDE enforcement authority for violations of the Act"). On the other hand, if agricultural run-off is *not* reduced, MDE, the primary agency responsible for overall water quality and the enforcement of TMDLs, will bear the brunt of public reaction.

Instead of developing a unified and focused program, the state has attempted to implement a diffuse, grossly under-funded approach to addressing non-point sources. This diffused approach has led to duplicative programs, decreased efficiency, and reduced accountability. The primary administrative anomaly is that although MDE is the primary agency responsible for maintaining water quality by regulating pollution, MDA is the primary agency responsible for reducing non-point source pollution from agricultural land. Because MDA has historically promoted conservation efforts, particularly soil conservation efforts, within the farm community, and is viewed as a customer service organization, this assignment has caused great tension and frustration, both within the Department and among farmers.

Cost-Share Programs

When it passed the WQIA, the General Assembly included several cost-sharing programs designed to help farmers meet the requirements of the Act. The Maryland Agricultural Water Quality Cost-Share (MACS) Program pays up to 87.5% of the cost to install Best Management Practices (BMPs). Eligible BMPs include animal waste storage facilities, cover crops, grassed water ways, manure transport, stream protection, and nutrient management services.

Eligible Best Management Practices Under MACS		
Animal Waste Management Systems	Field Borders/Windbreaks	Roof Run-off Management
Conservation Cover	Filter Strips	Sediment Basins
Contour Farming/Orchards	Grade Stabilization Structures	Spring Developments
Cover Crops	Grassed Waterways	Stream Crossings
Critical Area Plantings	Lined Waterways/outlets	Stream Fencing
Dead Bird Composting Facilities	Nutrient Management Services	Strip Cropping
Diversions	Riparian Buffers	Terrace Systems

Cover Crops

The Cover Crop program provides Maryland farmers with funds to plant small grain crops such as cereal rye, oats, and winter wheat. The purpose of planting cover crops is to prevent nutrient and sediment run-off.

Cover crops are the most cost-effective way to prevent nutrient and sediment run-off. The program received $2.4 million in 2002. The state pays up to $20 per acre to farmers who plant cover groups. Farmers must meet the requirements of the WQIA to be eligible for funding and must have submitted to MDA a nutrient management plan. A popular program, cover crops are widely accepted by farmers given the right incentives – that is, cost share dollars available to offset out-of-pocket costs related to planting and management.

Cover crops are the most cost-effective way to prevent nutrient run-off.

Manure Matching and Transport Programs

In order to maintain compliance with some of the nutrient management plan requirements, some farmers may find it necessary to transport manure, which is a potentially valuable product as a fertilizer, outside of the Chesapeake Bay watershed. Under the WQIA, MDA supports two programs to assist manure transport.

To help farmers cover transportation, loading and handling costs associated with transporting excess manure, the Program provides cost-share assistance of up to $20 per ton to Maryland producers with high soil phosphorus levels or inadequate land to fully utilize their manure. MDA reports that farmers received $392,000 in grant payments to move more than 20,000 tons of manure from areas with high phosphorus levels. One analysis estimates that approximately 150,000 tons of litter needs to be exported annually to reduce phosphorus levels adequately. The analysis estimates this amount would decrease to approximately 50,000 tons as nutrient management plans are implemented. MDA estimates that the project could support the transport of 60,000 to 70,000 tons annually.

Overall, the program seems to be slowly growing, although the Senate Budget and Taxation Committee and House Committee's Joint Chairmen's Report found that the "program has been extremely underutilized by the parties for which it was created," noting that "[MDA] (as of December 31, 2001) only approved expenditures of $482,000 out of a budget of $1.3 million." In 2001, the Governor's Nutrient Reduction Oversight Committee anticipated that participation would increase as the program matures and is promoted by poultry companies, soil conservation districts, extension agents, and MDA.

To date, farmers who want to transport their poultry litter have not met the demand of those wishing to receive it.

Maryland's Manure Matching Service links farmers with excess manure with farmers who can use the manure as a nutrient source without increasing nutrient loadings to the Bay. In its Annual Report for 2001, MDA reported that "30 matches accounting for 6,700 tons of manure have been successfully completed." The Governor's Nutrient Oversight Committee reports that registered farmers have requested more than 50,000 tons of poultry litter, a demand far in excess of the amount of litter supplied. The report notes that "farmers who want to transport their poultry litter have not met the demand of those wishing to receive it."

The Animal Waste Technology Fund

The Animal Waste Technology Fund was housed in the Department of Business and Economic Development (DBED), and was established as an incentive for individuals, partnerships, and companies to develop alternative uses of animal waste. The Inter-Agency Nutrient Reduction Oversight Commission recommended grant projects for approval. Approximately $3 million has been dispersed over three years. The Fund was repealed in 2000.

Although the final report listed a summary of approved projects, several stakeholders noted that many funds were returned. For example, $500,000 was given to Allen Family Foods

to assist in the construction of a co-generation facility that uses poultry litter to generate electricity. The facility was discontinued, however, because the company determined that it was not economically viable. Allen Family Foods returned the funds to the state. Likewise, $500,000 was granted to Perdue-AgriRecycle to assist with the construction and operation of a poultry manure processing plant to convert raw poultry litter into a processed organic fertilizer. After project managers had difficulties with state officials, the $500,000 was returned to the state and the project was ultimately located in Sussex County, Delaware.

While Perdue-AgriRecycle's plant is now operating successfully, the fact that Perdue and Allen Family Foods returned their grant funds strongly suggests that the Animal Waste Technology Fund was not implemented effectively. Other smaller and less sophisticated projects also were not successful.

These failed projects represent more than one-third of the total amount disbursed from the Animal Waste Technology Fund. It is difficult to determine why the program was ineffective from the final report.

Poultry Litter Pelletization

While the Animal Waste Technology Fund was less than successful in funding pelletization projects, turning poultry litter into fertilizer pellets is nevertheless an increasingly viable alternative. For example, Perdue AgriRecycle opened its new pelletizing plant in Sussex County, Delaware, last year. Perdue developed its $12 million manure processing plant to convert raw poultry litter into a processed organic fertilizer. The plant is able to process 80,000 tons of poultry litter per year. According to the Governor's Nutrient Reduction Oversight Committee, the company suggested in 2001 that it may consider opening another plant in Maryland.

Perdue chose Sussex County because it has the highest concentration of broiler chickens in the country and thus the highest concentration of chicken manure. The litter processed at the plant is removed from poultry houses within a 30-mile radius of Sussex County. Because Delaware is a large contributor of nutrient pollution to the Bay, Maryland benefits from the project even though the litter removed is primarily from Delaware.

CREP

Maryland's Conservation Reserve Enhancement Program (CREP) is a $200 million federal-state initiative that pays farmers and landowners a sign-up bonus and rental rates to remove environmentally sensitive cropland from production and plant streamside buffers or create wetlands. Marginal pastureland suitable for use as a riparian forest buffer is also eligible for CREP enrollment. Forest buffers can remove up to 90% of the nutrients before they reach waterways. Farmers are eligible for up to 100% of the cost to install best management practices on CREP land by combining cost-share funding sources.

Alternatively, landowners have the option of selling a permanent easement to the state, either directly or through the Rural Legacy Program. The fair market value of foregone

development and agricultural productivity determines the amount of payment for the easement. Easements may be administered by the local soil conservation district, DNR, or local land trusts.

As part of the Chesapeake Bay cleanup effort, Maryland has developed a Riparian Forest Buffer Initiative called Stream ReLeaf. The state has pledged to reforest 600 miles of streams and rivers by 2010 as part of the initiative. CREP incentives helped almost double the rate of forest buffer planting in the last year.

DNR estimates that CREP is large enough to restore up to 100,000 acres of environmentally-sensitive cropland and streamside properties. Maryland's acreage enrollment targets include:

- 70,000 acres of riparian forest or vegetative buffers;
- 20,000 acres of highly erodible land; and
- 10,000 acres of wetlands

After five years of the program, more than 30,000 acres have been enrolled. The state has almost met one-third of its goal of 100,000 acres well in advance of the 2010 deadline.

Overall, the CREP programs are popular with farmers. Tenant farmers, however, sometimes cannot compete with the government's rental rates. Consequently, tenant farmers lose some of the land they would otherwise be farming because landowners enroll in the CREP program instead of renting land to them. For this reason, some farmers have recently become concerned about the rate of land being taken out of agricultural production, although it appears that sprawl contributes far more significantly to this problem than the CREP programs do. On the other hand, Lorrie Lynch, an economist at the University of Maryland, has said that her research on CREP indicates that rental rates have not risen because of the program and that the payments may help some farmers enrolled in the program continue to produce.

STAKEHOLDER VIEWS

RESPONSIBILITY AND ACCOUNTABILITY

Stakeholders representing government, the agricultural community, and the environmental community agree that protecting the Chesapeake Bay should be one of Maryland's top priorities. Stakeholders from all sides generally agree that non-point source pollution is a major source of the Bay's nutrient loading problems, although some stakeholders from the agricultural community disagree.

With respect to non-point source pollution, although a lot of progress has been made, a cross-section of stakeholders agrees that more work needs to be done. As one government stakeholder puts it, Maryland has done a good job of simply holding even in the face of development and growth. Progress may be slow, but, given the challenges, the result could have been significantly worse.

Where stakeholders differ on non-point source pollution is the issue of responsibility and accountability. Both governmental and non-governmental representatives from the agricultural community emphasize that responsibility for cleaning up the Bay must be shared among all Marylanders. Several stakeholders note that people representing point and non-point sources have blamed each other for years for nutrient loadings. The problem, one agricultural stakeholder explains, is that farmers feel unfairly charged with polluting the Bay when other sources such as public treatment works and sediment loadings from developers also contribute to nutrient loadings. Agricultural stakeholders in particular believe that municipalities are not held to the same standards as farmers and the poultry industry. "We all have a stake," one government stakeholder notes, "it's time for farmers, developers, and whatever to do what we need to do, but responsibility needs to be distributed fairly across all levels."

Several stakeholders from government and the agricultural community also note the effect that sprawl has on water quality. Farmers, in particular, feel they are under a lot of pressure to sell their land. As one agricultural stakeholder put it, "it's cheaper to grow lots than it is to grow the commodity." Government stakeholders estimate that 6% of nutrient loadings in the Bay are caused by septic systems. As sprawl grows in more rural areas, the number of septic tanks is projected to increase. One agricultural stakeholder only half-jokingly suggests that one solution is for the Maryland Department of Transportation to "stop building more roads" to and on the Eastern Shore. Several stakeholders agree that the tax dollars it takes to provide new services exceeds the economic gains of new development. According to one agricultural stakeholder, "farmland conversion costs the taxpayers money."

Even though sediments, sprawl, and POTWs were cited as major problems for the Bay, the majority of stakeholders we interviewed agree that nutrient loadings from agricultural run-off was the Bay's most pressing problem. Stakeholders from the farm community and some government stakeholders maintain that, because farmers will have to do the heavy lifting of nutrient management, the state should support their efforts with incentives instead of mandatory programs. Otherwise, agricultural businesses, which already feel threatened by sprawl, rising population numbers, and labor constraints, will move elsewhere. "Somehow," one government

stakeholder explains, "we have to find a way for the two e's to coexist – the environment and the economy. It's about balance."

Farmers keenly feel that they are saddled with the lion's share of the responsibility and blame for nutrient loadings, and they resent what they believe is an inequitable burden. In fact, although farmers generally support programs such as the Rural Legacy Program, they note that many Marylanders seem almost hypocritical in their support of the rural landscape and culture. On the one hand, farms are supposed to be preserved. On the other hand, some farmers believe their economic success is threatened by nutrient management regulations. If you want to preserve the farm, one stakeholder observes, you have to preserve the business.

EFFECTIVENESS OF THE WQIA

Almost all of the stakeholders – from environmentalists to farmers -- agree that the Water Quality Improvement Act of 1998 has bred considerable ill will in the farming community. In particular, farmers believe that they were unfairly blamed for the pfiesteria scare in 1997. Many farmers feel "a loss of respect." They also resent what they perceive as "scare tactics" and "knee-jerk" responses to problems that have been building because of population growth and industrialization for more than 50 years. One government official explains that making nutrient management planning mandatory made farmers feel that they hadn't gotten respect for what they had accomplished under voluntary programs. On the other hand, another government stakeholder observes that Maryland "would be hard pressed to show what we've really done on the agricultural side after 15 years" about non-point source pollution.

Stakeholders from the agricultural community often cite Delaware's voluntary nutrient management programs as a better approach. Although several of these stakeholders agree that some farmers may have over-reacted to the WQIA's requirements, they nevertheless maintain that the ill will could affect the overall success of these programs. Several stakeholders from the agricultural community also believe that they were promised more assistance when the WQIA was passed than has been delivered. "There would be no problem with farmers complying with the law," one stakeholder observes, "if they had the resources to do so."

Most stakeholders question whether the current nutrient management plan program will result in significant gains for the Bay. One environmental stakeholder estimates that only half of the nutrient management plans will ever be implemented. An agricultural stakeholder notes that neither the program nor the WQIA itself contains any goals for nutrient reduction. A government stakeholder believes that farmers are unlikely to implement their plans in a way that results in nutrient reduction.

A stakeholder from the farming community also expresses concern about the lack of transparency in the regulatory process, noting that "if there's a disconnect between what people see" and what's reported, then farmers won't buy into a regulatory approach. For example, if a farmer reads about overflows from sewage treatment plants, he is likely to perceive that a major contributor to nutrient loadings is not being held accountable, even if that plant is later fined. Meanwhile, the farmer is blamed for nutrient loadings.

One government stakeholder notes that the compliance rates thus far in the nutrient management programs are roughly similar to the rates under the voluntary programs prior to the WQIA. As one agricultural stakeholder puts it, "even if you repealed the law, you'd get the same result."

According to stakeholders from the farm community, the nutrient management planning process could be more flexible. Farmers would prefer a simpler process for obtaining and writing nutrient management plans and often cite the current Pesticide Certification Program as an example. Some examples of current complications include the fact that only certified planners have had access to the NuMan computer program developed by MDA and the Extension, that plan submission dates do not coincide with spring planting schedules, and that farmers have to generate a new plan mid-cycle if alterations to the plan occur. One stakeholder observes that focusing regulations on animal manure instead of all farmers might be more effective.

Reducing crop yields or yield-reserve requirements are an area of contention between the farming and environmental communities. (Promulgated under Agricultural Article §§8-801-806, COMAR 15.20.06 lists nutrient and commercial fertilizer application requirements for agricultural land.) The way the regulations are structured now, farmers believe too much yield-capping is occurring as part of the nutrient management plans. Farmers dislike being told what amounts of fertilizer to apply to their crops, and are particularly resistant to any program which may require them to reduce their crop yields. As one stakeholder put it, even when the government provides subsidies for such programs, "we don't like to get paid for growing bad crops."

On the other side, environmental stakeholders note that adding more fertilizer doesn't necessarily add to yield. One government stakeholder says that many farmers exceed what their nutrient management plans require because they simply do not want to take the risk of reducing their yields. A possible solution to this problem, the stakeholder notes, may arrive as part of the $20 million that Bay states are seeking as part of the Federal Farm Bill. The programs would include paying farmers to apply fewer nutrients and to plant cover crops. The stakeholder recognizes that farmers did not like being paid to apply fewer nutrients to crops. Several stakeholders suggest that one way to address farmers' concerns would be to develop an insurance program that would pay farmers for any actual reductions in yields due to do nutrient reductions. Because farmers are taking the risk of reducing their yields by reducing the amounts of nutrients and fertilizer they apply to their crops, such an insurance program would provide farmers with a layer of security if they turn out to be correct about the amount of fertilizer required to reach their target yields.

After noting that Maryland has committed approximately $30 million to nutrient management over the past four years, one government stakeholder expresses the concern that the current budget situation may hamper more proactive programs designed to assist farmers implement their nutrient management plans. MDA in particular may have to choose between regulating nutrient management plans and more popular, cost-share programs.

COST-SHARE PROGRAMS

According to one stakeholder, farmers are willing to plant cover crops if there are cost share dollars available to offset out-of-pocket costs related to planting and management. According to both environmentalists and government stakeholders, cover crops are considered to be the most effective and efficient means of nutrient management. They also have the advantage of controlling sediment run-off as well. One agricultural stakeholder notes, however, that cover crops do not work in all cases, particularly in times of drought.

Stakeholders across the board generally support conservation programs such as CREP that pay farmers to develop buffer zones and conservation easements, although recently some farmers have raised concerns about the programs. Because much of CREP consists of federal dollars, many stakeholders pointed to the program as being a good opportunity for Maryland to reduce nutrient loadings without large costs to the state of Maryland.

Stakeholders from agriculture and government say that manure transport programs have the potential to reduce the amount of poultry litter on the Eastern Shore. Stakeholders from the agricultural community say the programs need to be more workable because they have been a "paperwork nightmare." The billing process, in particular, is cited as lacking transparency. Poultry integrators fund part of the program, and they are billed by the state. The integrators dislike having no idea how much they will be billed or where the amount comes from under the state's current billing process. The integrators also feel as if they have "no say" in where the litter is transported, especially because they believe they have a better understanding of who wants the litter and where it should go. In short, the manure transport program is too complex and does not treat the poultry industry as problem-solving partners.

Stakeholders from the agricultural community and government note that innovative solutions such as pelletizing poultry manure were "mushrooming" across the country, and that the state should promote such programs as they provide alternative uses for poultry manure without regulation. Other solutions noted include methane burners using cow manure and generating plants using poultry litter. Stakeholders from the agricultural community emphasize, however, that co-generation and pelletization plants are expensive investments that are difficult to justify in an economic slowdown. Stakeholders from the agricultural community also differ as to whether co-generation facilities that use poultry litter to produce electricity actually produce reductions because some of the nitrogen is released into the air.

TRANSBOUNDARY POLLUTION AND THE CHESAPEAKE BAY PROGRAM

Several stakeholders note that transboundary pollution is a big problem for the Bay. Stakeholders pointed to the Susquehanna River, in particular, as a primary source of nutrient loadings, noting that the river drains some of the most productive agricultural land in the United States and provides approximately 50% of the bay's fresh water. Out of all of the states within the Chesapeake Bay watersheds, Maryland has made the greatest progress in reducing nutrient loadings. Several stakeholders felt this outcome was appropriate, however, because Maryland is the primary beneficiary of the Bay as an economic and natural resource.

Many stakeholders agree that partnerships are the key to improving the Bay, especially in a time of limited resources. However, stakeholders from all sides also note that we need to eliminate duplication of effort and "make sure that our focus is on the most important problems." Most government and environmental stakeholders agree that a lack of focus has plagued programs to clean up the Bay.

The Chesapeake Bay Commission, a tri-state advisory commission consisting of Maryland, Virginia, and Pennsylvania, was described by one government stakeholder as "an embarrassment" because the Commission is so ineffective. The Chesapeake Bay Program, a federal agency under EPA not to be confused with the non-profit Chesapeake Bay Foundation, received more favorable reviews. Its strength, several stakeholders explained, was its "good science" and data-gathering capabilities, although some stakeholders from the agricultural community disagree with this assessment. It also does a good job of setting quantifiable goals, according to most stakeholders. Unfortunately, most stakeholders believe that the Chesapeake Bay Program has had less success implementing programs to achieve the goals they establish.

Across the board, no matter what program was discussed, stakeholders from all sides generally agree that there seems to be little programmatic accountability. Programs are created, but there are no criteria to evaluate whether the programs are working, they say. For example, one stakeholder notes that "listing the number of acres covered by nutrient management plans is not enough because it doesn't tell us anything about whether the plans are being implemented." Likewise, programs seem to be created without regard to other programs already in existence. Several stakeholders believe duplication of effort is a problem. Duplicative programs also make it difficult for the farming community to keep track of the programs. Many attribute the problem to a lack of vision and focus from state leadership.

NUTRIENT TRADING

Trading of nutrient credits was also raised as a possible solution, although most of the stakeholders note that it was on the radar and not much more. Even so, many stakeholders seem to think trading is inevitable. Several stakeholders wonder, however, whether the incentives exist in Maryland for trading to be successful. In particular, as POTWs are upgraded with biological nutrient removal technologies, the need for trading to deal with excess nutrients decreases as overall nutrient levels decrease. Some of themes stakeholders raised about trading include:

- Trading, if it is implemented, should occur on a watershed by watershed basis. Another approach might be to create regional districts for POTWs.

- A trading program must be sensitive to issues of equity. Farmers are not interested in a program that might seem to be more advantageous to POTWs. Environmentalists are not interested in programs that result in hot spots, which are areas where the amount of pollutants exceed water quality standards. Counties are not interested in programs that result in neighboring counties being able to lower standards and thus compete against them for development.

- Trading should occur between the same sources. Point sources should trade with other point sources. Non-point sources should trade with other non-point sources.

- Trading programs should be developed in watersheds that have completed their TMDLs. TMDLs should be the "baseline" on which trading programs are developed. In other words, trades should be conducted to meet TMDLs.

- Trading represents an opportunity to use economic incentives to reduce nutrient loadings. Such incentives are preferable to command and control regulation.

TOTAL MAXIMUM DAILY LOADS

Several stakeholders emphasize that developing TMDLs is a costly and time-consuming process. Because TMDLs are based on federal requirements and are in response to federal mandates, several government stakeholders believe that federal dollars should be available. One stakeholder explains that, because TMDL development is done at the expense of other programs, which may have a more direct effect on water quality.

In addition, because TMDLs are difficult and time-consuming to develop, MDE has tackled the easier TMDLs first. This leaves more severely impaired water bodies such as the Baltimore Harbor unaddressed for many years because the studies required for TMDL development are so complicated. Once TMDLs are developed, some environmental and government stakeholders are concerned about how the TMDLs will be implemented. Given the large amounts of money and time it takes to develop a TMDL, the stakeholders say it would be unfortunate if the information gathered wasn't utilized. Finally, one stakeholder estimates that 40% of the TMDL staff positions at MDE are vacant because such staff involved in such skilled work are "snapped up by consultants in a heartbeat."

Although concerned about the drain TMDL development places on the agency, government stakeholders think TMDLs are important because they are based on sound science. TMDLs are also necessary to develop trading programs, as they provide a good baseline for establishing trading caps. When asked what kinds of things are being learned from the TMDL development process, government stakeholders say that they have recognized that there are deficiencies in the resources available to the state to gather data.

Finally, several stakeholders agree that TMDLs need to be linked to efforts to improve water quality, especially with respect to non-point source pollution. As things stand now, however, federal money (§319) goes to DNR for non-point source programs, but MDE is actually the agency documenting non-point source problems under the TMDL process. As one government stakeholder explained, this has resulted in a situation where it is unclear which agency, in the end, is ultimately responsible for reducing non-point source pollution. It has also resulted in a situation where the data gathered in the TMDL process may not be driving the programs designed to address the problems. To effectively utilize our resources, the government stakeholder says that a stronger link should be made between the two efforts.

