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Protecting Wetlands

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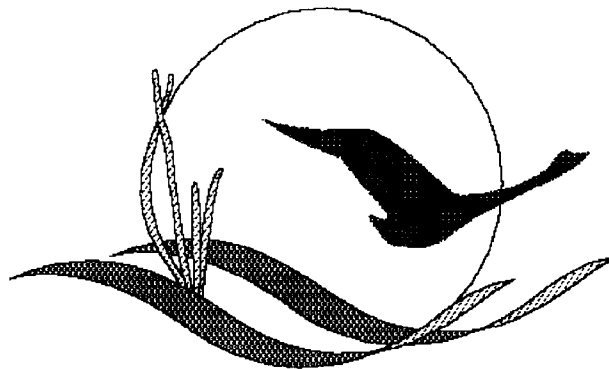
Tools for Local
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**U.S. Environmental Protection Agency
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1-800-YOUR BAY
<http://www.epa.gov/chesapeake/>**

Protecting Wetlands: Tools for Local Governments in the Chesapeake Bay Region

April 1997



Chesapeake Bay Program

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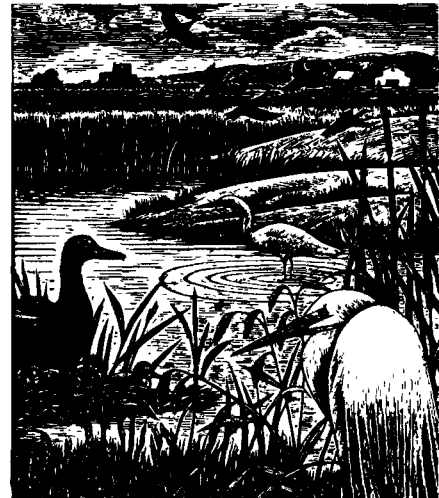
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Chapter One:



Wetlands and the Role of Local Government

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Wetlands are an important part of the local and regional landscape. Although wetlands are sometimes seen as primarily a federal or state responsibility, they perform many functions that contribute to local economic performance, environmental protection, and quality of life. Local governments have a variety of tools available to them to protect, conserve, and restore wetlands. This handbook is designed to assist local governmental officials, landowners, community activists, and others in identifying and using these tools, both to advance local interests and to contribute to the protection of the Chesapeake Bay watershed.

This handbook provides straightforward descriptions of tools available to local governments, identifies particularly valuable reference materials related to these tools that can be obtained by readers, and illustrates how local governments within the Chesapeake Bay watershed have used these tools in practice. Contacts and other information are provided to assist local governments in adapting these tools to local needs and priorities.

WHY SHOULD LOCAL GOVERNMENTS BE CONCERNED WITH WETLANDS?

Wetlands are the transitional zone between uplands and water bodies. Because of their unique position in the landscape, many types of wetlands are among the most productive ecosystems on Earth. They provide value to the land and prevent harm to communities and the environment.

Wetlands perform many different functions. They sustain plant and animal habitats and ecosystems, and they provide numerous economic benefits to communities, including flood control and mitigation, storm abatement, recharge of groundwater supplies, water quality improvement, fisheries, habitat for game and nongame animals, and open space and recreation. Wetlands are valued in some areas for their positive effect on property values. The following are just a few of the functions performed by wetlands in the Chesapeake Bay region.

Flood Control. Wetlands lessen the impact of floods by intercepting stormwater, storing the water, and slowly releasing it, thereby decreasing peak flood levels. These flood control functions are extremely important in the overall landscape and can help to avert the devastating costs of flooding to downstream urban, suburban, and agricultural lands and structures. The flood control functions of wetlands are extremely important to the maintenance of property values and thriving communities.

Erosion Control and Groundwater Protection. Wetlands buffer shoreland against erosion caused by storms in coastal environments and along rivers. Wetlands are also thought to be areas where groundwater aquifers are recharged. In areas dependent upon underground water for drinking water, or where wells and springs are vital to the community, the protection of wetlands can be particularly important.

Pollution Control. Perhaps the most valuable function of wetlands rests in their capacity to maintain and improve