MONITORING

Several stakeholders note that water monitoring seemed to constitute the greatest area for increased coordination. Several agencies conduct water monitoring, most particularly MDE and DNR. As one government stakeholder notes, "this isn't the best way." In a time of reduced resources, stakeholders agree that water monitoring activities could be consolidated.

PERMITTING AND ENFORCEMENT

One of the biggest issues for government stakeholders in this area is the lack of staff available to conduct permitting and enforcement. For approximately 1200 entities (ranging from wetlands to sediment control to POTWs), MDE has 14 permit writers and 44 inspectors, but only 33 of the inspector positions are filled.

RECOMMENDATIONS

Maryland should increase current cover crop funding as it is the most cost-effective way to reduce nutrient loadings from agricultural run-off.

Best-management practices such as cover-crop planting are the most cost-effective way to reduce nutrient loadings. Cover-crop funding should not be decreased in the upcoming round of inevitable budget cuts.

The state should consider designating MDE as the lead agency responsible for controlling non-point source pollution in Maryland and expand the enforcement resources MDE has available to ensure that farmers not only prepare adequate nutrient management plans, but implement them effectively.

If initial implementation of the nutrient management plan program remains with MDA, it should consider ways to streamline and simplify the submission process. Some proposals by the farming community – such as coordinating the plan submission dates with farming schedules – are obvious ways to improve the program's effectiveness.

Maryland has adopted a diffused approach to addressing non-point source pollution. This diffused approach has led to duplicative programs, decreased efficiency, and reduced accountability. In addition, unless Maryland develops a focused approach to non-point source pollution, innovative options such as water trading are not feasible.

Right now, MDE is responsible for regulating point sources. It also regulates some non-point sources when it approves sediment and erosion plans. In spite of MDE's regulatory responsibilities regarding water quality, however, MDA is primarily responsible for regulating non-point source nutrient run-off, a primarily cause of impaired water quality. This split in authority has led to a situation where it is unclear which agency is ultimately responsible for Maryland's water quality. A dispersed focus and reduced accountability are the result.

Our interviews with government officials reveal that MDA lacks the resources to implement the Water Quality Improvement Act adequately, with only six people to review plans submitted by thousands of framers. It is unrealistic to expect continued implementation of this program as now constituted to make any significant progress in reducing nutrient loading in the Chesapeake Bay.

Maryland should establish concrete nutrient reduction goals within the more general 40% reduction goal established by the Chesapeake Bay Agreement, scale back the scope of farms covered by nutrient management plan requirements; establish significant penalties for failure to implement such plans; and gear up to enforce those requirements.

Maryland should phase in its regulatory efforts by focusing first on the largest farming operations, which – not incidentally – have the resources not only to write a plan but to implement it on the ground. The statute should be amended to extend the deadline for mid-sized farms, and exempt smaller farming operations.

Maryland's WQIA ambitiously requires all agricultural operations with more than $2,500 in gross income or with more than eight animal units to submit a Nutrient Management Plan. Further, this level of penalties applies regardless of the size of the operation.

Maryland should consolidate water monitoring activities within one agency and refrain from creating councils, commissions, or task forces unless they include a commitment of additional funds.

DNR and MDE conduct duplicative water monitoring activities. Such duplication of effort wastes time and resources. Likewise, multiple commissions and task forces strain agency resources because they require staff to support and organize the groups, develop reports, and attend meetings.

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SECTION FIVE: WATER RESOURCES

SCOPE OF THE PROBLEM

Maryland's potable water is supplied by reservoirs, rivers, streams, and groundwater aquifers. These sources, scattered throughout the state's 9,774 square mile area, meet the needs of approximately 5.2 million inhabitants, 127,431 non-farm entities, and 12,400 farms.

Maryland has abundant surface water and groundwater resources, although a significant portion of this supply is not potable for natural and man-made reasons. The geology of the Central and Western regions of the state supports the withdrawal of large amounts of surface water. The geology of the Eastern Shore and Southern Maryland provides high groundwater yields. Two-thirds of Maryland's population relies on surface water, while one-third relies on groundwater.

In 1999 and again in 2002, severe drought conditions strained Maryland's fresh water supplies. Although Maryland's present situation is attributable in large measure to those conditions, anxiety provoked by the drought has led some stakeholders to question whether the state has sufficient water resources to meet current and future needs of its inhabitants, businesses, farms, and aquatic ecosystems. Senator Frosh therefore asked us to try and address whether Maryland was running out of fresh water supplies, or could run out in the foreseeable future.

Determining the short- and long-term status of the state's water resources depends on a highly technical and complex risk analysis. Once that risk assessment is completed, responsible authorities must make a policy judgment concerning how much risk is acceptable. For example, technical experts might tell us we will run out of water at a certain time if we plan to avoid the risks of a 200-year drought. Whether to be that cautious is a policy judgment. We are not qualified to make either determination. Indeed, given the level of uncertainty in the science and the state of information about water supplies, population growth, climate change, and other relevant factors, it is possible that no one could make these determinations until more work is done.

Consequently, what follows is our best effort to summarize available information and stakeholder views, without drawing definitive conclusions or making recommendations, except to say that coordinated, multi-state, watershed-based planning must occur to keep pace with development and cope with long-term climate changes.

STATE OF THE ENVIRONMENT

Fresh water uses include domestic consumption, energy production, irrigation, industrial processes, commercial operations, and meeting livestock consumption needs. A 1995 U.S. Geological Survey (USGS) study indicates that public water supply and thermo-electric power production are the two highest surface water consumptive activities in Maryland, while private and public domestic usage and irrigation are the highest groundwater consumptive activities.

Population growth is the primary factor placing pressure on water supplies. The 2000 Census indicates that Maryland's population increased 10.8% from 1990 to 2000 and is estimated to have increased about 1.5% from 2000 to 2001, a growth of approximately 1% each year. Other factors include industrial development, particularly in the electric power generating sector.

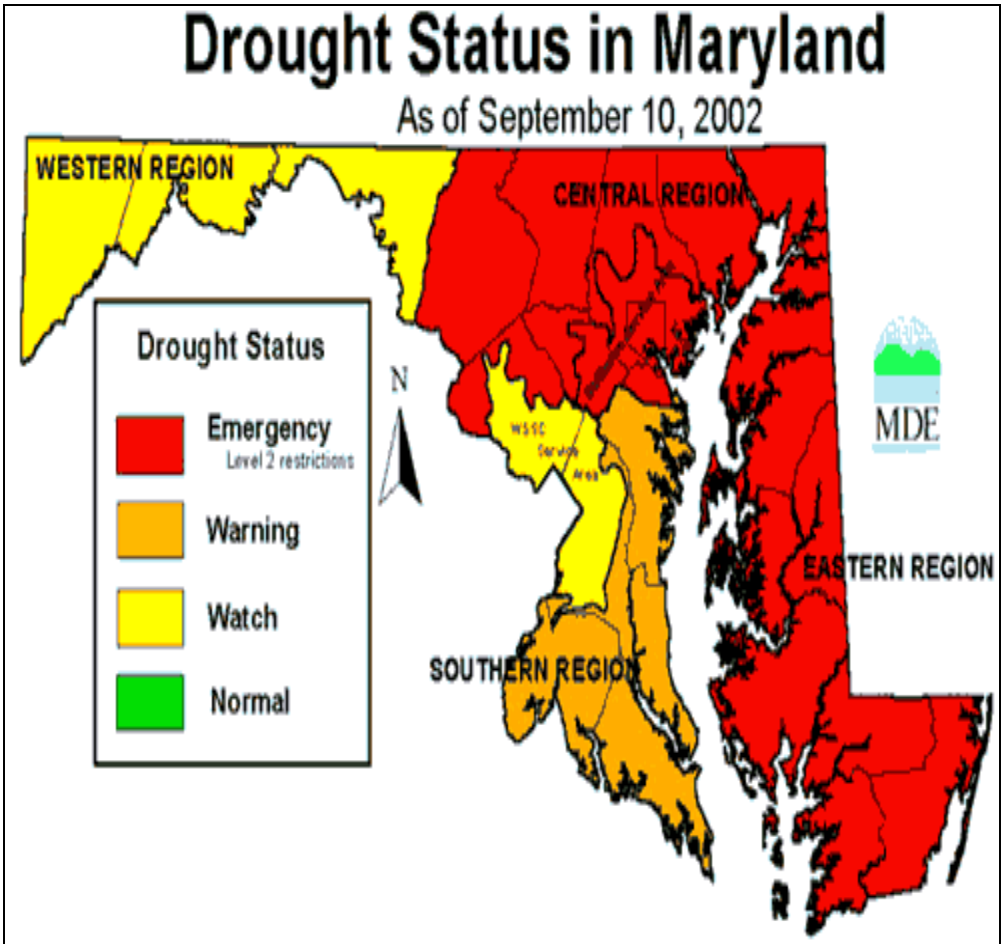
Climate change may also affect the availability of water resources. In 1996, the Intergovernmental Panel on Climate Change released a report finding that greenhouse warming will change the timing and regional patterns of precipitation, will increase temperatures, and will raise levels of evaporation of water supplies. These changes could also affect fresh water resources' by increasing consumption. However, there is no technically reliable and precise estimate of how much these factors will affect water resources in Maryland over the long-term.

The severe droughts in 1999 and 2002 triggered state and local government controls on water consumption by residences and business. In 2002, Maryland's Central and Eastern Regions, along with Baltimore City, were placed on emergency status, requiring the adoption of restrictions designed to limit water consumption by 10%.

The Western Region and the Washington suburbs also went on a drought watch throughout the summer of 2002. Although the Potomac Basin precipitation was above normal for most of the summer, the amount received from September 2001 to February 2002 was below normal, and groundwater levels have remained low. In September 2002, the City of Frederick declared that it would run out of water within a month and applied for a special permit to extract water from a recently drilled well.

Beyond inconvenience to domestic users and heightened public anxiety, the 1999 and 2002 droughts had the most negative effect on agriculture. Financial losses for Maryland farmers as a result of drought conditions are estimated to be in range of 50 to 75% of normal annual income, and 21 of Maryland's 24 counties were declared farm disaster areas.

Reductions in fresh water resources also harm the state's ecosystems. For example, the levels of salinity in the Chesapeake Bay have increased as a result of drought conditions and consequent reductions in freshwater in-flow. High salinities in the Chesapeake Bay favor the oyster diseases MSX and Dermo and result in higher oyster mortalities that in normal years. Increased water extraction can also lower stream flow, with adverse impacts on aquatic ecosystems, such as wetlands.



Source: http://www.mde.state.md.us/drought/default.asp

MARYLAND'S RESPONSE

REASONABLE USE DOCTRINE

The state has adopted by statute and regulation the "reasonable use doctrine" – a standard that is permissive of water use in comparison to other approaches throughout the nation, such as in many of the Western states, where water resources are far more limited. Although the legal definition of the doctrine is somewhat circular, it basically says that a person (or other entity) has the right to appropriate or use surface or ground water without (1) unreasonable interference from others; (2) unreasonably interfering with others; or (3) unreasonably affecting water resources. Water permits are generally issued unless there is evidence that other uses would be adversely affected and, if necessary, appropriate restrictions (e.g., reduced withdrawal) are imposed. If the state were to convert to a more restrictive doctrine for water usage, the change would cause great consternation among all sectors of the economy, especially agriculture.

THE PLAYERS

MDE's Role

MDE is responsible for the state's water resources programs. Its duties include long-term planning and issuing permits for water "appropriations" (also known as withdrawals in the case of surface water and extractions in the case of groundwater). Any person or entity wishing to withdraw water from surface or groundwater sources must apply for an "appropriation and use" permit from MDE. Permits are effective for 12 years, but are subject to revision at any time, as deemed necessary by MDE. Individual domestic use, agricultural use of less than 10,000 gallons/day, and residential subdivisions of less than ten units are exempt from the permit requirement. Domestic and municipal uses for sanitation, drinking water, and public health and safety are priorities over agricultural uses if MDE determines that a water supply emergency exists.

Applications for water use permits must include a map of the area, an explanation of the use of the water, a plan of the facility proposed, average daily use, and the maximum daily withdrawal. Violations of a water use permit are considered a misdemeanor with a maximum penalty of $500 per day of violation, and these penalties are imposed by MDE. During a drought emergency, when water use restrictions are imposed by the governor, the state and local police enforce those requirements.

The permitting law also authorizes MDE to undertake surveys, mapping, investigations, and other studies of water resources. In addition, the Potomac River Basin Protection Act requires an assessment of the capacity of the river's watershed to provide water for the metropolitan area in the next 30 years. MDE hired the Interstate Commission on the Potomac River Basin to conduct this assessment. The Commission issued a controversial study in 2000 concluding that, although the resources in the basin are sufficient to support projected population growth for the next 30 years, under a repeat of the historical drought of record, water resources would be seriously depleted.

Due to concerns raised about the adequacy of the existing limit on how much water could be withdrawn from the lower Potomac without unacceptably lowering its flow to the point where aquatic ecosystems would be threatened, the Maryland Department of Natural Resources is conducting a study of the impacts of low flows on the aquatic life of the river. This study is not yet complete.

MDE is also mandated to engage in long-term planning for the use of water resources, although only one full-time employee is committed to that task. MDE's Water Supply Program oversees the water quality of public supplies and individual wells and its Water Conservation Program works with state facilities to help them meet the state's water conservation goals for such facilities. The program encourages water utilities to take steps to reduce water consumption, and develops and implements an outreach campaign to educate Maryland citizens about the importance of water conservation.

In addition, two MDE water quality programs contribute to water resources analysis. The Source Water Assessment Plan is a program developed to assess the safety of all public drinking water sources in Maryland. Although the program does not address distribution or storage aspects of the water systems and does not cover individual domestic wells, it does provide an opportunity to identify and delineate these public potable water sources. The Wellhead Protection program is designed to protect public drinking water supplies by managing the land surface around a well where activities might affect the quality of water. It provides local governments with technical assistance, information, and advice.

Special State Commissions

The 1999 and 2002 droughts motivated Governor Glendening to appoint various special commissions to investigate water resource issues, generally without any funding to support their deliberations. These groups issued various advisories about rationing water use during times of drought. These commissions are controversial from the perspective of some government stakeholders because they operate in a political as well as a technical mode and compel MDE and other experts to participate in their proceedings, as opposed to carrying out their official duties.

The Statewide Water Conservation Advisory Committee was assigned to study the 1998-99 drought and recommend short and long-term solutions to the problem. In November 2000, the Committee submitted a report suggesting a monitoring and response plan for future drought crises. It also suggested that the state undertake a study on the effects of climate change on water resources and a more aggressive campaign on water conservation.

The Committee's monitoring plan divided the state into six different regions: Western, Central, Southern, and Eastern Regions, and the Baltimore Service Area and the Washington Suburban Sanitary Commission (WSSC). The latter two were designated as separate areas because they contained independent reservoir storage systems and had authority to determine their own water supply availability and needs.

The monitoring plan required the observance of four indicators:

- precipitation;
- stream flow;
- ground water levels; and
- reservoir storage.

The system monitors a selected group of streams, representative groundwater wells for each region, and ten reservoirs. It then compares the data obtained with historical records to determine the susceptibility of a drought and level of response that should be required. Issuance of water use restrictions is based on the status of each indicator. If an area reaches stage four (emergency status), then the governor will be in a position to adopt "level two restrictions," which require a mandatory reduction of water usage by 10%. The program is coordinated by MDE.

This emergency response plan was implemented during the 2001-02 drought. However, the drought conditions and losses prompted Governor Glendening to establish another commission: the Water Resource Management Advisory Committee. This body was asked to review and assess:

- the latest information from state, local, and federal agencies concerning assessments of the quality and quantity management and protection of the State's ground and surface water resources;
- the results of ongoing scientific research regarding climate change and its regional impacts on aquifer depletion and recharging models;
- local, state and federal laws and regulations and policies related to the management, development, conservation and protection of ground and surface water resources; and
- the adequacy of existing governmental resources, regulatory enforcement and monitoring programs that are available for the management, development, conservation and protection of the State's ground and surface water resources.

The Governor has not yet appointed members of the Committee, and that task may be left to his successor, Governor-elect Robert Ehrlich.

Interstate Commissions

Out-of-state actors also influence Maryland's decisions on how to manage its water resources. Interstate programs coordinate the conservation of water resources, especially during droughts. For example, the Susquehanna River Basin Commission coordinates the water

resources interests of Maryland, New York, Pennsylvania, and the federal government in the Susquehanna River Basin. The Metropolitan Washington Council of Governments includes representatives from 17 Washington area local governments, as well as members of the federal, Maryland, and Virginia legislatures. This organization develops and implements a year-round communications program that focuses on water conservation. It also coordinates drought awareness and response for public utilities in the Washington area. The Interstate Commission on the Potomac River Basin coordinates water supply operations during times of drought to ensure that the minimum environmental requirements for consistent flow of water are met.

Local Governments

Maryland law requires counties to have a ten-year plan providing for the orderly expansion and extension of community water supply systems and multi-use water supply systems. Such plans must describe the areas that must be served; indicate the sources of the required water supply; and estimate the approximate amount of water that will be withdrawn and discharged. The creators of the plan must take into account population growth, engineering, planning, and social factors, and update the plan every three years. Counties may not approve building permits unless the plan indicates that the water supply system is adequate to serve the needs created by new construction. However, the law does not require counties to plan for the supply of potable water in emergency situations, including droughts.

Neglect of the planning process, and the omission of a requirement for emergency planning, can result in crises when drought conditions occur. For example, the City of Frederick has experienced significant population growth, exerting unusual pressure on its potable water resources. The two recent droughts exacerbated these problems, and its main reservoir, at Lake Linganore, was running out of water. The City ended up imposing a moratorium on the construction of new homes in March 2002. City officials have indicated that when this moratorium is lifted, the City will assess a $5,100 impact fee for each single-family house, along with a demonstration of adequate water infrastructure. Over the long-term, Frederick may apply to withdraw water from the Potomac River.

Municipally-owned water supply utilities, such as the Washington Suburban Sanitary Commission (WSSC) and the Baltimore City Department of Public Works, are also responsible for monitoring potable water supplies and imposing water use restrictions on their customers based on their individual conditions.

Federal Government

Lastly, the federal government, acting through the U.S. Geological Survey, the Army Corps of Engineers, and the National Weather Service, provides additional data to area water utilities and other government authorities.

STAKEHOLDER VIEWS

AREAS OF AGREEMENT

With one notable exception, explained further below, most stakeholders agree that Maryland has abundant fresh water resources. Stakeholders further agree that population growth and suburban sprawl are increasing the pressure on Maryland's fresh water resources, and stated that state and local governments must continue to engage in monitoring and planning to avoid incidents like the Frederick water supply crisis. One government official noted that the state should place more emphasis on water conservation education. This education should not only explain how to conserve water but also how to build an effective infrastructure.

Another common concern among the stakeholders is the lack of resources for long-term planning at the state level. The water appropriation program came to MDE from DNR with a significant shortage of staff, and this shortage has worsened over the years. MDE has only one planner for the entire, statewide program. Stakeholders are divided, however, on how to resolve this problem. Environmental groups urge that a fee be imposed on water appropriation permit applications, but industry stakeholders say they would oppose this new charge.

ENVIRONMENTALISTS AND THE POTOMAC RIVER BASIN

One environmental group asserted that a shortage of potable water supplies in the Potomac River Basin was among Maryland's most important environmental problems. However, it appeared that the root of this concern was increased development in the region. In any event, while these environmental stakeholders acknowledge that Maryland is doing a better job than its neighbor states in protecting its water resources, they contend that the state is still tolerating excessive use of water resources.

These environmental stakeholders argue that MDE is too willing to grant applications to construct waterway pipelines, fostering indiscriminate water use. They add that the science needed to determine "base flows," or the minimum amount of water necessary to support aquatic life and ecosystems, is very uncertain, complicating the assessment of how much withdrawal can occur in the Potomac River without jeopardizing some sensitive ecosystems. Environmentalists argue that building new reservoirs in the Washington, D.C. metropolitan area could help alleviate the pressure on the existing resources and could be a solution to some of the scarcity problems.

INDUSTRY AND GOVERNMENT STAKEHOLDERS

Industry and government stakeholders generally disagree with environmentalists that the state is allowing indiscriminate water use or that water resources are about to run out.

RECOMMENDATIONS

MDE should be funded to expand its planning staff, and should emphasize active participation in such entities as the Interstate Commission on the Potomac River Basin Commission.

The key to evaluating whether Maryland will encounter water resource availability problems is long-term, watershed-based, multi-jurisdictional planning that takes into consideration the possibility of persistent drought conditions. As in other areas of environmental protection, some of Maryland's most critical water resources are shared with other states and, as population growth puts greater pressure on those resources, greater cooperation will be necessary in deciding how to share them fairly.

The state should refrain from creating special committees or commissions that further drain these limited resources.

As explained above, MDE is responsible for supervising the use and the safety of potable water resources, but has very limited resources for long-term planning and supervision of the water supply. These resources are severely taxed by the frequent appointment of special commissions and committees that are charged with duplicating these efforts, but receive no funding to do so.

Education that informs the public regarding the impact of over-burdening groundwater sources with multiple, individual wells and the importance of building adequate infrastructure would encourage voluntary cooperation with such efforts.

One obstacle to long-term planning is the uncertainty produced by unregulated water appropriations. Some appropriations, like private wells for domestic use, are exempted from the water appropriation process and from some counties' ten-year water supply plans. Although it might be appropriate to exclude these appropriations from the permitting process, it is not appropriate to ignore their cumulative impacts on groundwater levels. A significant increase in private wells in a particular area could reduce groundwater levels, drying-up other wells and increasing their vulnerability to the intrusion of polluted water. Drought conditions exacerbate these effects.

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SECTION SIX: LAND USE

SCOPE OF THE PROBLEM

From 1970 to 1995, Maryland's population increased by 25% from 4 million to 5 million residents. That number, in line with the national trend, is expected to increase another 20% by the year 2015. Maryland residents have also followed the national land use trend and moved away from established urban centers and rural areas into newly-developed suburbs. This suburban growth has had two unfortunate results.

First, uncontrolled growth has placed a heavy burden on Maryland taxpayers, who must continue to fund the infrastructure necessary to support such development. Second, and equally important, the consequences of sprawl have placed a strain on Maryland's natural resources and made it increasingly difficult to address Maryland's most severe environmental problems. The farther people move from job centers, the more they rely on cars for transportation. In addition, new roads built to serve sprawl development increase the total amount of impervious surface area, exacerbating nutrient run-off into the Chesapeake Bay.

In most instances, efforts to combat sprawl are a recent alternative approach to long-standing regulatory programs that tackle these difficult problems. The prime example is the Clean Air Act's (CAA) "transportation conformity" provisions that require each state to set budgets for air emissions from major categories such as cars. In an area like Baltimore, those budgets must be sufficiently low to achieve attainment of (compliance with) National Ambient Air Quality Standards (NAAQS), and can have the effect of limiting road building and therefore sprawl. These requirements have not proved to be enough to return Maryland to attainment and sprawl control programs represent an effort to supplement their effectiveness.

In focusing on the environmental aspects of the sprawl problem, this report does not attempt to undertake a comprehensive examination of the complex causes of sprawl or the underlying political and social changes that would be necessary to address those root causes. Rather, we seek to answer the following questions:

1. **Have our signature Smart Growth programs achieved their stated goals of preserving open space areas and forestalling sprawl?**

2. **Are we doing enough to provide incentives for growth in Priority Funding Areas (PFA's)?**

3. **What else, if anything, can and should be done?**

STATE OF THE ENVIRONMENT

NATURE OF THE PROBLEM

The Chesapeake Bay Foundation (CBF) has estimated that open land in the entire Chesapeake Bay watershed is being converted to developed land at an annual rate of 128,000 acres, or the equivalent of three times the size of Washington, D.C. Unfortunately, reliable figures regarding how much greenfield development occurs in Maryland each year are not available. Even without such statistics, it is obvious to even a casual observer that sprawl is a phenomenon that exacerbates the state's problems with air and water quality. A significant share of new development occurs outside specifically designated growth areas. Businesses and developers are driven to move farther out along the perimeter of existing development by the high costs of redeveloping urban areas and resistance to efforts to increase the density of existing suburbs.

Sprawl development places a heavy burden on taxpayers by requiring them to fund new roads, schools and other public services in areas previously devoid of the infrastructure necessary to support development. The estimated cost of providing the infrastructure and public services necessary to support current development is $10 billion over the next 20 years. Compounding the problem is a failing infrastructure network in many of the state's existing urban and suburban areas, in particular Baltimore City. Even if developers could be encouraged to return to areas closer to existing urban centers, the infrastructure needed to support such development is in desperate need of repair.

CURRENT LAND USE TRENDS

Although the pressures of population growth are significant, land use patterns play a more important role in determining the impact this growth will have on the quality of life in the region. The land use trends for the past 50 years have not only shifted development from urban areas to suburban areas, but have also begun to push development from suburban areas further out into rural areas. Local governments, viewing residential development as a money-making proposition for their respective jurisdictions, have encouraged new development in rural areas without paying adequate attention to the consequences of sprawl.

The signature Smart Growth programs attempt to reverse these land use trends by providing financial incentives for local governments to concentrate development in existing urban and suburban communities. The Smart Growth programs have been successful in eliminating state government support for sprawl. The public education component of the Smart Growth programs has also been successful in bringing the issue of sprawl to the forefront of environmental concern. However, these programs have yet to provoke significant changes in overall land use patterns.

A recent study of planned residential development has determined that four out of the five counties surrounding Baltimore City are projecting that at least 5,000 new houses will be built outside each county-designated Priority Funding Area in the next 20 years, which,

according to one environmental group that closely tracks such issues, is an indication that state programs have not been as effective as originally hoped. The same group projects that this residential development will contribute to the loss of 82,000 acres of open land to development in Central Maryland alone during the same time two-decade period. Anne Arundel County, for example, has designated 37% of the land in the county for growth. Yet almost 30% of the residential units expected to be built in the next 20 years will be located outside the county-designated PFAs. Less than 13% of Anne Arundel County remains agricultural and, of that total, less than 23% of that farm land is permanently protected.

Anne Arundel County is the typical example of how the Smart Growth programs have not changed the "bottom line" for land use development. The prospect of financial incentives from the state has not equalized the cost of urban and suburban development with the cost of open space greenfield development. To provide adequate incentives to redirect growth, the former type of development must be less expensive than the latter.

Even in areas where local governments have been moderately successful in planning for growth and directing development into PFAs, other problems in land use planning have arisen. In contrast to Anne Arundel County, Baltimore County has achieved some success. Baltimore County is projected to have only 9% of new homes built outside of its designated growth areas. Although residential growth areas in Baltimore County has been concentrated to designated growth areas, mixed-use development, or strategically planned combinations of residential and commercial development, has not occurred. The failure to incorporate mixed-use development has left Baltimore County largely transit inaccessible, thereby reinforcing a car-oriented commuting lifestyle and its negative effects.

In contrast to the efforts to persuade local governments to engage in "smart" land use planning, the state's "Rural Legacy Program" uses money to take direct action, purchasing land that is preserved as open space. These efforts have preserved approximately 54,000 acres of open space areas through acquisition or conservation easements. However, the 54,000 acres of land set aside during the first five years of this program probably does not offset the thousands of acres of open land developed during those years.

Further, protected lands are not distributed evenly throughout the state or in proportion to the population distribution. Strategic preservation of greenfields to target the most ecologically valuable tracts of land is a recent addition to the state's land preservation efforts. The majority of land acquisitions in the state still tend to be self-selected through availability of individuals willing to sell or dedicate conservation easements on their property.

ENVIRONMENTAL IMPACTS

Development in the state's rural areas turns the character of the land itself from a green filter into a gray impervious surface. Rain, rather than slowly filtering through the ground and seeping toward the Bay, washes quickly over streets—picking up road oil, grease, and heavy metal debris—and gushes into storm drains at a rapid pace toward the Bay. Storm water run-off from urban streets is the third largest source of impairments to Maryland's streams and rivers.

The most significant adverse impact from run-off is the increase in nutrient levels. Between 55 and 74% of harmful nutrients poured into the Bay come from difficult-to-regulate sources, such as contaminated run-off from urban and agricultural areas.

Sprawl also results in residential neighborhoods in places such as Carroll County that are located far from existing urban and suburban working environments. The long distances between home and work and the isolated nature of these neighborhoods forces residents into long commutes. In addition, the lack of public transportation connecting these communities to urban job centers further forces residents to rely on their cars for transportation. Mobile sources, in particular cars, are one of the largest source of air pollution. Increases in vehicle miles traveled (VMT) exacerbates the region's air quality problems. In particular, mobile source emissions contribute to the region's ground level ozone and the number of "Code Red" ozone days, complicating the state's efforts to meet federally mandated ozone standards by the year 2005.

Compounding these problems, both the vehicle population and VMTs are increasing at a faster rate than the total population. The Washington, D.C. metropolitan area alone is projected to have a 79% increase in VMT by the year 2020. These increases accelerate the downward spiral of increasing the demand for more roads to accommodate traffic congestion and, thus, a further increase in VMT.

Sprawl also harms the environment in a more direct sense by eliminating ecological valuable and commercially productive tracts of land. Low density, scattered development patterns leave pockets of open space areas, which are often too small to be used productively for farmland and too small to provide a viable habitat for wildlife. One estimate is that more land in the Chesapeake Bay watershed will be developed between 1990 and 2020 than was developed in the prior three-century history of the state. Although not easily quantified, the loss of ecological and biological diversity in the region harms the region's overall environmental health.

For more detailed information and statistics on the state of impaired water quality in the Chesapeake Bay and the state of air quality in the region, please refer to Section Three (Air Quality) and Section Four (Water Quality) of this report.

MARYLAND'S RESPONSE

OVERVIEW

Maryland's 1997 Smart Growth and Neighborhood Conservation Initiative was an important step in the state's efforts to prevent sprawl. The Initiative was comprised of several different programs, including the PFA legislation, the Rural Legacy Program, the Live Near Your Work Program, the Job Creation Tax Credit Program, and the Brownfields Program.

These incentive-based programs have the three stated goals of:

- preserving valuable natural resources;
- targeting state resources to preserve existing communities; and
- saving taxpayers hundreds of millions of dollars by avoiding the high costs of sprawl development.

Essentially, these programs seek to reverse the trend of government support for unplanned growth in suburban or previously undeveloped greenfield areas. In contrast, these programs utilize the gubernatorial powers over the state budget to set aside funds to preserve open space areas and direct growth toward existing communities with the infrastructure and services in place to support development.

The Smart Growth programs comprising this legislative initiative have received national acclaim for being at the forefront of state involvement in managing growth. These programs are frequently praised for their incentive-based rather than regulatory-based approach to preserving open space areas and influencing land use development patterns. In 2000, Maryland's Smart Growth program was named one of the ten most innovative new government programs in the nation.

THE SMART GROWTH PROGRAMS

The United States has a strong and well-established tradition of land use decision-making at the local level. Rather than address the problems of sprawl by infringing on local government control, Maryland has attempted to reach the same result by providing financial incentives for desirable development. The Smart Growth programs establish the state's primary methods for preventing sprawl as preserving open space areas and providing incentives for anti-sprawl development. The goal of the Smart Growth programs is not to prevent or slow the rate of growth in the state. Rather, these programs utilize state financial resources to affect the "bottom line" decisions driving land use patterns. Or, in other words, these programs attempt to equalize the benefits of preserving open space areas with the benefits of selling land for development. They also seek to equalize the costs of redeveloping existing urban or suburban areas with the costs of new development in rural greenfield areas. Both of these methods for preventing sprawl, however, rely heavily upon state financial resources for success. Without sufficient state

money to support these programs, the costs and benefits of alternative land uses will not be equalized and sprawl will remain the most cost-effective option for development.

PRIORITY FUNDING AREAS

The legislation establishing PFAs was the core of the 1997 Smart Growth and Neighborhood Conservation Initiative. The goal of this legislation is to use the state's financial resources to influence the location of development by only supporting development projects located in municipalities, existing communities, industrial areas, and county-designated planned growth areas. The program does not prohibit private or local-government funded sprawl, it simply limits the ability of state agencies to support such growth. In allocating state funds exclusively for development in planned growth areas, the Priority Funding Areas legislation attempts to level the costs of urban and suburban redevelopment with development in rural areas.

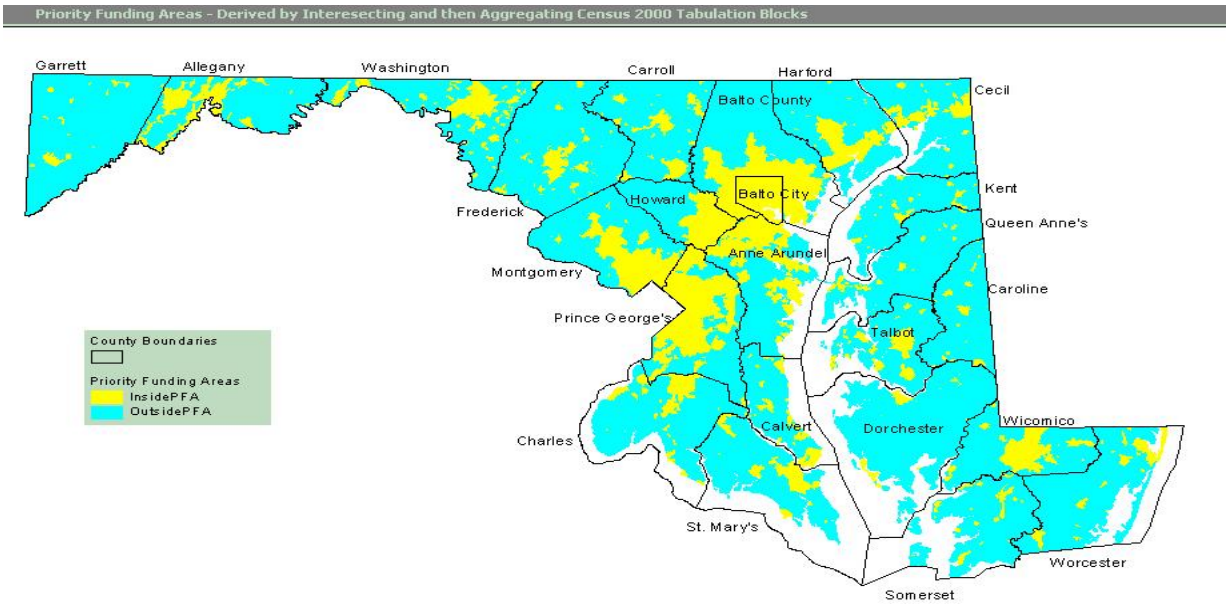
Each county applies its own methodology to determine its PFAs. Certain areas within the state automatically qualify as PFAs, including all municipalities, areas inside the Baltimore and Washington Beltways, and areas already designated as enterprise zones, neighborhood revitalization areas, heritage areas, and existing industrial land. Counties are also permitted to designate additional areas as PFAs, provided those areas meet certain guidelines for intended use, availability of plans for water and sewer systems, and permitted residential density set forth in the Priority Funding Areas legislation. Once the counties have designated their PFAs, state funds are restricted to the support of development projects within these areas.

The Maryland Department of Planning (MDOP) provides counties with guidelines for establishing PFAs and has the ability to review and provide commentary on the counties' proposed plans. However, MDOP does not have the authority to require revisions necessary for compliance with the law. The state does not have authority to disapprove local comprehensive plans, which are the primary tool used for determining future growth areas. Therefore, the PFA program is inherently limited in addressing the regional impact of land use planning, in particular the impact that sprawl development has on transportation.

Areas designated by the counties as PFAs which do not meet the guidelines of the program, however, may be designated by MDOP as PFA "Comment Areas." The MDOP then has the authority to recommend to other state agencies that development projects inside PFA Comment Areas should not be eligible for state funding unless special approval is given.

The following is a map of PFAs designated by each of Maryland's 23 counties and Baltimore City.

Priority Funding Areas in Maryland



Source: http://www.op.state.md.us/smartgrowth/smartpfa.htm

THE RURAL LEGACY PROGRAM

The Rural Legacy Program seeks to protect against the adverse effects of sprawl by providing state funds to local governments to purchase open space areas, conservation easements, and transferable development rights in designated Rural Legacy Areas. Similar to the PFA law, the decision regarding which parcels of land should be preserved is made at the local level.

Counties choosing to participate in the Rural Legacy Program must submit applications in conjunction with landowners willing to sell or dedicate conservation easements on their property to the Rural Legacy Board, which consists of the Secretaries of the Departments of Agriculture, Natural Resources and Planning. The Rural Legacy Board then makes recommendations to the state Board of Public Works as to which preservation projects should be pursued. The Board of Public Works (BPW) then makes the final decision to grant state funds to the local governments. Prospective land acquisitions are evaluated by the Rural Legacy Board on the basis of whether the purchase will protect contiguous tracts of land with significant agricultural or natural resource value. An additional criterion for dedication under the Rural Legacy Program is whether a particular tract of land is threatened by development.

From 1998 to 2002, approximately $128 million from the sale of general obligation bonds and the real estate transfer tax was committed to the Rural Legacy Program to protect approximately 54,000 acres of open space areas. If current levels of funding for the Rural Legacy Program are maintained for the next 10 years, the state could reach its goal of protecting between 200,000 and 240,000 acres of open space areas by the year 2011.

The following table from the DNR website details the funding for the first five years of the Rural Legacy Program.

Rural Legacy Budget

	1998	1999	2000	2001	2002	5 year total
Share of 10% increase in Transfer tax	**$3,876,000**	**$3,339,000**	$4,623,898	$4,861,043	$4,799,000	**$21,498,941**
General Obligation Bonds - original #	**$3,000,000**	**$5,000,000**	$13,800,000	$16,000,000	$33,000,000	$70,800,000
POS Transfer tax Stateside contribution	**$4,000,000**	**$5,000,000**	$6,000,000	$7,000,000	$8,000,000	$30,000,000
Paygo	-----	**$5,000,000**	-----	-----	-----	$5,000,000
Share of Prior year surplus Transfer Tax	-----	**$670,655**	-----	-----	-----	$670,655
Totals appropriated/estimated	**$10,876,000**	**$19,009,655**	$24,423,898	$27,861,043	$45,799,000	**$127,969,596**
Funds awarded to date:	**$10,800,000**	**$18,200,000**	$24,423,898	-----	-----	-----
Carryover surplus	$54,683	$864,333	$288,231	$149,274	-----	-----
Carryover surplus awarded	-----	-----	$576,102	$138,957	-----	-----
TOTAL AWARDS	-----	$29,000,000	$25,000,000	$28,000,000	-----	-----

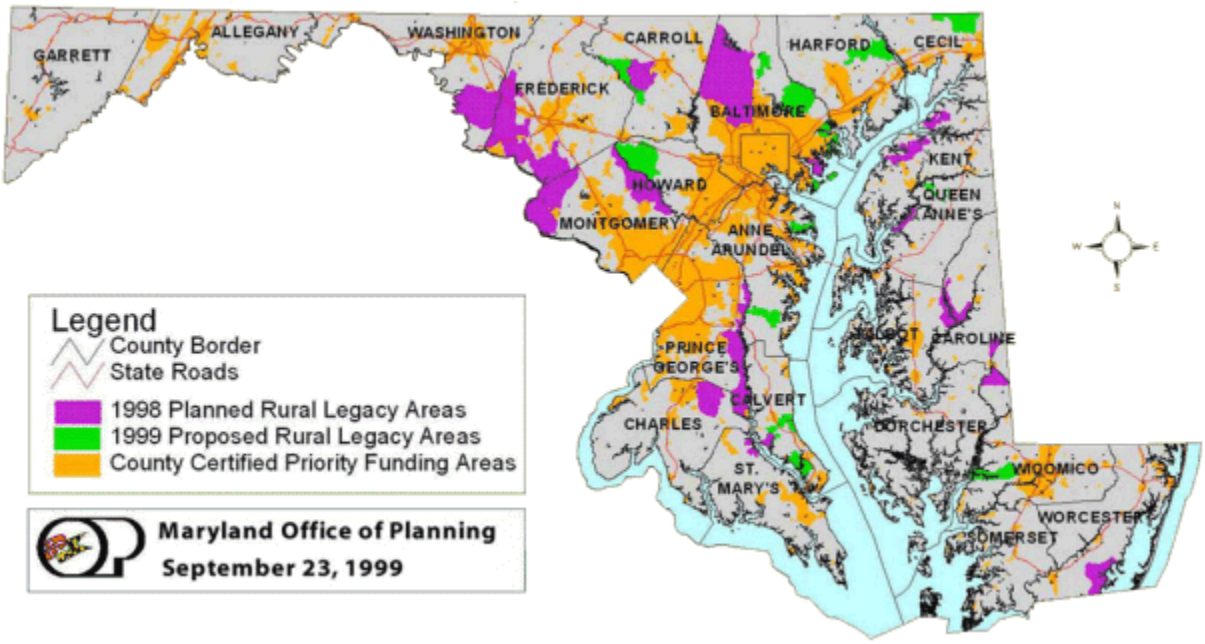
Source: http://www.dnr.state.md.us/rurallegacy/rlprogram/funding.html

THE GREENPRINT PROGRAM

Created in 2001, the GreenPrint Program complements the Rural Legacy Program by developing a "green infrastructure network" to identify the most ecologically sensitive areas throughout the state in order to maximize the benefits of land acquisition. The GreenPrint Program was also designed to coordinate state land preservation programs such as the Rural Legacy Program with similar county land preservation programs to protect larger contiguous tracts of land. The program is administered by DNR and requires local government approval for the acquisition of a property or property interest within its jurisdiction.

The following map illustrates the amount of open space areas preserved through the first three years of the Rural Legacy Program.

Rural Legacy Areas



Source: http://www.op.state.md.us/smartgrowth/legacy.htm

LIVE NEAR YOUR WORK PROGRAM

The Live Near Your Work Program provides incentives for employees to buy homes within biking or walking distance from their workplace. The two main goals of this program are to revitalize urban areas by encouraging homeownership and reducing the costs associated with long commute distances. Consistent with the overall approach of the Smart Growth programs, local governments apply to the state Department of Housing and Community Development (DHCD) to have certain residential areas designated as a Live Near Your Work Areas. Once such areas are designated, home buyers who locate to these neighborhoods for at least three years are eligible to receive $1,000 each from their employer, state and local governments. In addition to the three-year residency requirement, the program requires participating employers to set eligibility requirements and provide matching resources to employees. Since the inception of the program, 548 employees from 111 different participating companies have received more than $500,000 in grants under the Live Near Your Work Program.

JOB CREATION TAX CREDIT PROGRAM

The Job Creation Tax Credit Program grants income tax credits to businesses for creating a minimum number of full-time, permanent jobs paying at least 150% of the minimum wage. It was amended to encourage growth in PFAs, by offering a tax credit of the lower of $1,500 or 5% of the average salary per employee if small and mid-sized companies create 25 new jobs in a 24-month period. The tax credit is limited to specific industries, which primarily include manufacturing, biotechnology, research development or testing, computer programming, transportation and communications. Unfortunately, the state Department of Business and

Economic Development (DBED) does not keep track of how many businesses have taken advantage of this program.

BROWNFIELDS

The Brownfields Program seeks to curb sprawl by providing incentives to business and industry to clean up and redevelop contaminated urban properties rather than locate in previously undeveloped greenfield areas. For a more detailed description of the Brownfields Program, please refer to Section Seven of this report.

STAKEHOLDER VIEWS

AREAS OF AGREEMENT

Stakeholders generally agree that sprawl is a significant cause of Maryland's most severe environmental problems, in particular the increase in emissions from motor vehicles and nutrient run-off into the Chesapeake Bay. Stakeholders stress that being able to reduce the total Vehicle Miles Traveled throughout the state is a crucial tool to use in solving the state's air pollution problems. Many stakeholders iterated that the Smart Growth programs must place a greater emphasis on mass transportation in order to be effective.

With the exception of the Brownfields program, which is addressed in the next section, most interested stakeholders further agree that Maryland's incentive-based Smart Growth programs are a step in the right direction toward preventing sprawl, primarily because these initiatives recast the negative of stopping sprawl into a positive – encouraging "smart" growth. Although a subtle difference, stakeholders, in particular government officials, point out that state's approach of favoring urban and suburban redevelopment rather than being anti-development is important in uniting environmental and economic interests. Stakeholders differ, however, on the degree to which Maryland's Smart Growth programs have been successful and what more can and should be done to improve these programs.

Stakeholders also agree that a major issue the state must confront is the failing infrastructure in the state's existing urban and suburban communities. One federal official drew an analogy between the task of resolving these problems and the process of assessing the health of a stream, urging an examination of why urban areas are no longer functioning at the level they did 20 or 30 years ago. This representative added that unless we take a more "holistic" view of how these problems are connected, the inherently good concept of Smart Growth cannot take hold.

Stakeholders generally agree that more can and should be done to manage growth across the state. As explained in detail below, they disagree regarding the effectiveness of voluntary programs, with government and business representatives urging that incentives be enhanced, and environmentalists urging exploration of more mandatory approaches.

GOVERNMENT OFFICIALS

Despite these areas of agreement, stakeholders disagree regarding the degree to which the Smart Growth programs have succeeded in slowing the rate that open space greenfield areas are consumed by development. State and federal government officials believe that, although development of greenfield areas continues, the Smart Growth programs are making some progress. They note that many of the projected housing units planned for outside PFAs were permitted prior to the enactment of the Smart Growth, arguing that it is unfair to consider those numbers in assessing the programs' success.

Federal officials acknowledge that the incentives for development in urban and suburban areas have not been strong enough in many cases to influence fundamental changes in development trends. But they caution that these programs need more time before their true effectiveness is apparent, noting that they have only had five years to reverse over 50 years of poorly planned land use development patterns.

Some government officials stressed that the state's land preservation programs have been the single most important success of the Smart Growth programs. These officials point to the fact that one out of every four acres of land that has been preserved throughout the state has been preserved through Smart Growth programs. They add that the financial rewards that property owners can receive for dedicating their land for preservation is a significant incentive. However, stakeholders on all sides recognize the fact that state funds are limited and that the state simply cannot afford to buy rights to all the land it wants to preserve.

Some government officials voiced concern that the Smart Growth programs have not been more successful because of the lack of public awareness of the environmental problems caused by sprawl. The educational outreach efforts associated with the Smart Growth programs have made moderate successes in terms of identifying the problem, but a general lack of understanding exists.

Government officials also believe increasing public awareness is important because they fear that Smart Growth is seen as an elitist movement. They note that local, lower-income residents are often displaced by the "gentrification" of urban neighborhoods. Government officials are worried that the general public perceives discussions of quality of life and preservation of rural areas as a self-interested concern of upper middle class homeowners living in suburban areas who are only interested in protecting their privileged way of life. They stress that the goal of the Smart Growth programs as providing an alternative to sprawl is often misunderstood.

Government officials generally feel that the state has reached its political limit for imposing rules and regulations on local governments. They believe that the state needs to focus more of its resources on influencing local governments, not making decisions for them. At the same time, government officials point out that they do have some ability to intervene and reverse some poor decisions that are made at the county level. The threat of intervention, they suggest, is only effective to the extent that it is used sparingly.

Alternatively, government officials suggest, the state needs to make use the existing framework established by the Smart Growth programs, but make the incentives smarter. They generally believe that businesses and local governments want to make environmentally sound decisions, but those decisions also need to make economic sense. Increasing the incentives and making incentives available to more people would make sense, according to this view. For example, one government source suggested making the Live Near Your Work program more widely available and instituting a competitive grants program to get state financial assistance.

ENVIRONMENTAL GROUPS

Environmental groups take a dimmer view of the success of Smart Growth programs thusfar. They believe that even though smart growth policies have encouraged more development in PFAs, too much greenfield development continues. As one knowledgeable advocate bluntly stated, Smart Growth "is not happening." Environmental groups support these assertions by pointing to the number of residential housing units projected to be built outside PFAs. They suggest that many county officials still falsely view growth as a money-making proposition. Although environmental groups agree that some counties have been more responsible and better able to comprehensively plan for future growth, not one county has a perfect record. They argue that, by and large, the county government officials do not understand or simply do not have adequate resources to anticipate and counter the trend toward suburban sprawl.

Environmentalists note that counties plan for growth on a quarter-by-quarter or year-by-year basis without looking at the big picture over the long-term. Counties too often do not even attempt to analyze the affordability of development. And even when smarter residential growth has occurred, there is inadequate "mixed-use development" that combines residences with businesses so that people can live near their work. Unless these growth patterns are reversed, they argue that the state will lose its agriculture industry and the health of the Chesapeake Bay will be in peril.

Environmental groups also say that not only is too much growth happening outside the PFAs, but that this growth is using up disproportionate amounts of land. Greenfield development tends to be large lot development, providing only one house per one to three acres, while urban and suburban development is denser, and thus imposes less of an environmental burden. Those groups concerned with this type of growth point to county zoning law and agricultural land protections for answers. They say that protective rural zoning—allowing only one home per 20 or 50 acres—will help protect farm land and the agricultural lifestyle. State financial incentive programs —such as the Rural Legacy Program—should be targeted at counties that have zoned for protection of rural areas. Furthermore, they point to various studies that say that such zoning will decrease the land's attractiveness to developers, without devaluing it as some have suggested.

Environmentalists agree that the public does not understand the implications of sprawl adequately. They argue that, in general, the costs of sprawl are not identified up-front and that the short term benefits of a new shopping center are not connected with its long-term costs. They fear that people do not understand that more roads and wider roads are not the answer to the state's traffic congestion problems.

Environmental groups suggest that voluntary incentive programs can only work to a certain point and that some form of regulation may be necessary to deal with the problem. They argue that the state's commitment to withholding Priority Funding Area money when smart growth does not occur must be stronger. These groups suggest that counties should not receive state financial support unless they make a concerted effort to zone for protection of open space areas. Environmental groups believe Rural Legacy funds should similarly be withheld unless the

counties can demonstrate to the state that they are committed to preventing sprawl. They argue that the state budget is the key leveraging power for the state, but that it is not being used to its full capability.

Environmental groups also stress that more incentives need to be provided for development in urban and suburban areas. They believe the infrastructure crisis in these areas needs to be dealt with in order to make these neighborhoods more attractive for development and to improve the quality of life so families are encouraged to stay rather than move farther away from the city centers. The infrastructure and sprawl problems are "two birds that can be killed with one stone." In addition to urban neighborhoods, environmental groups feel that "grayfields," or abandoned shopping centers that are not contaminated with toxic pollutants, should be an even greater focus for redevelopment and mixed use properties.

Environmental groups contend that incentives alone will ultimately prove ineffective at solving the problem of a lack of comprehensive planning at the county level. They argue that the state must find a way to enforce regional planning with a strong view towards the future. Environmental groups worry that, as some counties become better at implementing Smart Growth policies, there will be a race-to-the-bottom in other counties to attract new growth. Thus, state-wide regulation and enforcement may be necessary. In addition, some environmental groups suggest that development laws need to be more strenuously enforced and penalties need to be increased in order to be true deterrents to developing in environmentally sensitive areas, such as in critical Bay areas, forests and wetlands. As they exist and are enforced, these penalties act as a figurative "slap on the wrist" that can be factored into the cost of doing business. Finally, environmental groups recommend that the educational programs that attempt to inform people about the problem and impact of sprawl need to be increased.

BUSINESS REPRESENTATIVES

Recognizing that there are differences in outlook between various business interests, we interviewed representatives of the manufacturing sector, as well as developers who focus on building residential and commercial properties. When we refer to "business representatives in this section, we mean both groups. Otherwise we refer to their different perspectives as those of "industry" versus "developers."

The business community's assessment of the success of the Smart Growth programs falls somewhere in between the views of government officials responsible for the program and environmentalists. Business representatives agree that the added incentive of receiving state money for development projects inside PFAs is not enough to equalize the higher costs of development in these areas with the lower cost of development in rural areas. They add that the Smart Growth programs have not done enough to recognize that the costs of urban development are higher to begin with, because property is often contaminated and existing infrastructure cannot support growth. As explained in the next section, they believe the state has not done enough to limit liability for cleaning up such contamination. They add that developers often have difficulty getting loans for projects inside PFAs.

In addition, business stakeholders say that, although Smart Growth programs favor development in existing suburban communities, developers often encounter resistance from residents in these neighborhoods who want their ideal, relatively rural, suburban community to be preserved. These groups cite the political pressures from the community and the resulting unpredictability as a major obstacle to development inside PFAs. Schools tend to be overcrowded in PFAs, prompting counties to place a moratorium on development. Developers said they also encounter a tremendous amount of resistance to mixed-use development. One business representative mentioned that even though some developers intended to locate 95% of their projects inside PFAs, they ended up with only 25% because of outside pressures.

Another concern raised by industry representatives and developers was housing affordability. Sixty-two percent of Maryland residents own their homes, and many people are still willing to pay for houses that are being built far away from urban job centers. In general, business stakeholders argue that despite the Smart Growth programs, the overall consumer mindset in the state is to pursue open space development. Industry representatives and developers assert that the Smart Growth programs' attempt to change this mindset and funnel development back to urban and suburban areas will not work unless the state and local governments improve infrastructure in these areas.

Business representatives agree with other stakeholders that local governments do not yet have the capability or political will to plan for "smarter" growth. They believe that local governments will sometimes "down-zone" agricultural areas in their county without really engaging in Smart Growth. They feel that the state needs to do more to make these types of decisions easier for local government officials.

On the whole, business representatives say they are becoming more educated about the problem of sprawl, noting that although they did not support the Smart Growth programs five years ago, they have slowly begun to realize the added benefits of clustering development in certain areas. However, they remain skeptical about the possibility of equalizing the cost of urban and rural development.

Business stakeholders believe that regulation of local land use decisions is not the proper role for the state. Regulating local governments will not solve the problem and will only cause a negative reaction to the state's efforts. More and better incentives need to be provided to influence development trends. They also recommend that education and training programs for both citizens and, in particular, county officials need to be increased. They stress consumer awareness as a cost-effective method to solve one of the major factors exacerbating the sprawl problem, public attitudes. Business representatives do not believe that county implementation of Smart Growth policies will lead to a race to the bottom. They generally feel that the availability of choices to sprawl will positively influence the market and help eliminate this concern.

Business representatives also recommend that the amount of land set aside for development needs to be quantified. They assert that government is always looking at how much land needs to be preserved, but that it should consider both sides of the equation in order to give developers a more concrete idea of what they will be able to do.

Developers recommend changes in local development codes to encourage “low impact” or more environmentally sensitive development. They would prefer to “cluster” development to be able to preserve as much open space area as possible on a given parcel of land. However, developers argue that many local zoning ordinances, such as the requirement that streets to be a certain width, prohibit this environmentally-friendly development practice. They say that combining educational efforts with some of these changes will advance efforts for businesses and developers to comply with the mandates of the Smart Growth programs.

RECOMMENDATIONS

In comparison to other environmental problems discussed in this report, the adverse effects of sprawl have just emerged at the forefront of the debate over environmental policy. In that context, it is important to recognize that Maryland's Smart Growth programs are among the most ambitious yet attempted by any state in the country to preventing sprawl. These programs have received deserved recognition for making the fundamental shift from a negative anti-development approach to a more positive role for the state of supporting urban and suburban development and rural land preservation. Unquestionably, these programs are a step in the right direction.

However, it is probably too early to evaluate their success. As noted above, development has a long lead time and much of the current development projected to occur outside Priority Funding Areas was planned prior to the implementation of these programs. Making a comprehensive assessment of the true impact of the Smart Growth programs on land use patterns in the state is therefore difficult and premature at this time.

Although the big picture results are not quite in focus, there are areas in which the Smart Growth programs appear to be successful, and other areas in which more can be done.

The state must continue to provide funds for the preservation of open space areas through the Rural Legacy Program.

The single most successful aspect of Maryland's Smart Growth programs is the preservation of approximately 54,000 acres of rural land. Preservation of one out of every four acres of land in the state was accomplished within the last decade, and the state is on target to achieve its goal of preserving over 200,000 acres of land by 2011. These programs are the most successful approach to defeating sprawl and we think it is crucial that these efforts be maintained. In addition, the state must work to find better ways to preserve the most ecologically valuable tracts of land.

The state must find a way to equalize the costs of development in urban and suburban areas and costs of development in rural areas.

An apparent shortfall of the Smart Growth programs at this point is the inability to provide enough incentives for development within Priority Funding Areas. Greenfield development remains a cheaper and more viable alternative to development in existing urban and suburban areas. For the programs to be more successful, the state must reverse this trend. Because this aspect of the program is incentive-based, the key to accomplishing this outcome is money. Therefore, the state must find a way to either:

- **provide more financial incentives for development inside PFAs through increased money for the program; or**

- **provide more financial disincentives to development outside PFAs through development fees or requiring developers to fund the cost of infrastructure.**

The state must do more to educate local government officials and citizens of the impact their everyday decisions have on the health of Maryland's environment.

Education is another key to improving the success of Smart Growth programs. Although many people are beginning to realize the impact that poorly planned development has on commuting times and distances, fewer people understand its impact on the health of Maryland's environment. Local government officials must be persuaded that there are costs that often outweigh the benefits of allowing development in rural areas, especially without mixed-use development.

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SECTION SEVEN: BROWNFIELDS

SCOPE OF THE PROBLEM

Federal and state Superfund laws impose strict, joint, and several liability on those responsible for contaminating land, allowing the government to compel them to pay for costly cleanups that are necessary to protect public health and the environment. The federal program also has collected billions of dollars from a combination of industry taxes and general appropriations, giving EPA the option of either (1) using government money to clean up the worst sites and recovering its costs form parties responsible for contaminating the site, or (2) using the fund to bring enforcement actions against responsible parties and obtaining a court order instructing them to do the cleanup on their own.

Superfund liability applies ***in theory*** to every contaminated site and every "responsible party" in the country. Thus, EPA has the legal authority to bring an enforcement action against any party defined as liable under the statute and associated with an "release" of some 700-800 "hazardous substances" (virtually all common industrial chemicals). But with a potential universe of literally hundreds of thousands of locations, EPA generally focuses its limited enforcement resources on only the approximately 1200 sites on its National Priorities List (NPL), which it believes are the worst sites in the country, leaving the remainder to state agencies.

Most states have enacted their own "little" Superfund laws and Maryland is no exception. The Maryland statute imposes virtually the same liability on the same parties as the federal law, but the state does not have enough money to clean up sites or to bring enforcement actions against potentially responsible parties. As a result, the state Superfund program has been dormant for several years.

Despite the state's failure to prosecute liable parties, businesses and developers say that the fear that MDE or EPA will someday do so has discouraged many developers from investing in contaminated property, resulting in acres of abandoned land in urban areas with commercial potential. Instead of redeveloping these existing sites, developers often opt to build on lower risk rural and suburban property, in part because they have a significantly easier time getting banks to finance such projects.

In recent years, these abandoned, under-utilized, industrial properties became known "brownfields," and state and local governments throughout the country have actively pursued programs to make them viable for economic development. As discussed in Section Six, the motivations behind brownfields reclamation is multi-faceted. Relocation of industry to undeveloped "greenfields" requires government to fund expensive new infrastructure, such as roads and sewer systems. Furthermore, development of greenfields exacerbates air and water quality problems. Meanwhile, the under-utilized industrial properties remain vacant and contaminated, draining the tax base and the economic and public health of the inner city.

This report seeks to answer the following:

1. **Are the Voluntary Cleanup and Brownfields Revitalization Incentive Programs effective in spurring remediation and reuse of contaminated properties?**

2. **What barriers remain to widespread participation in the Voluntary Cleanup Program?**

3. **What role should enforcement play in the cleanup of contaminated properties?**

STATE OF THE ENVIRONMENT

Maryland grew around its agriculture and its industry. Families located in company towns built near the factories where people worked, fueling the state's early economy. But, as the economy shifted and industry began to move elsewhere, neighborhoods were left with the abandoned industrial properties. Old industrial practices—some as egregious as quite literally dumping buckets of waste out the factory's backdoor—left these properties contaminated with toxins later found to be harmful to public health and the environment.

The threat of environmental contamination—either real or perceived—became a barrier to the re-development of such properties, especially those in urban areas. Rather than face the cost of cleanup, many owners opted instead to leave the contaminated land fallow, collecting tax breaks rather than assuming cleanup costs. Other owners simply could not afford to clean up, and facing other challenges, went bankrupt. Local governments, especially Baltimore City, acquired many of these sites through tax foreclosure. However, like the owners before them, the jurisdictions have been unable to turn the sites into productive, tax-generating properties. The problem is by no means only an urban one. The suburbs are home to one of the most common types of abandoned, contaminated property: strip malls where dry cleaners have contaminated the land with solvents.

Unlike air and water resources, the primary concern with brownfields is not mitigating ongoing and new sources of pollution by installing pollution control equipment, but rather removing old sources of pollution that have spread into land and water. The type of pollution depends on the type of industry that was present on the land. In many cases, especially in Baltimore City, many different types on industry located on a single plot of land, over time contributing a wide range of persistent pollutants.

Brownfields undercut Maryland's health and economy in multiple ways. Thousands of acres of prime commercial land in the heart of Baltimore City and in other urban areas sit vacant, at best urban blight, at worst toxic wastelands. Contamination in the ground seeps into groundwater or runs off into nearby streams and storm water systems, contributing to poor water quality or emitting toxins by air. Sites located in populated areas risk exposure to children and other trespassers. Too often, such properties are not even fenced effectively to keep out curious neighborhood residents.

Government-approved remediation focuses primarily on eliminating "pathways of exposure," a term of art encompassing the means by which contaminants enter the human body. Water soluble contaminants pose a threat to sources of household water. Airborne contaminants are inhaled into the lungs. Contaminated soil presents risks to children at play, other neighborhood residents, and construction workers.

For example, common contaminants in Baltimore City are lead, volatile organic compounds, and mercury. These substances are found in the soil, the water, and the air. Lead, known to cause brain damage in children, usually reaches the system through ingestion of contaminated dirt and dust particles. Many volatile organic compounds are classified as "carcinogens" that cause cancer, and typically affect people through inhalation. People may

inhale airborne mercury or eat it when it builds up in the human food chain – for example, in fish. Mercury causes a variety of serious problems from memory loss and tremors to organ damage and failure.

Maryland has 21 federal Superfund sites, which are among the approximately 1200 worst sites in the country. The state is responsible for all remaining sites that are known or suspected to be contaminated with hazardous substances. At the end of fiscal year 2001, 437 of these sites were on the State Master List, a list of sites known or suspected of being contaminated with hazardous waste based on their prior uses. These sites are found throughout Maryland. Developers have also identified more than 2,000 acres of brownfields that are ripe for development.

MARYLAND'S RESPONSE

OVERVIEW

Maryland's primary response to contaminated, under-utilized land has been to seek cleanup and redevelopment through a system that depends on volunteerism by two distinct groups:

- developers who wish to use the land but have no prior relationship to it or its contamination (so-called "inculpable parties");
- entities or individuals who own the land, once owned the land, "operated" the land when it was a dump site, or once sent wastes to be disposed of at the site ("responsible parties").

The policies that animate these programs are based on two goals that often are in tension with each other. The first is to encourage the revitalization of the inner city and discourage sprawl. The second is to protect the human health and environment by preventing exposure to hazardous substances on contaminated land. To understand how Maryland has reconciled these competing concerns, we must first examine the federal Superfund program.

FEDERAL SUPERFUND PROGRAM: HOW LIABILITY IS DEFINED

As discussed above, federal Superfund law casts a wide net of liability that extends to all contaminated properties in the nation and over anyone who may have allowed or contributed to contamination on those properties. Superfund imposes strict, joint and several liability not only on owners and operators, but also on "generators" and "transporters" of toxic waste that ended up at the site. Even a generator who contributed a small amount of waste decades ago, or a current owner who had nothing to do with the past dumping, can be held liable by the government for the cleanup of a contaminated property.

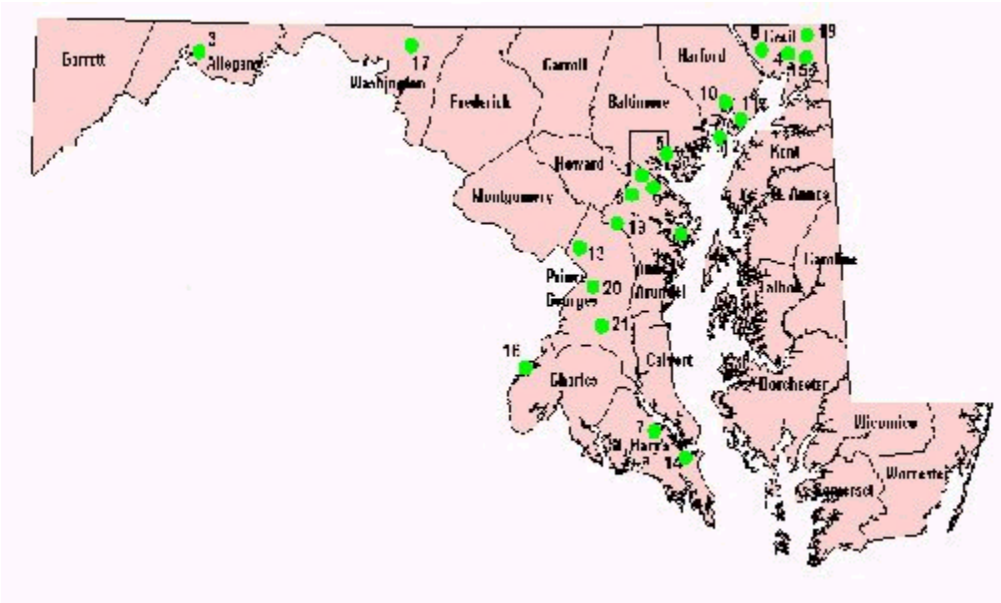
Often EPA will go after the parties with the clearest responsibility and the deepest pockets. These entities subsequently bring "contribution actions" against other liable parties, sometimes resulting in hundreds of entities being forced to pay for cleanup actions. The federal government also has a multi-billion dollar fund available to clean up the worst sites where public health and the environment are most at risk. However, the taxes that support the Superfund expired in 1995, and the fund is slowly running out of money.

EPA has two methods to achieve a cleanup from a liable party. If the site poses a major, immediate threat, EPA will clean up the site first, and then file a lawsuit seeking to recover the cost from one or more liable parties afterward. This approach is referred to as "shovels first, lawyers later" approach. Because of federal contracting requirements, this approach can sometimes be more expensive than when private companies undertake cleanups, because companies can sometimes take advantage of their own personnel and resources. In the other circumstance, EPA will sue to force the liable party to clean up the contamination. This approach is referred to as "lawyers first, shovels later" approach. In still other circumstances,

when the contamination is not severe enough to warrant federal action, EPA leaves it up to the states to enforce the cleanup. Tens of thousands of such state sites are located in industrial areas across the country.

The following is a map pinpointing the 21 NPL sites in Maryland.

NPL Sites in Maryland



Source: National Priorities List Sites in Maryland, www.mde.state.md.us/was/npl.html

STATE PROGRAMS

The state has authority over all contaminated and potentially contaminated land that is not on EPA's NPL. In addition to enacting a "little Superfund" law that is very similar to the federal statute, in 1997, Maryland joined dozens of states across the country by enacting a law designed to encourage more cleanups through two distinct programs: the Voluntary Cleanup Program (VCP) and the Brownfields Revitalization Incentive Program (BRIP). The VCP offers liability "releases" and assurances to developers who agree to remediate and redevelop blighted properties in populated areas, while BRIP offers state-funded loans for such cleanups.

The responsibility for implementing state Superfund law and its voluntary counterparts is assigned to one program of MDE's Waste Management Administration: the Environmental Restoration and Redevelopment Program. The Program oversees cleanups of approximately 437 hazardous waste sites on Maryland's Master List. The human resources component of the state Superfund component is comprised of only a handful of employees who do not have the resources to mount enforcement actions on any significant scale.

Both responsible and inculpable parties may participate in the VCP, but responsible parties are not eligible for cleanup grants. Inculpable parties do not own the land when they apply to participate in these state programs. Typically, they are third parties, such as real estate developers seeking to revitalize abandoned sites. Upon satisfactory completion of the program, inculpable parties can take title to the land free of Superfund liability. They can clean and redevelop properties polluted after the VCP law took affect. They may withdraw from the program without penalty or threat of enforcement, unless their actions have caused a release of controlled hazardous substances.

Only certain properties are eligible for the VCP. Ineligible sites include those that are: listed on the NPL, the subject to an MDE enforcement action, active disposal facilities, contaminated after the VCP incentive program was enacted (for responsible parties), or contaminated by oil pollution.

The VCP offers streamlined and expedited review to encourage participation. The program imposes tight deadlines on MDE to review applications and other submissions and provides opportunities for public input.

As a part of the application process, the applicant must investigate "all potential sources and areas of contamination" on the proposed site. This environmental site assessment typically consists of two phases. In Phase I the applicant analyzes historical records describing the activities and chemicals that contaminated the site to make preliminary conclusions about what contamination is probably present. Phase II consists of field sampling and laboratory testing of soil, ground water, surface water and air emissions at the site, based on preliminary findings of Phase I, in order to quantify the actual contamination. Phase II assessments are generally far more expensive than Phase I assessments.

Once MDE receives this site assessment information, it has two basic options available: first, to determine that no further action is necessary, in which case it gives the developer or Responsible Party a letter to that effect; or, second, to require that the developer or responsible party take action to cleanup, reduce, or prevent exposure to the hazardous substances found at the site. If MDE determines that cleanup is necessary, it asks the developer or responsible party to prepare a remediation plan, called a Response Action Plan (RAP). MDE then reviews this plan to see if it will "protect public health and the environment" and achieve "appropriate" cleanup standards. The approval process, as we explain further below, is the primary source of conflict between MDE and both developers and responsible parties, who often feel that MDE's cleanup requirements are too protective.

It is important to note that MDE has a range of options to consider when it decides whether to approve a cleanup plan. Remediation can be permanent, temporary, or protected by institutional controls. Permanent remediation is the most costly, typically involving the removal of contaminated debris and soil. Temporary remedies cut off pathways of exposure to humans by containing the contamination, such as under pavement. Temporary remedies must be reviewed periodically to ensure that such caps are not breached, allowing hazardous releases. Finally, "institutional controls" use legal methods to prevent exposure, such as a deed restriction against using ground water or digging beneath a cap. Institutional controls provide the least

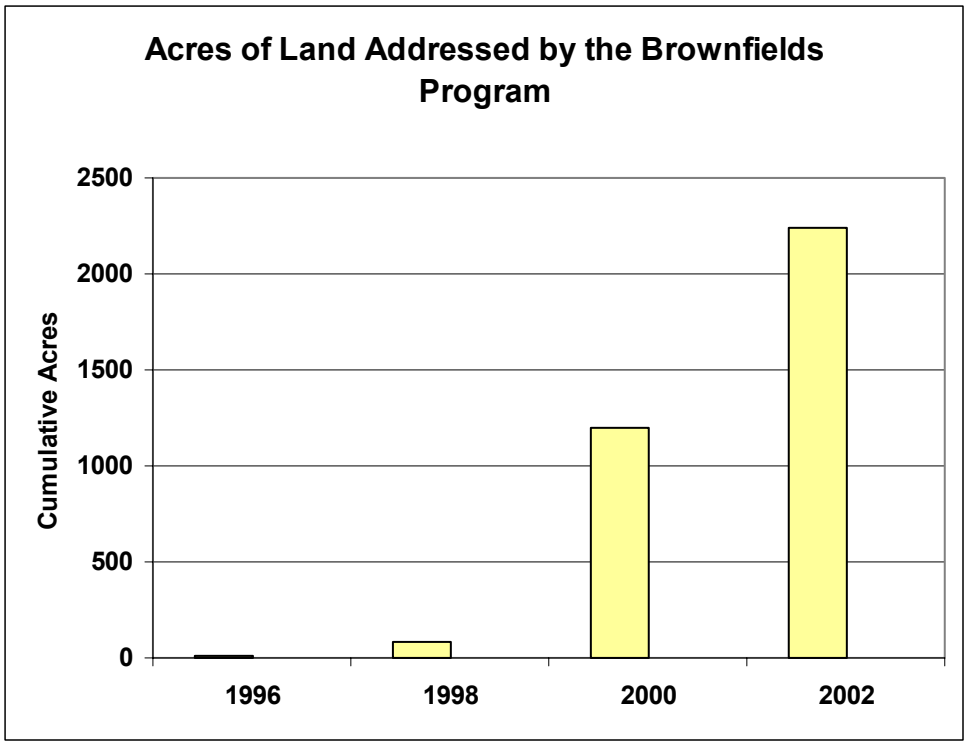
amount of assurance that pathways of exposure will be eliminated. Selection of remedies and the degree of cleanup required vary based on the future use of the land (is it industrial, commercial, or residential?); the location of the property (is it near homes?); and worker safety requirements (will contaminants be released during construction?).

The VCP is intended to be a "pay-as-you-go program" that does not cost the taxpayer. Initially, applicants pay a $6,000 fee to cover MDE's cost of review. If the review costs more, MDE is entitled to charge the applicant. If it costs less, the applicant gets the balance back. Additionally, the applicant pays for all necessary studies and assessments. While the system pays for the time of state technical experts, it does not allow MDE to recover any overhead, leaving this burden with the general taxpayers.

The state-funded Brownfields Revitalization Incentive Program (BRIP) also offers financial incentives to encourage third parties to participate in the VCP. Administered by the Maryland Department of Business and Economic Development (DBED), BRIP offers grants and loans to inculpable parties who agree to work with MDE to remediate land and return it to productive use. BRIP also allows local jurisdictions to provide Brownfields Property Tax Credits to help compensate the developer for the increase in the land's value after remediation.

Finally, Maryland has a small pot of money in the Brownfields Sites Assessment Initiative, which is supported by federal grants by EPA for use on publicly- and privately-owned brownfields. MDE can chose to use these public funds to cover the often costly environmental site assessment. To be eligible, the publicly-owned site must be vacant or under-utilized, capable of being remediated, and involve a redevelopment project that will create jobs and improve the local tax base. The availability of the program depends on the availability of funds.

In the five and a half years since the VCP and the BRIP were authorized, developers have applied to build on more than 127 properties—representing more than 2,240 acres in 13 counties and Baltimore City. MDE has completed its review of applications concerning 62 of the properties, with only 12 actually requiring remediation. Those 12 properties comprise 600 acres, far exceeding the original goal to remediate 222 acres by 2000. The other 50 completed sites did not require active cleanup. Instead, these sites generally required institutional controls to restrict certain land uses, restrict the withdrawal of groundwater, or require notification to MDE prior to initiating site excavation. The following chart shows the cumulative number of acres involved in the Brownfields program from its inception to 2000:


Acres of Land Addressed by the Brownfields Program
Cumulative Acres
2500
2000
1500
1000
500
0
1996
1998
2000
2002

STAKEHOLDER VIEWS

AREAS OF AGREEMENT

All stakeholders recognize that more participation in the VCP and BRIP programs is desirable. They also agree that the relative ease and low cost of development on greenfields deters participation in the VCP. Building projects on greenfields means that developers avoid the expense of site investigation and remediation. Furthermore, lenders prefer to make needed loans where the risk is lowest, making Greenfield development the path of least resistance.

Stakeholders also agree that the location of the contaminated property matters most in predicting whether it will be redeveloped. Brownfields on the Baltimore City waterfront have been sought after regardless of the level of their contamination, while properties landlocked by decaying urban neighborhoods remain neglected.

Stakeholders agree that greater incentives would increase the rate at which brownfields are redeveloped. Such incentives include local tax credits for creating jobs, "living near your work" credits, property tax credits, and stronger enterprise or revitalization zone incentives. Industry representatives contend that curtailed liability, access to public funds, and truncated site investigation are also necessary, as discussed further below.

Beyond these relatively limited, consensus points, stakeholders are divided in their assessment of MDE's performance in implementing the VCP and BRIP, as well as the wisdom of some of the statute's key provisions. Of all of the environmental problems discussed in this report, stakeholder views on these issues were the most polarized.

INDUSTRY CRITIQUE

Business representatives took an extremely negative view of the programs and the statute, arguing that:

- both the statute and the programs' implementation should be significantly revamped because the VCP and BRIP are "non-starters;"
- MDE's policies deter industry from participating because the process is costly and unpredictable; and
- MDE has failed to achieve its redevelopment goals.

Industry representatives assert that MDE's policies in implementing the VCP and BRIP are fundamentally out of touch with the market in which businesses operate. They complain that the programs do not account for the fact that Maryland brownfields are in direct competition with brownfields and greenfields in neighboring states, where restrictions may not be as burdensome. And, while businesses and lenders make bottom line decisions and seek to avoid

uncertainty, MDE staff demands "overzealous" site investigations and cleanup standards, building into the VCP is a wavering bottom line and unpredictable cleanup requirements.

Cost is a primary concern of industry, both in terms of the expense of cleanup and the costs of delay. Business representatives contend that environmental assessments and laboratory testing required by the VCP are costly and that the costs are not worth the corresponding liability releases. While the purchase price of contaminated urban land is considerably less than the purchase price of greenfields, when the increased cost of urban construction and the time and cost variables associated with cleanup are factored into the equation, greenfields development is more desirable.

Even though government officials say that up to 80% of VCP properties receive from MDE a "no further requirement" determination with no expensive remediation, industry argues that developers have self-selected the outcome by deliberately choosing properties that would result in such a determination, thus defeating the goal of fostering additional cleanup. Industry also contends that potential developers are discouraged by expensive delays caused by extended site assessments. Not only do the delays add to the cost of construction, but they can cause a lender to cancel a deal, leaving a developer in the midst of the project without financing.

Industry representatives say that the BRIP does not sufficiently counteract these financial concerns because many potential developers—i.e., owners of contaminated property—are not eligible for state loans and tax breaks. One example is the case of the shopping center owner who is liable for contamination caused by a dry cleaner that leased space from the center's developer. The owner had no role in the contamination, but still is not eligible for BRIP loans. Rather than act quickly to clean up contamination when it is discovered, industry argues that such an owner is more likely to be deterred by the cost and the time cleanup takes and sit on the property, allowing it to decay. Cleanup of such shopping centers often requires a third, inculpable party to intervene, they said.

Business stakeholders also say that the two-phase structure of testing builds both unpredictability and unnecessary cost into the system. Several say that a typical scenario involves a third-party developer seeking to revitalize a brownfield property, who submits its preliminary findings to MDE. Based on that Phase I and II characterization of the contamination, MDE will determine if additional investigation and/or whether remediation will be required. However, after the second phase of laboratory testing, MDE will ramp up the required cleanup at a significant, unexpected cost to the developer. Industry representatives assert that this kind of unpredictability is untenable and creates a barrier to participation in the program.

To answer these concerns, industry representatives offer specific proposals to reform the VCP, urging that the General Assembly act to:

- make non-polluting owners eligible for BRIP funding; and
- increase the predictability of MDE's requirements for cleanup by limiting use of Phase II studies;

Industry representatives noted that Congress recently enacted the federal Brownfields Revitalization Act, and that the Maryland General Assembly should move quickly to incorporate those more reasonable provisions into state law. It is worth noting, however, that EPA is in the midst of conducting a rulemaking to interpret the meaning of key terms in the federal Act, and until those deliberations are complete, it is unclear whether the federal law will become the panacea industry expects.

In addition, industry representatives urge that MDE make greater use of "presumptive remedies," which allow developers to avoid expensive testing and instead to design a remedy based on what types of contaminants are typically located at properties with the same historical use. For instance, in the case of a contaminated dry cleaner, MDE can reasonably predict what contaminants are present, eliminating the need for an expanded list of chemicals to be tested and lowering the overall cost of Phase II laboratory work.

OTHER STAKEHOLDERS' RESPONSES

Government and environmental group stakeholders strongly dispute industry's critique of the VCP and BRIP, contending that both programs have been successful at achieving their dual redevelopment and cleanup goals.

Environmental stakeholders argue that the major impediment to success is that the VCP has not been coupled with necessary enforcement of the state's Superfund law and that, if anything, MDE should receive increased resources that would establish enforcement as the clear alternative to volunteerism. Government stakeholders generally agree with this assessment, and have begun a program of sending notification letters to parties thought to be liable for contamination at sites on the state's Master List. However, government officials acknowledge that they do not have the resources to enforce Voluntary Cleanup agreements, much less bring large numbers of enforcement actions.

Environmental and government stakeholders also say that a marketing program about the VCP targeted at developers would increase participation in and understanding of the program. While government sources report that participation is up 65% from last year, they add that many developers are not yet fully aware of the benefits of the program.

Government and environmental group stakeholders say the VCP and BRIP are reasonably successful. If the programs have not lived up to their full potential, it is because the system of enforcement that is supposed to drive the incentive for owners to clean up contaminated property is not in place, they say. Rather than suggest fundamental changes to the law, government and environmental stakeholder support increased BRIP funding for developers in the form of grants and tax credits and more aggressive implementation of the two programs. Furthermore, environmental stakeholders say that those liable under the state and federal Superfund laws should remain so, and that taxpayers should not have to pay for cleanup through tax breaks or state grants. Alternatively, environmentalists suggested that a public campaign to "shame" larger owners into cleaning up their contaminated properties may prove as productive as enforcement in achieving cleanup.

Government officials say they have implemented several methods to help participants keep down testing costs wherever possible. These methods have included development of soil and groundwater cleanup standards to increase the predictability of when a cleanup would be required, use of EPA Brownfield funds to perform Phase I and II assessments at no cost to the site owner, and the use "high technology" field laboratory equipment to test samples at low costs. They also say that if they were better informed about the participant's plans for a site, they would be better equipped to provide a more adequate testing program and remedy. On the other hand, government officials, charged with "protecting public health and the environment," say that the two-phased assessment system provides them with the knowledge they need about a property's contaminants before they can agree to waive liability for it.

Environmentalists expressed a desire to see more focused development of abandoned and under-utilized shopping centers in place of the building of malls and shopping centers on green spaces. In fact, shopping centers containing a dry cleaner that has caused contamination are the most common brownfield redevelopment. Environmentalists identified several ways in which shopping center redevelopment helps the environment. Because the land is already paved, such development would cut down on the increase of impervious surfaces that result from greenfields development. Furthermore, such centers generally are located along existing roads, making them ripe for mixed use development where residences, business and retail can commingle in the type of development environmentalists and others have identified as the best use of land.

RECOMMENDATIONS

Opinions about the VCP and BRIP are perhaps as bifurcated as the programs' dueling goals. The programs seek to achieve environmentally protective cleanups at the same time that they seek to encourage economic development. Environmentalists and government representatives say they work because cleanups are generally protective; industry representatives say they do not work because they do not sufficiently encourage development.

Additionally, the programs suffer from a lack of resources that undermine the incentives to participate. But even with the lack of resources, the VCP has established a respectable track record of success. After a slow start, the number of properties and total acreage in the programs has risen significantly and the number of remediated acres (600) is nearly triple the state's original goal (222). What is needed is not a significant change in the underlying laws, but rather the addition of incentives, including enforcement, to get recalcitrant landowners into the program and an expansion of the efforts targeting inner city properties. While incorporating the provisions of the new federal law may make some sense, it is also clear that administrative changes would accomplish appropriate reform of the VCP.

Maryland should resuscitate the enforcement of the state's Superfund law by committing additional state resources initially, and then funding the program through costs and fees recovered.

Many of the complaints from industry are grounded in a dislike of the federal Superfund law, more than in the dysfunction of the state VCP. However, even if Maryland were to change its liability scheme, parties would remain liable under the federal law.

Furthermore, as a matter of policy, Maryland has committed both to protecting public health and the environment and to focusing development on priority areas to discourage loss of green spaces. The VCP is a critical tool in achieving those goals.

However, participation in the VCP is likely to decrease over time without either a significant influx of taxpayer dollars to pay for the cleanup or a significant increase of enforcement to compel owners to clean up their contaminated properties. Neither the federal nor state governments have dedicated resources necessary to enforce the law, so many responsible parties have chosen not to abide by it. Liability protections offered by the VCP have encouraged many developers to work with MDE to clean up and revitalize contaminated land, but only on the most desirable parcels. As those parcels are bought up, developer participation is likely to decrease as well. Contamination will remain on thousands of acres unless the responsible parties remediate them. The longer the contamination remains, the more expensive it becomes to remove and the worse the impact of the pollution grows, especially if it comes into contact with groundwater.

The benefit of enforcement is that it requires those responsible for creating the sites, or those who have purchased that responsibility from the originally liable parties, to pay for cleanup. Taxpayers do not bear the burden. MDE has had moderate success luring responsible parties into the VCP. However, with only four full-time employees engaged in enforcement and

a limited environmental enforcement budget in the Attorney General's office, MDE lacks the resources to pursue responsible parties who refuse to cooperate. While enforcement will require an influx of resources, it will be small in comparison to the cost to taxpayers if the state assumes the responsibility for cleanup.

MDE should sanction "institutional controls" only when a mechanism can be implemented for policing compliance with those restrictions over the long-term.

Developers have increasingly turned to temporary and institutional controls as a solution to contamination problems. A common example of a temporary institutional control is a deed restriction barring property owners from disrupting the thin layer of concrete poured over polluted soil. These remedies are far less reliable than more expensive removal or encapsulation of the contamination, in large measure because few owners or renters continuously consult their deeds. MDE does not have the resources to inspect such institutional controls. In one location, MDE required the developer to create a homeowner association assigned to police compliance with such a restriction. MDE should insist on similar provisions at every property that uses institutional controls in lieu of cleanup.

The MDE should expand its processes to provide for increased communication between the agency and the participating party early in the process.

One of the primary complaints from participants in the VCP is the unpredictability of the cost of the remediation plan and time for approval. One answer to this problem would be for the participants to engage in early communication with MDE about its proposal for future use of the property, expected contaminants, and expected remediation requirements.

Maryland, local governments, and private enterprises should continue to invest federal and state money in assessments of inner city contaminated property to "jump start" developer interest in redeveloping this land.

Use of federal money to assess properties is an excellent way to leverage scarce outside resources, making properties more marketable because the risk they pose is measured and characterized. In addition, state BRIP funding should be increased to support brownfields redevelopment.

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SECTION EIGHT: BUDGET AND PERSONNEL

SCOPE OF THE PROBLEM

The state is projecting a budget shortfall of over one billion dollars for the next fiscal year, the largest one-year deficit in state history. At this critical point, each dollar must be spent efficiently.

The transition team advising Governor-elect Robert Ehrlich has proposed the consolidation of Departments of Environment and Natural Resources to save money and increase efficiency. This idea is not new. It was considered by Governor Glendening when he first took office, but never came to fruition because stakeholders dependent on both agencies – especially DNR – opposed it vigorously.

The value of consolidating and streamlining crucial government programs is obvious and, in fact, is a key finding and recommendation of this report. But if the merger of the two agencies is used as a rationale for cutting their budgets precipitously, the results could be no less than devastating for the environment. With these considerations in mind, this section of the report seeks to answer the following questions:

1. **How much do we spend on environmental programs under both the operating and capital portions of the overall state budget and what are the sources of this funding?**

2. **Which programs are under-funded and what are the implications of across-the-board budget cuts on those activities?**

3. **What should be done to improve the fiscal stability of environmental programs and avoid harmful cuts in a time of severe deficits?**

4. **What other management problems undermine the effectiveness of environmental protection programs?**

ENVIRONMENTAL SPENDING IN MARYLAND

Maryland spends about $131 per person annually to protect the environment. Including funds from both the operating and the capital budgets, Maryland spends approximately $697 million on the environment. Approximately $420 million is spent from the operating budget, which is about 2.5% of the state's $22 billion operating budget. Capital funding for environmental programs total $277.1 million, which is 9.2% of the state's $3 billion capital budget.

THE OPERATING BUDGET

MDE received $160,626,436 for fiscal year 2003. This includes PAYGO, special, and federal funds. According to the Office of Budget and Management, MDE comprises less than 1% of the overall operating budget. DNR received $234,746,937 in fiscal year 2003, comprising about 1.3% of the overall operating budget. MDA's Office of Resource Conservation received approximately $22 million for environmental protection programs, which is about one-fourth of MDA's total budget. The Governor's Office of Smart Growth received $257,851 for two positions. It is important to keep in mind that significant portions of this money are provided by user fees, as opposed to general tax revenues, as will be explained further below.

THE CAPITAL BUDGET

Capital funding for environmental programs total $277.1 million, which is approximately 9.2% of the state's $3 billion capital budget. Agencies such as MDE, DNR, and MDA use capital funds to support projects designed to last more than 15 years.

Capital Expenditure. An expenditure for the acquisition or construction of buildings or other fixed assets, or for other tangible assets with a useful life of at least 15 years.

Federal Funds. Grants and other payments from the federal government which flow through the state budget.

General Funds. The governmental fund into which revenues are deposited if they are not dedicated to particular expenditures, and from which most discretionary spending is made. Income taxes and sales taxes provide the bulk of Maryland's general fund revenues. About half of the state's expenditures are made from the general fund.

Reimbursable Funds. Many activities of state agencies are performed for other state agencies. Reimbursable funds are an accounting technique used to record these expenditures without overstating total expenditures.

Special Funds. Special funds are a particular source of revenue *dedicated* to a specific category of expenditures. Such revenues are paid into a special fund, and the expenditures are charged against the special fund.

Source: *Budget Priorities, FY 2003 Budget,* Office of Budget and Management, State of Maryland, 95 (2002).

Environmental Programs Funded by Capital Funding

Land Preservation Programs. $151.1 million for preservation programs such as the Rural Legacy Program, Program Open Space, and the Agricultural Land Preservation Program.

Water and Wastewater Infrastructure. $68.9 million for local drinking water and wastewater treatment systems.

Chesapeake Bay Restoration Programs.
- $31.2 million to reduce point and nonpoint source nitrogen.
- $19.6 million for Biological Nutrient Removal ($8.2 million for seven pfiesteria-related projects).
- $8.6 million to reduce nitrogen and phosphorus run-off from urban, suburban, and agricultural lands.
- $3 million for oyster restoration.

State Park and Waterway Improvements. $19 million.

Environmental Cleanup and Mitigation Programs. $6.9 million.

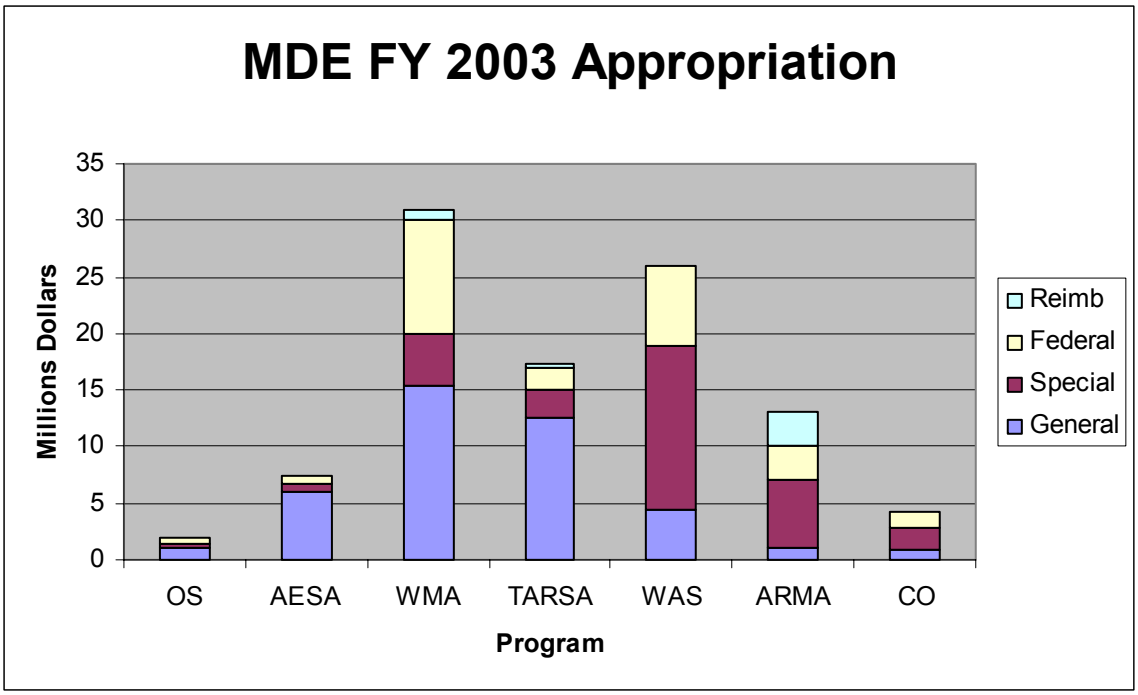
SOURCES OF FUNDING

Maryland's Operating Budget for environmental departments and programs consists of:

- ***general funds*** raised by a collection of individual and corporate taxes;
- ***special funds*** raised by the imposition of ***user fees*** on those who receive services, including licenses and permits, from the department; and
- ***federal grants*** awarded to states that undertake to implement initiatives established under federal law.

Political leaders in the state have spent several weeks preparing Maryland residents for severe budget cuts in the first category – general revenues, and these reductions are likely to be proposed as an across-the-board percentage of all state programs. Although such an across-the-board cut appears likely, changes in special funding have yet to be put on the table and the decisions the state makes will have only limited effect on federal funding. (Some federal funding programs require states to provide a "matching share" and could be affected if state budget cuts deprive MDE and other agencies of the resources necessary to meet those matches.)

As the following figure illustrates, some environmental programs receive significantly larger funding from state general revenues than other sources and an across-the-board cut would cause disproportionate harm to those programs, while leaving others relatively untouched.



OS **Office of the Secretary**

AESA **Administrative and Employee Services**

WMA **Water Management Administration (hazardous and solid waste management and enforcement, voluntary cleanup and brownfields programs)**

TARSA **Technical and Regulatory Services Administration (standard setting, including TMDLs)**

WAS **Water Management Administration (CWA permitting and enforcement)**

ARMA **Air and Radiological Management Administration (CAA permitting and enforcement)**

CO **Coordinating Offices (audits, communications, permit service center)**

For example, MDE's water quality programs receive 60% of their funding from general revenues while its air quality programs receive only 10% of their funding from that source. Similarly, MDA's Office of Resource Conservation receives 78% of its funding from general funds. MDA's efforts are already pitifully under-funded, with only six inspectors available to assess nutrient management plans and supervise their implementation. A 10% reduction in general revenues would therefore have a devastating impact on MDA's ability to implement the WQIA and MDE's ability to protect and improve water quality.

Compounding this anomaly is the likelihood that, if confronted with across-the-board budget cuts, MDA will encounter severe pressure to focus on providing technical and administrative support to farmers through programs that have nothing to do with nutrient management. Yet the funding needs for nutrient management are also acute. Last year, for example, the General Assembly increased the Office of Resource Conservation's funding by $1.5 million to address a backlog of more than $600,000 in funding requests for nutrient management planning. Other cost-sharing programs, especially cover crop initiatives, could also suffer inordinate shortfalls. These outcomes would be particularly unfortunate because cover crops are considered to be the most effective and cost-effective way of reducing nutrient run-off.

In sum, water quality programs would be undermined drastically by an acoss-the-board budget cut. It has taken a significant amount of resources to maintain the status quo. Such a cut would clearly result in the loss of the state's hard-won gains in protecting the Bay. Because the Bay provides an estimated $31 billion in annual benefits to Maryland and Virginia, this outcome seems acutely self-defeating.

MANAGEMENT ISSUES

MDE, MDA, and MDNR are managed by senior civil servants who are highly skilled and extraordinarily committed to serving the public interest. In too many areas, however, government lacks the flexibility and resources to provide the working environments necessary to retain technical employees.

MDE's problems are especially acute because it labors under an outmoded, unduly rigid series of job classifications that do not compensate government personnel on the basis of their expertise. If MDE wishes to promote an employee and confer a significant salary increase, it must place her in a supervisory position. Many professionals in scientific and technical areas are not interested in management positions and prefer working as technical experts. MDE faces stiff competition for the most talented staff with other sectors of the economy. Consequently, its best professionals can leave to make higher salaries, avoiding the additional management responsibilities that are a prerequisite for promotion within state government. As a result of these pressures, MDE suffers from a perpetual revolving door and regularly loses employees not just to the private sector, but to more lucrative positions on the county level.

The following chart dramatically demonstrates the problem, showing that even local governments are able to pay civil engineers more than MDE can.

Maryland Salary Comparisons: Civil Engineers			
Employer	**Average Minimum**	**Average Mid Point**	**Average Max**
Local Government: Large Jurisdiction	$43,086	$52,988	$65,045
Local Government: Average	$41,877	$54,103	$66,329
Large companies	$45,792	$62,405	$79,019
Medium companies	$42,031	$69,327	$96,623
Small companies	$38,400	$60,858	$83,316
Maryland State Government	$39,766	$50,941	$61,794

In addition to the problem of the revolving door of personnel, Maryland's environmental compliance programs suffer from an overwhelming workload for inspectors in too many important programs.

Inspectors	Number of Sites
Air Quality Compliance Program: 23 stationary source inspector positions, of which 18 are filled.	10,000
Water Management Administration: 44 point source inspector positions, 33 of which are filled.	1200 point sources, plus all activities that may compromise wetlands
MDA's Office of Resource Conservation: Six Nutrient management Plan inspectors.	12,000 covered farms

USER FEES

Beside general revenues and federal funding, special funds supported by user fees are a major component of both MDE and DNR's budgets. The General Assembly normally sets the costs of such fees. When they are collected, the fees are deposited in special funds that may only be spent for specific purposes. Therefore, MDE requires individuals and businesses to obtain a permit – and pay a permit fee -- before conducting certain activities that may harm the environment. For example, industrial sources are required to obtain permits before discharging wastewater or emitting airborne pollutants. The user fee imposed for such permits vary depending on the degree of complexity of the requested activity.

A number of permit fees have not been increased in years, with the result that the level of funding they provide has not kept pace with inflation and that the purchasing power of special funds is much lower than the General Assembly intended originally. The following chart analyses some of the major permits issued by the MDE. For each permit, the current fee is listed along with the date in which the fee was last updated.

Major Air Permits and Their Current Costs		
Permit	**Current Fee**	**Last Date Fee Raised**
NSR Approval Permit	$20,200	1989

Selected Water Permits and Their Current Costs		
Permit	**Current Fee**	**Last Date Fee Raised**
Surface Water Discharge Permit	Initial fee: $50- $20,000 Annual fee: $100- $5,000	1993
Industrial Wastewater/Stormwater General Discharge Permit	Initial fee: $0- 20,000 Annual Fee: $0-$5,000	1994
Groundwater Discharge Permit	Initial fee: $50-$20,000 Annual fee: $100- $5,000	1993
Water and Sewage Construction Permit	$125-$2,000	1992
General Permit for Construction Activity	$0-$2,500	1994

In addition, MDE issues several permits without imposing a user fee. For example, there is no fee required to receive a water appropriation permit. Last year, MDE's Water Appropriations Division issued over 1600 permits. Of those permits, over 100 were for large appropriations, requiring in-depth technical analysis and public participation, including the opportunity for a public hearing. Depending on the number of regulated entities, even relatively small fees can raise the state's special fund account by significant amounts. The following chart lists permits that do not require any fee.

Major Environmental Permits That Carry No Fee	
Water Appropriation and Use Permit	This permit is required for any activity that withdraws water from the State's surface and/or underground waters unless exempted.
Non-Tidal Wetlands Permit	A permit is required for any activity that alters a non-tidal wetland or its 25 foot buffer.
Waterway and 100-Year Floodplain Permit	A permit is required for any construction (dams, bridges, channelization, etc.) or repair in a waterway or 100-year floodplain.
Toxic Materials Permit	Any homeowner or farmer who wants to control aquatic life in ponds, ditches, or waterways by deliberate use of toxic chemical is required to obtain this permit.

STAKEHOLDER VIEWS

CURRENT FUNDING LEVELS

Stakeholders from industry, government, and environmental groups agree that MDE's budget and personnel resources are insufficient to provide timely customer service, effective enforcement, and comprehensive planning. Former senior government officials we interviewed estimate that MDE's operating budget is 50% less than what it needs to implement federal and state statutory mandates. Crucial functions, including permit writing and inspection of major facilities, are crippled.

Likewise, stakeholders involved with the implementation of the WQIA agree that MDA lacks the necessary resources to adequately implement nutrient management programs. Most industry stakeholders believe that the nutrient management plan regulations have created an administrative morass that distracts from more effective, cost-sharing initiatives.

CONSOLIDATING DNR AND MDE

While acknowledging that the budget deficit makes it imperative to streamline and consolidate government programs, stakeholders are divided on how best to accomplish this goal.

One senior government official offered arguments for and against merging MDE and DNR. He reasoned that, because DNR has a more devoted constituency than MDE by virtue of the fact that it is not primarily a regulatory and enforcement agency, a good argument could be made that government's overall reputation in the environmental area would benefit by bringing the agencies together. Such a move would probably improve the perception of MDE's regulatory functions as well as encourage more focused environmental leadership. He cautioned, however, that great savings probably would not result from consolidation, adding that crucial programs in both MDE and DNR are severely under-funded, and consolidation would not alleviate those shortfalls. Finally, this official noted that one unavoidable consequence of consolidation would be great disruption as personnel from both agencies "jockeyed for position and protected their turf."

Many other stakeholders, representing industry and environmental groups, agree that MDE's reputation is always mixed from the perspective of industry because it is a regulatory agency. Unlike DNR and MDA, MDE has far fewer opportunities to conduct service-oriented programs.

Regardless, however, some business and environmental stakeholders believe that keeping the agencies separate is desirable for several reasons. First, some stakeholders believe that it is both necessary and effective to separate regulatory and resource management functions. Combining these functions within one agency could blur the focus of both. Inevitably, the agency as a whole would concentrate its efforts on either pollution regulation or conservation – it would have a hard time doing both to the same extent. Second, one environmental stakeholder pointed out that MDE has had to hold DNR, as well as other state agencies, accountable for

violating environmental regulations in the past. If the agencies were combined, the regulatory division would have a difficult time holding other divisions within its same agency accountable, according to one government stakeholder.

Federal officials indicate that almost all of Maryland's neighboring states have separate departments for natural resource and environmental regulatory functions. Pennsylvania, Virginia, and West Virginia have separate departments. Only Delaware combines the functions, and that state is looking at putting them into separate entities.

MANAGEMENT PROBLEMS

Instead of consolidating the agencies, some industry stakeholders contend that MDE should strive for a more customer service-oriented culture. Stakeholders from the agricultural community are particularly upset by MDE's recent co-permitting or permit integration efforts which are designed to hold large poultry producers accountable for their contract farmers' nutrient management problems.

An agricultural stakeholder noted that MDE does not have the resources to compete with private industry for staff, but said that MDE "has the potential to be dynamic" if it was led by senior people with strong leadership and managerial skills.

Other industry stakeholders stated with great frustration that permitting decisions for new facilities took more than 18 months, especially in the wetlands area. These delays stymy development and cost business considerable additional money. This stakeholder pointed to Pennsylvania's efforts to improve the image of its environmental agency. In addition to changing its name, the agency developed a program that raised permitting fees in exchange for improved service. If Pennsylvania agency does not meet its deadline in providing the permit, the individual or organization requesting the permit receives it for free.

Several business and environmental stakeholders note that MDE managers appear very defensive, apparently because these managers believe they are vulnerable to attack from outside parties. As a result, senior managers have a difficult time delegating responsibility to their subordinates. This degree of control from the top, stakeholders say, makes it hard to transact routine business with the Department. According to one senior federal official, Maryland's repeated budget crises have prevented MDE from getting sufficient traction regarding environmental problems, despite many talented staff and some exceptionally good and innovative ideas.

One stakeholder suggests that a blue ribbon panel be created to determine how the agency could be more effective. Yet many other stakeholders believe that Maryland has been too quick to create blue ribbon panels, committees, and task forces. One problem is that these organizations are underfunded. Another is that the same people are required to attend multiple task forces that have the same issues. This duplication of effort wastes time and resources. One government stakeholder expresses exasperation with the reporting burdens, noting that "it seems like writing reports is all we do."

In addition, some government officials think partnerships are necessary in time of limited resources. They believe collaborative efforts between state and federal entities and among public and private groups are required. They also recommend that Maryland develop new statutory and regulatory systems that provide flexibility in achieving measurable environmental progress, and which make information systems more timely, accurate and transparent. They believe this will improve the effectiveness and efficiency of environmental decision-making and joint planning.

RECOMMENDATIONS

To meet the deficit without burdening the general taxpayer, and to restore the credibility of crucial enforcement programs, user fees must not only be updated, but must be imposed for permits that are now free.

MDE should increase all user fees to give them the same purchasing power as they had when they were passed. Additionally, fees should be added to permits that are free, with levels set in proportion to the size and overall resources of applicants. This would be an equitable way to increase MDE's revenue because parties that benefit from the services MDE provides would be required to pay the current value for those services.

Both government and business stakeholders believe Maryland can improve its efficiency in key areas by offering incentives to industry in exchange for user fee increases. For example, Maryland could offer increased fees in exchange for faster permit review, or offer fee reductions if permit approval is particularly slow.

The state should revise outmoded job classification schedules so that MDE may promote employees without placing them in supervisory positions.

The state's job classification schedule currently inhibits MDE from promoting employees based on their expertise. If MDE wishes to promote an employee, it must place them in a supervisory position. Because many professionals in scientific and technical areas are not interested in management positions, these professionals can leave MDE to make higher salaries without having to take on additional management responsibilities.

The General Assembly should convene a blue ribbon panel along the lines of the commission chaired by Governor Hughes that was formed to deal with the Pfiesteria crisis. This panel should be adequately funded, and should be mandated to develop recommendations regarding how to consolidate duplicative agency functions to increase efficiencies.

Sources

Lori Montgomery, "Maryland Facing $1 Billion Deficit" A01 Washington Post, Aug, 30, 2002.

Budget Priorities, FY 2003 Budget, Office of Budget and Management, State of Maryland, http://www.dbm.state.md.us/html/2003priority.pdf.

Business Guide to Environmental Permits and Approvals, MDE, http://www.mde.state.md.us/Permits/busGuide.asp

APPENDIX A: LISTING OF STAKEHOLDERS

GOVERNMENT

FEDERAL:

U.S. EPA Region 3

Donald Welsh, Regional Administrator
Thomas Voltaggio, Deputy Regional Administrator
Michael Burke, Director of Government Affairs

STATE:

Maryland Department of Agriculture

Hagner Mister, Secretary
Royden Powell, Assistant Secretary

Maryland Department of Business & Economic Development

David S. Iannucci, Secretary

Maryland Department of Natural Resources

Charles Fox, Secretary

Maryland Department of the Environment

Jane Nishida, Former Secretary
Ronald Nelson, Former Deputy Secretary
Shari Wilson, Office of the Secretary

Maryland Department of Transportation

Marsha Kaiser, Director of Office of Planning and Capital Programming
Meg Andrews, Planner, Office of Planning and Capital Programming

Maryland Environmental Services

James Peck, Director
Robert D. Miller

Maryland Governor's Office of Smart Growth

Jessica Cogen, Chief of Staff

Maryland Port Administration

Rick Sheckells, Director of Planning and Environment

INDUSTRY

Allen Family Foods

Robert Mitchell, Corporate Environmental Manager

Constellation Energy Group

Edward Davis, Director of Environmental Management
John Quinn, Lead Engineer
Mary Dempsey, Manager of Public Affairs
Alexander Nunez, Senior Public Affairs Representative & Annapolis Counsel
Edward Tracey, Director of Environmental Management

Delmarva Poultry Industry Association

Bill Satterfield, Executive Director

Gordon, Feinblatt, Rothman, Hoffberger & Hollander, LLC

Michael Powell, Esq.

Maryland Chamber of Commerce

Monica Best James

Maryland State Builders Association

Kathleen L. McHugh, Executive Vice President & Director, Legislative Affairs

Maryland Farm Bureau

Stephen L. Weber, President
Valerie T. Connely, Director, Government Relations

Mountaire Farms, Inc.

Jeff Smith, Environmental Manager

Pepco Holdings, Inc

James S. Potts, Vice President - Safety & Environment

Perdue Farms Incorporated

John Chlada, Vice President of Environmental Services

Piper Rudnick, LLP

Deborah Jennings, Partner & Chair, Environmental Practice Group

Sasol North America Inc.

David Mahler, Environmental Manager

PUBLIC INTEREST GROUPS

1000 Friends of Maryland

Dru Schmidt Perkins, Executive Director

Audubon Naturalist Society

Neal Fitzpatrick, Executive Director
Dolores Milmoe, Maryland Conservation Associate

Chesapeake Bay Foundation

Theresa M. Pierno, Maryland Executive Director

Cleanup Coalition

Terry Harris, President

Sierra Club

Jim Fary, Conservation Chair for Montgomery County
Ed Merrifield, Immediate Past Chair
Richard Klein, Community & Environmental Services

APPENDIX B: ENVIRONMENTAL PROGRAMS: WATER QUALITY

In effort to understand where the state has focused its efforts in this area, we compiled a chart of all of the state programs we could identify that are directed toward solving our water quality problems. The chart is extensive for several reasons. First, water quality has been a concern in Maryland for many years. The number and diversity of programs reflects this history. Second, programs developed in response to water quality "emergencies." The best examples are the various nutrient management programs that emerged after the *Pfiesteria* scare in 1998. Third, many of the programs are in response to federal mandates and/or federal funding opportunities. MDE, for example, must enforce the Clean Water Act while the Department of Agriculture's CREP program is in response to a federal funding opportunity.

The chart is organized by government entity and then by program. Each program is then broken down by source of authority, status, budget, and a brief description. The programs are then keyed by the broad categories described in the text of the report and indicated by the chart on the right. Of course, many state programs include several of these categories. This report attempts to identify programs serving multiple functions when possible while focusing on the primary goals of the program for the sake of clarity. Finally, the activities listed related only to water quality; some of the programs have other functions and duties that do not appear on this chart. For example, the Emergency Operations Program under the Technical and Regulatory Services Administration at MDE a variety of responsibilities, only some which involve water quality.

Department of Environment

Program(s)	Source of Authority	Status	Budget	Notes
The Maryland Water Quality Financing Administration (WQFA) INF, REP, $	Environmental Article Section 9-16. Est. pursuant to the CWA of 1987 and the Md Water Quality Financing Administration Act.	Report: 6/3/02: *Intended Use Plan*. FY 2002: 6 capitalization grant projects at $37,402,354 (4 of which are going to Patapsco WWTP) FY 2002: 45 "recycled funds" (funds from fund earnings) projects at $79,150,000.	Total: $117,842,091 Consists of: ▪ FY 2002 Fed Capitalization Grant: $32,243,409 ▪ State General Fund Match: $6,448.682. ▪ Est. Invest. Earnings/Repayments: $79,150,000.	The Administration's purpose is to encourage capital investment for wastewater and drinking water projects pursuant to the Clean Water Act of 1987, and the Safe Drinking Water Act and Amendments of 1996. ▪ Manages the Water Quality State Revolving Loan Fund (WQSRF) -- Low interest loan program that may be used to finance the planning, design and construction of capital projects to upgrade wastewater collection and treatment systems, and to finance capital projects to address non-point source water pollution. ▪ Issues bonds subject to approval of the State Board of Public Works and Secretary of the Maryland Department of the Environment (Department). **WQRLF assistance is available for:** Point Source Pollution Prevention (Public Entities/Local Governments Only): ▪ Wastewater Treatment Plant Improvements/Expansion including State Grant Match for Biological Nutrient Removal (BNR) Facilities ▪ Sewerage Collection/Conveyance Systems including New/Replacement Sewers ▪ Correction of Excess Sewerage Infiltration/Inflow (I/I) and/or Combined Sewer Overflow ▪ Sludge Handling Facilities at Wastewater Treatment Plants ▪ Landfill Leachate Pretreatment Facilities ▪ Back Wash Facilities at Drinking Water Treatment Plants Nonpoint Source Pollution Prevention Public and Private (See Linked Deposit) Entities: ▪ Wellhead Protection (Drinking Water Source) ▪ Landfill Closure ▪ Stream Corridor Restoration/Protection ▪ Hazardous Waste Clean-up (Brownfields) ▪ Shoreline Erosion Control ▪ Agricultural Nutrient Management Plans and Water Soil Conservation Plan

				Projects selected from a priority list based on their: 1. Water quality benefit ranking per the Integrated Project Priority System 2. Consistency with Smart Growth/Priority Funding Area legislation, and 3. Readiness to proceed to construction by 12/2003.
Linked Deposit Program INF, $	Environment Article Section 9-16. Est. pursuant to the CWA of 1987 and the Md Water Quality Financing Administration Act.	As of March 2002, 49 NPS projects totaling $3.2 million have been financed.	$5 million of "recycled" funds. Because funds are still available, no additional funds are being allocated in the 2002 IUP for Linked Deposit.	A mechanism that provides below market rate of interest loans through a network of private lending institutions for eligible private NPS projects to be funded on a first come first served basis.
Water Management Administration Programs Administered by WMA:	Environment Article, Title 4.		FY 2003: $28,871,048 Authorized positions: 332 Positions funded: 285. General funds: $15,278,805 Special funds: $6,932,285 Federal funds: $6,659,958	The mission of the Department's Water Management Administration (WMA) is to restore and maintain the quality of the State's ground and surface waters; and to plan for and supervise the development and conservation of the State's waters. WMA manages a broad range of activities, including regulating and financing municipal wastewater treatment systems, regulating the use and development of the State's water resources, public water supplies and on-site residential sanitation systems; regulating well-drilling and industrial pretreatment; providing technical assistance for water and wastewater utilities; financing small creek and estuary restoration; approving erosion/sediment control and storm water management plans; storm water permitting; dam permitting and inspection; protection and management of tidal and nontidal wetlands and waters; and regulating mining activities and mitigation problems associated with abandoned mines. *STATE WATER QUALITY ADVISORY COMMITTEE*
Water/Wastewater Permits Program REG	Environment Article, § 9-3 ; COMAR 26.08.01-26.08.04 and 26.08.08. Clean Water Act, 33 USC §§ 1311(a), 1342.	▪ 11 permit writers for municipal sources. ▪ 3 permit writers for industrial sources.		▪ Issues permits for industrial facilities required under state and federal law under the National Pollutant Discharge Elimination System (NPDES). ▪ Issues pretreatment permits for municipal wastewater treatment systems ▪ Issues permits for municipal sewage wastewater treatment plants under the National Pollutant Discharge Elimination System (NPDES). ▪ Issues groundwater discharge permits to control the disposal of treated municipal or industrial wastewater into the groundwater. ▪ Issues toxic materials permits for any homeowner, farmer, local government who wants to control aquatic life in ponds, ditches or waterways by use of toxic chemicals.
Wetlands and Waterways Program PL, MGT, EDU, REG		Goal: 60,000 wetland acres restored.	Restoration efforts funded from EPA grant CD983039-01-0.	MDE's Wetlands and Waterways Program seeks to conserve valuable aquatic systems; providing for the environmental, economic and resource needs of Maryland. ▪ Issues permits regarding wetland development. ▪ Develops the *Wetlands Conservation Plan.* ▪ Provides and develops guidance manuals for wetlands development. ▪ Supports wetlands reclamation efforts in response to the Governor's 60,000 acre wetlands Restoration Initiative. *Cooperative Effort with DNR, Dept. of Ag., Local Conservation Districts, Local Health Departments.*
Nonpoint Source Program	Environment Article, Title 4, Subtitle 1 for erosion and sediment control, and Subtitle 2 for stormwater management. These statutes are further defined in COMAR 26.09.01 and	Report: *Stream Response Report,* 2000.		The purpose of Maryland's erosion/sediment control and stormwater management programs is to reduce stream channel erosion, pollution, siltation and local flooding caused by land use changes associated with urbanization.

REG, EDU, REP	26.09.02.`			Erosion/sediment control plans are reviewed and approved by the Department. These plans must meet the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control and adhere to the Erosion and Sediment Control Guidelines issued by the Department in January 1990, and Stormwater Management Guidelines For State and Federal Projects issued by the Department in July 1987. ▪ Developed and adopted the 2000 Maryland Stormwater Design Manual, Volumes I & II (COMAR 26.17.02.01-1). ▪ Publishes *Maryland Stormwater Management Guidelines for State & Federal Projects*. ▪ *Soil Erosion/ Sediment Control and Stormwater Management Programs*
Water Quality Infrastructure Program REG, INF, $	Environment Article, Title 9; COMAR 26.03.12.			The purpose of water and sewerage construction permit is to ensure that infrastructure projects throughout the State are designed on sound engineering principles and comply with State design guidelines to protect water quality and public health. Water and sewerage construction permits are required before installing, extending or modifying community water supply and/or sewerage systems including treatment plants, pumping stations and major water mains and sanitary sewers.
Water Supply Program REG	Environment Article, Title 5, §4-203 and §5-501-514, COMAR 26.17.06.		FY 2003: $4,529,075 Authorized positions: 52 Positions funded: 49. General funds: $935,379 Special funds: $148,502 Federal funds: $3,445,294	Issues water appropriation and use permits for any activity that withdraws water from the State's surface and/or underground waters unless exempted.
Compliance Program MA, REG, ENF, REP	33 USC §§ 1311(a), 1342.	44 inspectors for 700 entities. Enforcement Compliance Report.	NPDES Permit Compliance Monitoring--Funded under §106 of the Clean Water Act.	▪ ***NPDES point source permit monitoring.*** MDE conducts between four and 8 localized intensive water quality studies annually addressing specific permitting concerns. These studies are conducted to evaluate pollutant loading for resolution of disputed permit renewals or requests for increased constituent loads. This monitoring program is designed to compliment the Watershed monitoring ("Cycling Strategy") for water quality impairment determination and TMDL development described above. ▪ ***NPDES Permit Compliance Monitoring.*** This function is a required under the Section 106 federal grant to the State. It has been conducted since the early 1980s. It involves monitoring at approximately 60 "major" domestic wastewater treatment plants that discharge more than one million gallons per day.
Mining Program REG, ENF	Environment Article, Title 15, §§5 and 6; COMAR 26.20.01, 26.21.01. Federal Surface Mining Control and Reclamation Act of 1977,			▪ Issues coal mining permits ▪ Issues surface coal mining blaster certifications ▪ Issues coal mining operator licenses ▪ Issues non-coal mining permits ▪ Issues surface mining licenses.
Technical & Regulatory Services Administration			FY 2003 $17,410,001 Authorized positions: 178 Positions funded: 167 General funds: $12,796,654 Special funds: $2,825,736 Federal funds: $1,787,611	The Administration provides technical and scientific analyses and data for departmental regulatory activities. It devises solutions to multimedia environmental problems, makes environmental risk assessments, and coordinates Department emergency responses. The Administration also maintains geographic information systems and the Toxics Inventory, does computer modeling of environmental conditions, and monitors shellfish waters for contaminants.
Computer Modeling Program		Maryland currently has 196 water bodies listed on its impaired water bodies' list, and it	For TMDL Development: $4.3 million FY 98-01.	The Program develops and applies mathematical and other predictive models as the basis for Department water regulations and policy. In addition, the Program assesses water quality associated with channel dredging in

S, MA, REG		has committed to establish 371 TMDLs for these impaired waters. To date, Maryland has completed 59 TMDLS, and 15 are due by the end of the year.	$1.5 million FY 2002.	Baltimore Harbor and Chesapeake Bay. ▪ Estuarine Modeling Division ▪ Watershed Modeling Division ***TMDL Program.*** 33 USC § 1313(d). The CWA requires that Maryland: 1. Establish Water Quality Standards (WQS) for its waters. 2. Monitor the conditions of its waters. 3. List waterbodies that do not meet WQSs with technology-based controls alone (303(d) list). 4. Set priority rankings for the waterbodies listed. 5. Establish TMDLs that meet WQS for each listed waterbody. 6. Solicit public comment. 7. Submit 303(d) list and TMDLs to EPA for approval. 8. Incorporate TMDLs into the State's Continuing Planning Process.
Environmental Health & Risk Assessment Program S, MA				By certifying the quality of water for the safe harvest of oysters and clams and establishing water quality standards for State waters, the Program protects public health. The Program monitors shellfish and fish tissues for contaminants; and studies water quality. To evaluate and reduce whole effluent toxicity, the Program oversees tests at municipal and industrial facilities and develops and promulgates regulations to protect the quality of groundwater and surface water. The Program operates through three divisions: ▪ Effluent Toxicity and Evaluation; ▪ Environmental Health and Standards; and ▪ Shellfish Certification.
Environmental Planning & Analysis Program MA, PL, EDU				▪ Ecological Assessment ▪ Environmental Planning & Outreach ▪ Flood Hazardous Mitigation & Right-to-Know Division ▪ TMDL Outreach ▪ Chesapeake Bay Program Coordination ▪ Water Quality Standards
FISH AND SHELLFISH PROGRAM MGT, MA, EDU	Environmental Article § 4-405(c); Environment Article, § 16-102. COMAR 26.08.02.03-3	A total of 129 fish kills were reported in 2001, of which 84 were considered significant enough to warrant on-site investigations. There were approximately 3,390,000 fish mortalities confirmed.		MDE's fish and shellfish programs put a strong emphasis on preventing pollutants from entering the waters of the State, monitoring the quality of shellfish harvesting waters, and testing edible fish tissue to certify that fish are safe for human consumption. ▪ Fish Kill Investigation Section ▪ Fish and shellfish Contaminant Monitoring& Advisories ▪ Shellfish Harvesting Notices
Field Operations Program MA				The Program provides field support, on-site observations, water quality assessments, and data for the Water Management Administration and other Department units. The Program has three divisions: ▪ Compliance Monitoring; ▪ Emergency Response; and ▪ Water Quality Monitoring.
Water Quality Management Continuing Planning Process PL, REP	§303(e) of the federal CWA requires each state to submit this document.	June 23, 2000 draft available for public comment.		The CPP explains the process the State uses to administer its water programs. Also, the CPP describes the methodology to develop plans to protect, maintain, and improve the quality of the State's waters.

Department of Natural Resources

PROGRAM(S)	SOURCE OF AUTHORITY	STATUS	BUDGET	NOTES
Chesapeake & Coastal Watershed Service	Natural Resources Article, Chapter 437, Acts of 1992.		FY2003 appropriation: $14,558,959 authorized positions: 72.5	David G. Burke, *Director* (410) 260-8705. The Service develops and helps implement watershed management strategies and projects to restore and protect the ecosystems of Chesapeake Bay and its watersheds. Departmental responsibilities under the Economic Growth, Resource Protection, and Planning Act are coordinated by the Service (Chapter 437, Acts of 1992). In addition, the Service provides staff support to the Maryland Greenways Commission.
Coastal Zone Management Division The Division includes the following programs:	Created in accordance with the federal Coastal Zone Management Act of 1972.		FY2003: $9,579,096 18 authorized positions. Administers the Program with grants from the National Oceanic and Atmospheric Administration.	Origins of the Coastal Zone Management Division stem from the Coastal Zone Management Program which began in 1973 when the Governor designated the Department of Natural Resources to receive and administer federal grants pursuant to the federal Coastal Zone Management Act of 1972. *COASTAL & WATERSHED RESOURCES ADVISORY COMMITTEE* Established in 1976, the Coastal and Watershed Resources Advisory Committee advises the Secretary of Natural Resources and the *Coastal Zone Management Program* on policy issues affecting Maryland's coastal areas. The Committee consists of citizen and representatives of federal, State and local government; businesses; and private associations.
1. Nonpoint Source Management Program MGT, $	Created under the federal Clean Water Act (CWA) § 319 and § 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 – the Coastal Nonpoint Program.	2001 Annual Report Available	Funding under two mechanisms: ▪ CWA Section 319 -- Nonpoint Source Program planning funds ("Section 319 grants"), and ▪ Coastal Zone Management Act (CZMA) Section 309 – Coastal Enhancement Strategy funds.	Report: 2001 Annual Report Available §6217 Grant Program for Non-point sources --2003 Request for Proposals: Proposals Due September 19, 2002. In addition to funding watershed planning efforts, the Nonpoint Source Program provides grants to state and local governments, and institutions of higher learning to implement nonpoint source pollution control projects and programs. March 2000 – EPA approved the NPS Program Management Plan.
2. Chesapeake Bay National Estuarine Research Reserve System – Maryland. MGT, REP, EDU, RES		2001 Annual Report Available		The Chesapeake Bay National Estuarine Research Reserve in Maryland (NERR-MD) is part of the National Oceanic and Atmospheric Administration's National Estuarine Research Reserve System (**NERRS**). Created in 1972 by the Coastal Zone Management Act (CZMA or "Healthy Coasts Act"), the national system is dedicated to building a network of estuarine reserves that captures the wide range of coastal and estuarine habitats found in the U.S. and its territories.
3. Coastal Bays National Estuary. S, MA, MGT, PL				▪ On June 6, 2002 the Scientific and Technical Advisory Committee to the Coastal Bays, hosted an Environmental Indicators Workshop at Salisbury University in which over 35 scientists attended. The goal of the workshop was to review and finalize a set of environmental indicators to be monitored in the Maryland Coastal Bays. These indicators will provide information on the overall direction, efficacy, and priority of measures being implemented to protect, manage, restore and enhance Maryland's Coastal Bays through the MD Coastal Bays National Estuary Program. The three major categories for indicating progress were water quality, aquatic habitat, and terrestrial landscape. ▪ Maryland Coastal Bays Environmental Monitoring Program ▪ *Costal Bays Comprehensive Conservation Management Plan* ▪ *Eutrophication Montoring Plan*

4. Public Involvement. EDU				This program seeks help from civic and community associations, environmental groups, businesses, and local governments to protect and restore watersheds.
Geographic Information Services Division MA		In 1995, geographic information systems from the Water Resources Administration, the Tidewater Administration, and the Chesapeake Bay Critical Area Commission consolidated to form the Geographic Information Services Division under the Chesapeake and Coastal Watershed Service.	.	The Division includes two programs: a. Geographic Data Production, and b. Geographic Systems Management.
Watershed Management and Analysis Division The Division works through three programs: 1. Ecological Processes; 2. Watershed Analysis and Modeling; 3. Watershed Management and Planning. MA, MGT				The Division identifies sources of **nonpoint pollution** throughout the State as a key element of Maryland's restoration of Chesapeake Bay. The Division also evaluates efforts at and defines options for comprehensive, cost-effective control of nonpoint source pollution. Through research and technical analysis, the Division evaluates water quality statewide, focusing on trends that affect Chesapeake Bay and its tributaries. The Division also coordinates its work with other State agencies, neighboring states, and the federal government. Works with the ***COASTAL & WATERSHED RESOURCES ADVISORY COMMITTEE***. Established in 1976, the Coastal and Watershed Resources Advisory Committee advises the Secretary of Natural Resources and the Coastal Zone Management Program on policy issues affecting Maryland's coastal areas. The Committee consists of citizen and representatives of federal, State and local government; businesses; and private associations.
Surf Your Watershed—Maryland integrated Data and Information System REP	EPA grant.	Currently active on DNR's website.	Funded by EPA State Wetland Program Development Grant.	This project is a cooperative effort with MDE to "catalog" important environmental, socioeconomic, and programmatic information on a watershed basis. The project provides a database in which natural resources and biological information (including hydrologic, hydraulic, and water quality); bibliographic references; contacts, programs and activity descriptions; and other data for watershed management.
Watershed Restoration Three programs come under the Division: 1. Riparian and Wetland Restoration; 2. Watershed Assessment and Targeting; and 3. Watershed Evaluation. MA, MGT, $			FY 2001: $3.5 million were awarded for 12 stream restoration projects in 8 counties across the state. Funds originated through the Transportation Equity Act for the 21st Century.	The Watershed Restoration Division devises watershed management plans and projects to maintain water quality and wildlife habitats. Through technical assistance and training, the Division helps local governments and interested persons assess stream systems and implement watershed restoration plans and projects. The effects of these plans and projects are evaluated by the Division to ensure that environmentally beneficial and cost-effective practices are used. ▪ The Division, on behalf of the Maryland Departments of Transportation (MDOT) and Natural Resources (DNR) is managing a 2 year stream restoration funding program under the Governor's Watershed Revitalization Partnership Program.
Regional Chesapeake Bay Program				The *Regional Chesapeake Bay Program* derives from Maryland's commitment under the 1983 and 1987 Chesapeake Bay Agreements to restore and protect the Bay, particularly its finfish, shellfish, wildlife, and other aquatic life.

PL, MGT				The Director of the Regional Chesapeake Bay Program chairs the Living Resources Subcommittee of the Chesapeake Executive Council, an interstate agency. Under the 1987 Chesapeake Bay Agreement, that subcommittee develops and implements plans to protect and restore habitats, ecosystems, and populations of the Bay's living resources.
Waterway and Greenways Division PL, MGT				Derives from Maryland's commitment under the 1983 and 1987 Chesapeake Bay Agreements to restore and protect the Bay, particularly its finfish, shellfish, wildlife, and other aquatic life. The Director of the Regional Chesapeake Bay Program chairs the Living Resources Subcommittee of the Chesapeake Executive Council, an interstate agency. Under the 1987 Chesapeake Bay Agreement, that subcommittee develops and implements plans to protect and restore habitats, ecosystems, and populations of the Bay's living resources.
Education, Bay Policy & Growth Management The Division includes the following programs:			FY 2003: $1,928,667 26 authorized positions.	
1. Chesapeake Bay Policy Coordination P/C				Chesapeake Bay Policy Coordination develops Department policy on Bay-related issues, drawing on departmental expertise and advice from citizens and signatories to the Chesapeake Bay Agreement.
2. Conservation Education EDU				For the Department, Conservation Education coordinates programs, publications, and materials for conservation education to promote environmental awareness in Maryland.
3. Growth & Resource Conservation PL				*Growth Management Program*. This program was started in 1992 to coordinate Department responsibilities under the Economic Growth, Resource Protection and Planning Act (Chapter 437, Acts of 1992). The Program helps public and private entities plan for and manage the adverse environmental effects of land development, population growth, and economic expansion. As State government agencies acquire land and undertake capital projects, the Program helps them develop and implement guidelines to protect environmentally sensitive areas. For local governments, the Program provides technical, educational and financial aid to prepare comprehensive plans and development ordinances. *Resource Economics Program*. Created in 1995, the Program applies economic principles to Chesapeake Bay restoration and protection programs. These principles include risk assessment, cost and benefits analysis, resource valuation, and regional impact evaluations. By demonstrating to business and developers the financial benefits of sustaining the Chesapeake Bay ecosystem, the Program induces voluntary participation rather than regulatory control to change business practices that harm the Bay.
4. Tributary Strategies EDU, PL	Created by and appointed by the Governor in 1995.	A two year process to develop new Tributary Strategies is currently underway.	$300,000 annually. Funded through an EPA Chesapeake Bay Implementation Grant. The MDNR funds six full time employees to staff and support the efforts of the ten Tributary Strategy Teams	Maryland's Tributary Strategy Program is a broad-based, citizen and government partnership that focuses on nutrient pollution reduction and the preservation and restoration of habitat throughout the state's Chesapeake Bay watershed. Using both regulatory and voluntary means, this program has, at its core, the state's Tributary Teams, an innovative public outreach component of the program. Maryland's Tributary Teams, consist of ten, geographical-oriented groups, based on the 10 major sub-watersheds found in Maryland. Each team has 30 to 35 members appointed by the Governor. The teams focus on policy, legislation, hands-on implementation, and public education. Each sub-watershed has a plan, or Tributary Strategy, that when implemented, would reduce nutrients in the Chesapeake Bay Watershed by 40%.

Resource Assessment Service The Division has the following programs:			FY 2003: $16,545,850 144 authorized positions.	The Service collects and interprets scientific data to help restore, protect, and manage Maryland tidal and nontidal ecosystems. The Service oversees the work of the Maryland Geological Survey, and four divisions: Monitoring and Nontidal Assessment; Power Plant Assessment; Support Services; and Tidewater Ecosystem Assessment.
1. Maryland Geologic Survey MA	Natural Resources Article, §§ 2-201 through 2-203.		FY 2003: $2,423,374 29 authorized positions.	The Survey researches the geology, water and mineral resources of the State so this knowledge can be applied to resolve practical problems related to environmental and natural resources. Publication of maps and technical reports are the primary means of relaying this information to the public, private industry, and local, State and federal government agencies. Periodically, the Survey publishes *County Reports, County and Quadrangle Atlases, Reports of Investigations, Basic Data Reports, Bulletins, Educational Series,* and *Information Circulars*. The Survey also publishes county topographic and geologic maps, a State geologic map, and other maps and charts. Coastal and estuarine geology related to erosion and sedimentation in the Chesapeake Bay and along the ocean shoreline are studied by the Survey. As part of its applied earth science research on the Bay, the Survey was one of the principal investigators on the Chesapeake Bay Program of the U.S. Environmental Protection Agency. The Survey's work is carried out by three projects: Coastal and Estuarine Geology; Environmental Geology and Mineral Resources; and Hydrogeology and Hydrology.
2. Monitoring and Nontidal Assessment MA			FY 2003 $2,273,605 35 authorized positions.	In Maryland streams, rivers, and the Chesapeake Bay, the Division conducts water monitoring and technical assessments. This work describes the status of ecosystems, contributes to the development of habitat protection and restoration, and measures changes caused by watershed management. The Division consolidates scientific programs of the Resource Assessment Service in the areas of ecological habitat impacts; biological assessments; nonindigenous aquatic species control; and atmospheric deposition. The Maryland Department of Natural Resources is the lead agency in implementing the "Maryland Coastal Bays Environmental Monitoring Program." Monthly monitoring of ambient water quality in the coastal bays continues at 47 DNR stations and 18 Park Service stations in the coastal bays. ▪ CORE/Trend Program. CORE stations are funded by EPA through the Clean Water Act (Section 106). ▪ Biological Stream Survey. Program focus is on wadeable (1st, 2nd and 3rd order) non-tidal streams in 17 of the State's 18 major basins (excluding Chesapeake Bay), however, individual site data from 300 stream segments of a fixed length sampled are being examined for local degradation issues and for targeting restoration actions.
3. Power Plant Assessment Program RES	Natural Resources Article, §§ 3-301 through 3-307.		FY2003: $6,466,533 11 authorized positions.	To evaluate and minimize the environmental effects of power plants without imposing unreasonable costs on the production of electricity, the Division conducts environmental research, monitoring, and assessments. Recommendations necessary to protect the environment, related to the design, construction, and operation of power plants, are made to the Public Service Commission and other regulatory agencies. The Division also helps select sites for dredged materials and monitors the environmental impact of these sites.
4. Tidewater Ecosystem Assessment Program MA			FY2003: $4,651,210 37 authorized positions.	The Tidewater Ecosystem Assessment Division assesses the ecological health of Maryland's tidewater ecosystems, identifies the causes of environmental degradation, and seeks solutions. The Division also manages the State's long-term databases on water quality and living resources for both tidal and nontidal ecosystems. Under the Division are six units: Data and Computer Resources; Living Resource Assessment; Modelling; Support Services; Toxics Contamination; and Water and Habitat Quality.

				The Division is responsible for a comprehensive long-term water quality and habitat monitoring program in Maryland's Chesapeake Bay and tidal tributaries. This program builds upon historical monitoring efforts and is coordinated with other state and federal agencies.
Waterway Improvement Program MGT, $	Established in 1966 by the State Boat Act. Annotated Code of Maryland Sec. 8-707. *See also* WIF State Boat Act Section 8-721.	Created in 1966 by the State Boat Act.	The revenues for this fund are obtained primarily from the one time 5% excise tax that is paid to the State of Maryland when a boat is purchased and titled in the state. In addition, the fund also receives a small percentage of the state motor fuel tax as a result of purchases made to fuel boats.	The Waterway Improvement Fund (WIF) was established in 1966 (Annotated Code of Maryland Sec. 8-707 of the State Boat Act) for the purpose of funding projects which improve and promote the recreational and commercial capabilities, conditions and safety of Maryland's waterways for the benefit of the general boating public.
State's Water Quality 305(b) report REP	Required by §305(b)(1) of the CWA.	Most recent report: 2000. Published every two years They are holding off one year to publish in order to realign this report with another required report. This realignment will result in an order than makes more sense from an information-gathering perspective.		This report is submitted to EPA and is the primary source of information about water quality impairments in the State. *Written in conjunction with MDE.*
On-Site Sewage Disposal System Task Force Report REP	An initiative of the Maryland Tributary Teams.	The On-Site Sewage Disposal System, (OSDS), Task Force ended their six month work with the submission of this report to the Bay Cabinet on September 10, 1999.		A report about the cumulative impact of septic systems, or on-site sewage disposal systems (OSDS) on water quality and Smart Growth initiatives.
Resource Management Service Includes the following divisions related to water quality:				The Resource Management Service organized in 1992 as Resource Management and received its current name in 1995. The Service is responsible for four agencies: the Critical Area Commission for the Chesapeake and Atlantic Coastal Bays; the Fisheries Service; the Forest Service; and the Wildlife and Heritage Service.
1. Critical Area Commission for the Chesapeake & Atlantic Coastal Bays MA,MGT, $, REG	Natural Resources Article, §§ 8-1801 through 8-1816.	54% of the Chesapeake basin's 110,000 miles of streams and shorelines are buffered by riparian forests.	FY2003: $2,002,344 15 authorized positions.	In 2002, the protection of critical areas was extended to lands around the Atlantic coastal bays of Assawoman, Isle of Wight, Sinepuxent, Newport, and Chincoteague, and the Commission received its current name. *Chesapeake Bay Critical Area Protection Program*. The law governing the Program requires that development projects within 1,000 feet of the tidal influence of the Chesapeake Bay meet standards designed to mitigate adverse effects on water quality, and fish, plant and animal habitat. The law is administered through critical area programs of local governments. To ensure compliance with State law, the Commission funds local programs and monitors them and local development projects. Periodically, the Commission meets with the General Assembly's Joint Committee on Chesapeake Bay Critical Areas. ▪ A keystone of the Chesapeake Bay Critical Area Protection Program is the establishment, preservation, and maintenance of a 100-foot, naturally vegetated, forested buffer (the Buffer) landward from the Mean High Water Line of tidal waters or from the edge of tidal wetlands and tributary streams. Criteria are implemented at the local level by your county or town. Ensuring compliance is a local responsibility. However, MDE 'sTidal and Nontidal

				Wetlands Division handles the following violations: ▪ Filling of tidal and/or nontidal wetlands without permits ▪ Pier construction without permits ▪ Construction of structures on piers ▪ Construction of shore erosion protection measures without permits ▪ Clearing and/or burning of marsh vegetation
2. Fisheries Service MA, REG, MGT	Natural Resources Article, §§ 4-101 through 4-1209.		FY 2003: $17,406,626. 161.5 authorized positions.	The Fisheries Service plants oyster shells for propagation, transplants seed oysters on public oyster bars, and monitors blue crab movement to gauge fluctuations in annual harvest. The Service studies young fish annually to determine reproductive success; monitors anadromous fish reproduction and harvests; and supports striped bass hatcheries for research and restoration. Permits for aquaculture and scientific collections of fish and shellfish are issued by the Service, which also investigates disease and parasite infestations, develops and analyzes statistics for management decisions, and formulates management plans. Within existing habitat, the Service strives to provide maximum opportunities for public fishing while preserving and enhancing natural resources in Maryland.
3. Forest Service MGT, PL			FY2003: $10,979,612. 116.5 authorized positions.	The Forest Service helps private landowners and municipal and county governments manage their forests and trees. The Service seeks to improve and maintain the economic, aesthetic, recreational and environmental contributions of trees, forests, and forest-related resources for human benefit. Duties include cooperative forest management; urban and community forestry; resource use, planning, and protection; and all matters relating to forestry in the critical areas surrounding Chesapeake Bay. *CHESAPEAKE FOREST CITIZENS ADVISORY COMMITTEE* In May 2002, the Secretary of Natural Resources formed the Chesapeake Forest Citizens Advisory Committee. The Committee assists the Department in developing a long-term management plan for the Chesapeake Forest lands. Acquired by the State in 1999, these lands consist of more than 58,000 acres in five lower Eastern Shore counties, previously owned and harvested by the Chesapeake Forest Products Company.

Department of Agriculture

PROGRAM(S)	SOURCE OF AUTHORITY	STATUS	BUDGET	NOTES
Chesapeake Bay Agricultural Programs P/C				By the Chesapeake Bay Agreement of 1987, states in the Bay region agreed to reduce nutrient run-off from farmland into the Bay. Chesapeake Bay Agricultural Programs was formed in 1992 by the Department of Agriculture with the College of Agriculture and Natural Resources at the University of Maryland, College Park. This office provides technical support for policy development in the effort to restore Chesapeake Bay, and helps evaluate the efficiency of agricultural nutrient reduction practices.
Office of Resource Conservation Includes the following divisions:			FY 2003: $14,318,475 Authorized positions: 154.5	Through agricultural soil conservation and water quality programs, the Office works to control soil erosion and agricultural nonpoint-source water pollution. The Office coordinates its efforts with other Department programs and with county, State and federal agencies. This includes managing interagency cooperative agreements. For Chesapeake Bay Agricultural Programs, the Office serves as agency liaison and facilitates State and local agricultural involvement in tributary strategies.
1. Nutrient Management REG, ENF, EDU	Agriculture Article, §§ 8-801 through 8-806.	Backlog of more than $600,000 in funding requests. Has had administrative problems. Funding increased by $1.5 million		This office oversees implementation of the Water Quality Improvement Act of 1998 which mandates nutrient management on Maryland farms. The Program helps individual farmers plan nutrient management of animal waste, sludge, and commercial fertilizers. It also trains, certifies, and licenses persons who provide this service.

		in 2002 to address administrative problems.		▪ Trains and certifies Nutrient Management Plan Consultants ▪ Issues nutrient-related newsletter *NUTRIENT MANAGEMENT ADVISORY COMMITTEE*
Cost-share Assistance (MACs) $			FY 2003: $5,600,000	MACS will cover eligible costs incurred to hire a private, certified nutrient management consultant to develop a nutrient management plan. Payment is not to exceed 87.5% of the eligible costs capped by the flat rate. Funding is also limited per operating unit.
2. Program Planning and Development PL, EDU	Agriculture Article, §§ 8-101 through 8-501.		FY 2003: $2,924,591 Authorized positions: 23.	This office supports the State Soil Conservation Committee and the Office of Resource Conservation by planning, developing, and coordinating policy, programs, and public information. Soil and water conservation is coordinated with soil conservation districts, and agencies and organizations with related programs. ▪ *Agricultural Water Management Program.* Program Planning and Development helps public drainage associations maintain agricultural drainage through cost-share maintenance and interagency review of plans for construction, reconstruction, operation, and maintenance. *STATE SOIL CONSERVATION COMMITTEE*
3. Resource Conservation Grants			FY 2003: $3.944,211 Authorized positions: 7	This office administers the Maryland Agricultural Water Quality Cost-Share Program. *Maryland Agricultural Water Quality Cost-Share Program.* Established in 1983, the Program reduces water pollution caused by nutrient and sediment erosion, and animal waste run-off. The Program helps farmers pay the costs of best land and water management practices to control pollution and improve water quality.
Cover-Crop Program MGT, $			$2,400,000 FY 2002	Farmers are paid by the state to plant cover crops such as oats, barley, rye and wheat on fields after the fall harvest of other crops. Register for funding at county soil conservation offices.
Manure Transport Project and Manure Matching Service. MGT, $	Agriculture Article, §8-704.2. COMAR 15.20.04.	Established in 1999. Four year pilot project. Administered through the Md Agricultural Water Quality Cost-Share (MACS) Program. HB 468 in 2002 made it an ongoing program. *See* Agriculture Article, 8-704.1.	$750,000 pilot project for four years. $250,000 FY 2003 (for Manure Transport Project – joint effort with Delmarva Poultry companies.)	Four-year pilot program, established in 1999. The Project provides cost-share assistance of up to $20 per ton to help farmers cover transportation, loading and handling costs associated with transporting excess manure off their farms. Supports the transport of 60,000 to 70,000 tons of manure annually.
4. Resource Conservation Operations.			FY 2003: $7,278,843 Authorized positions: 122.5	State resources that support soil and water conservation programs on agricultural land are administered by Resource Conservation Operations. This section guides and assists twenty-four soil conservation districts and gives financial, administrative and technical support for conservation programs. Resource Conservation Operations also provides technical assistance to farmers and landowners on best management practices to control soil erosion and agricultural nonpoint source pollution.
Conservation Reserve Enhancement Program (CREP) MGT, $		Goal: 100,000 acres. 2001: farmers enrolled 14,695 acres	Funded by USDA Commodity Credit Corp. CCC: 50% Md: 37.5% Total: **$200 million**	Maryland's Conservation Reserve Enhancement Program (CREP) a new federal-state initiative pays farmers and landowners a one-time sign up bonus along with attractive rental rates to remove environmentally-sensitive cropland from production and plant streamside buffers or create wetlands. CREP also covers most of the costs of building animal crossings, fences, and watering troughs to limit livestock's access to streams.
Nutrient Management Software Laboratory.				▪ Program "NuMan MD" to be released in fall 2001. Provides fertility recommendations to help farmers meet Md nutrient management requirements.

MGT				▪ Phosphorus Index software *With the University of Maryland and Cooperative Extension.*

Other Agencies

Program(s)	Source of Authority	Status	Budget	Notes
Department of Planning *Watershed Planning* PL			FY 2003: $8,911,244 (entire agency). Authorized positions: 129	Staff provides support to local governments for integrated management of growth, protection of resource lands, and watershed protection. Projects have been undertaken in Winter's Run in Harford County, and in the Patuxent River Watershed. Computer models of watershed planning have been developed to represent local land management tools and options more accurately and efficiently. The Department of Planning participates in the Tributary Stategies effort, staffing the Patuxent and Upper Western Shore watershed teams.
Patuxent River Commission REP, P/C	State Finance and Procurement Article, § 5-801.			Created in 1980, the Patuxent River Commission reviews the operation of State and local agencies in regard to the Patuxent River. New legislation empowered the Commission to assume Tributary Team responsibilities for the watershed. ▪ Provides a clearinghouse for watershed information, reviews plans, and comments on reports and development projects impacting the river. ▪ Prepares the Patuxent River Policy Plan and, every five years, considers draft amendments to update it. The original Patuxent River Policy Plan was adopted in 1984 as a policy guide for the Commission, State agencies, and local governments in carrying out programs in the Patuxent River watershed. ▪ Also serves as the Tributary Strategy Team for the Patuxent Watershed, coordinating the Patuxent tributary strategy with the Patuxent River Policy Plan.
Maryland Coastal Bays Alternative Futures Analysis REP		Report: *Maryland Coastal Bays: Alternative Futures Project*	This project was partially funded by the U.S. Environmental Protection Agency through the Maryland Coastal Bays Program.	The Maryland Coastal Bays Alternative Futures Analysis (Analysis) was developed in response to the Maryland Coastal Bays Program's (M-CoBP) goals and action items to address growth issues.
Maryland Cooperative Extension	Education Article, 12-101.			Maryland Cooperative Extension (MCE) is a statewide, informal education system within the college of Agriculture and Natural Resources and the University of Maryland Eastern Shore.
Nutrient Management Programs REP, EDU	Agriculture Article, § 8-801.1; Agriculture Article, §10-1501 (establishes Dairy Farm and Nutrient Business Management Program).	Report: *Nutrient Management Annual Report 2001*		The Maryland Cooperative Extension's Agricultural Nutrient Management Program is a component of the University of Maryland's College of Agriculture and Natural Resources Nutrient Management Programs and focuses on reducing the pollution of the Chesapeake Bay by plant nutrients from cropland. The program provides nutrient planning services to Maryland farmers via a network of nutrient management advisors located in all county Extension offices **and** provides continuing education and technical support to certified nutrient management consultants via state and regional nutrient management specialists. ▪ Trains and certifies Nutrient Management Consultants ▪ Administers Dairy Farm Nutrient and Business Management Program ▪ Distributes NuMan and Phosphorus Index software ▪ Publishes *Nutrient Manager,* a publication provided free of charge or at the cost of production to the citizens of Maryland.
Department of Business and Economic Development *Animal Waste Technology Fund*	Department of Business and Economic Development Article, § 5-1404.	Repealed in 2000. Report by the Inter-Agency Nutrient Reduction Oversight Commission indicates that about	Approximately $3,350,000 has been dispersed over three years.	The fund was established as an incentive for individuals, partnerships, and companies to develop alternative uses of nutrient waste. The Inter-Agency Nutrient Reduction Oversight Commission recommends grant projects for approval.

$, RES		17 projects were funded.		▪ Funded $1 million in grants 1999 ▪ Funded $1 million in grants in 2000 ▪ Funded $1 million in grants in 2001
Maryland Environmental Service MGT	Natural Resources Article, Secs. 3-101 through 3-132.	Received a $100,000 grant in 2001 to evaluate the feasibility of constructing a 40 megawatt power plant using poultry litter as fuel.	$63,400,000 FY 2001	The Service works to ensure a safe drinking-water supply and minimize the environmental impact of residential and industrial wastewater discharge. County, municipal and private facilities, as well as all State plants at correctional institutions, health facilities, rest areas, and parks are operated and maintained by the Service. Wastewater sludge and dredged material from waterways also are managed by the Service.
Department of Health and Mental Hygiene EDU				As part of routine activities to protect public health, DHMH is cooperating with local health departments and community health care providers to maintain a surveillance system for identifying early warning signs of illness that may be related to exposure to estuarine waters. Lists the Maryland Fish Health / *Pfiesteria* Hotline: 1-888-584-3110.
Board of Public Works *Wetlands Administration* REG	Environment Article, § 16-202.		FY2003: $150,567 Authorized positions: 2	Anyone wishing to dredge or fill in State tidal wetlands must first secure a license from the Board of Public Works. The Wetlands Administration receives applications for licenses and conducts required public hearings. The Wetlands Administrator recommends to the Board of Public Works whether a license should be issued and if so, under what terms and conditions. Licenses approved by the Board are issued by the Wetlands Administration. Appointed by the Board of Public Works, the Wetlands Administrator coordinates the program with other State, local and federal agencies, and with environmental groups and the general public.

Committees, Councils and Task Forces

PROGRAM(S)	SOURCE OF AUTHORITY	STATUS	BUDGET	NOTES
Governor's Inter-agency Nutrient Reduction Oversight Committee REP	Executive Order 01.01.1998.18	*Biennial Report to Governor & General Assembly due July 1 & Dec. 31,* 2001		Co-chairs: Secretary of Agriculture, Secretary of the Environment The Interagency Nutrient Reduction Oversight Committee was initiated by the Governor in June 1998. The Committee oversees and coordinates State initiatives to reduce nutrient pollution, particularly those originating from the Water Quality Improvement Act of 1998 (Chapter 325, Acts of 1998). To see that the State's Nutrient Management Program is implemented, operational, and meeting nutrient reduction goals, the Committee consults with the General Assembly, the Nutrient Management Advisory Committee of the Department of Agriculture, the agricultural community, environmental advocates, the University System of Maryland, and other interested parties. ▪ Sets research priorities and examines proposals or the Animal Waste Technology Fund under the Department of Environment ▪ Sets research priorities and examines proposals for the Department of the Environment's research budget.
Governor's Council on the Chesapeake Bay – The Chesapeake Bay Cabinet P/C	Executive Order 01.01.1985.02.	Initiated in January 1985.		The Council, referred to as the Chesapeake Bay Cabinet, advises the Governor on management of the Bay watershed and surrounding areas that comprise the entire State of Maryland. The members of the Council are the Departments of Environment, Natural Resources, Agriculture, Planning, and Transportation, as well as the University of Maryland. These agencies work together to ensure that Maryland's environmental programs are well coordinated and integrated into a complete water quality management program.
Maryland Agricultural Commission REP	Agriculture Code §2-202.		FY2003: $128,479 Authorized positions: 2	*Strategic Plan for Agriculture.* Released a report on 9/12/02 that indicates farmers were unfairly blamed for the *Pfiesteria* outbreak.
Maryland Greenways	Executive Order 01.01.1991.24 (creating the		Supported by the	Co-chairs: Secretary of Natural Resources, Secretary of Transportation.

Commission MGT	Commission); Executive Order 01.01.1995.27 (reforming the Commission).		Waterways & Greenways Division at DNR.	The Commission works with State agencies, local governments, land trusts, and citizens to form a system of interconnecting recreational trails and wildlife corridors that link protective buffers along Maryland's waterways. These greenways - corridors of open space that follow streams, ridgetops, rivers, or other linear features - can be used for recreation and conservation. They may be publicly owned for recreation and parks, or privately owned as wildlife habitat or to enhance water quality. Meeting quarterly, the Commission is aided by a liaison from each county and Baltimore City.
Blue Ribbon Pfiesteria Action Commission REP	At direction of the Governor.	Now defunct.		The Governor appointed the Blue Ribbon Citizens' Pfiesteria Commission in September 1997. The Commission studied the toxic outbreak in Maryland waters of the microbe, *Pfiesteria piscidida* which occurred in the summer 1997. After determining causative factors, the Commission charge was to recommend short- and long-term solutions to prevent further toxic outbreaks in the Pocomoke River, Manokin watershed, and other State waters. The Commission reported to the Governor on November 3, 1997. In recommending solutions, the Commission evaluated what federal expertise and programs might be used and what level of interstate cooperation would be needed. The Commission also focused on immediate actions to combat the pfiesteria threat, and interim solutions for issues requiring further consideration and scientific study.
Nutrient Management Advisory Committee P/C	Agriculture Article, §§. 8-101 through 8-501.			Under the Department of Agriculture's Nutrient Management Division of the Office of Resource Conservation in the Department of Agriculture, the committee addresses concerns related to soil fertilization and determining the amount, placement, timing, and application of animal waste, commercial fertilizer, sludge, or other plant nutrients to prevent pollution and maintain productivity. Appointed by the Secretary of Agriculture, the Committee advises the Department on certification and licensing of nutrient management.
State Soil Conservation Committee P/C, EDU	Agriculture Article, §8-201.		Supported by Program Planning Division of the Office of Resource Conservation in the Department of Agriculture.	Under the Program Planning Division of the Office of Resource Conservation in the Department of Agriculture, the committee works to stop soil erosion and nonpoint source pollution, conserve soil, and protect water quality. Through twenty-four soil conservation districts covering the entire State (except Baltimore City), the Committee coordinates district work to apply scientifically sound and practical conservation measures ("best management practices") to Maryland lands. For each district, the Committee appoints four of the five persons who serve on a local board of soil conservation supervisors. The Committee has eleven members. Six serve ex officio. Five are soil conservation district supervisors appointed to four-year terms by the Secretary of Agriculture from nominees of the districts represented. ▪ Conducts the Nutrient Application Education Program. COMAR 15.20.06.
Watershed Resources Advisory Committee REP	An initiative of the Maryland Tributary Strategy Teams.		Supported by EPA 319(h) funds, which are managed by DNR's Non-Point Pollution Program.	Report: *Reducing the Nutrient Impacts from On-Site Sewage Disposal Systems*, February-July 1999 (presented to the Governor's Chesapeake Bay Cabinet).
Coastal & Watershed Resources Advisory Committee P/C	Natural Resources Article, § 8-201.		Supported by the Coastal Zone Management Division at DNR.	Established in 1976, the Coastal and Watershed Resources Advisory Committee advises the Secretary of Natural Resources and the *Coastal Zone Management Program* on policy issues affecting Maryland's coastal areas. The Committee consists of citizen and representatives of federal, State and local government; businesses; and private associations.
On-Site Sewage Disposal Task Force REP	An initiative of Maryland's Tributary Teams at the request of the Chesapeake Bay Cabinet	Now defunct. Concluded work in 1999.		The Middle Potomac Tributary Team became aware that revised On-site Sewage Disposal System (OSDS) regulations were soon to be submitted for public comment by the Maryland Department of the Environment (MDE). Members of the Upper Western Shore, Patuxent and Middle Potomac

				Tributary Teams met with representatives of MDE, the Washington Suburban Sanitary Commission, and Montgomery County to review the direction that MDE would take regarding septic system regulations. The Teams wished to encourage the use of technologies that reduced nutrients while also hydraulically removing pathogenic waste water and, therefore, proposed the creation of a broad-based Task Force to the Governor's Chesapeake Bay Cabinet in October 1998. The Cabinet endorsed the idea and asked that the Tributary Team representatives report back to them with the OSDS Task Force recommendations at the completion of their work in September 1999. Report: *Reducing Nutrient Impacts from On-site Sewage Systems.*
Septic System Advisory Committee P/C, REP	Created to examine the recommendations of the On-site Sewage System Task Force and the State Water Quality Advisory Committee.			Co-chars: Department of Environment and Department of Planning. Report: *Septic System Advisory Committee, Final Report, January 2000.*
Task Force on Upgrading Sewerage Systems REP	Established by Governor's Executive Order 01.01.2001.03 on March 19, 2001.	Issued report in 2002. Now defunct.		In March 2001, the Governor created the Task Force on Upgrading Sewerage Systems (Executive Order 01.01.2001.03). In January 2002, the Task Force reported to the Governor, Maryland's Congressional Delegation, and the General Assembly. *See Task Force on Upgrading Sewerage Systems: Final Report.*
Maryland Water Monitoring Council S, REP, MA		Developed the Maryland Water Monitoring Strategy Report.		The MWMC is an organization created in 1995 to foster cooperation among groups involved in all types of water monitoring activities. The Council is interested in physical, chemical, and biological monitoring, as well as the evaluation of those land use factors that affect changes in aquatic habitat quality and quantity.
State Water Quality Advisory Committee P/C	Federal Regulations 40 CFR, Part 25.		Not subject to legislative appropriation process and receives no public tax dollars.	Advises the Secretaries of the Dept of Environment and Dept. of Natural Resources on issues concerning water quality. Conducts the general interaction of local government with Maryland's TMDL Program on broad policy issues.
Chesapeake Bay Trust $	Natural Resources Article, §§ 8-1901 through 8-1910.			The Trust is a nonprofit organization created by the Maryland General Assembly in 1985 to promote public awareness and participation in the restoration and protection of the Chesapeake Bay. Although established as an instrumentality of the State, the Trust operates with independent financial and policy-making status. It is not subject to the legislative appropriation process and receives no public tax dollars.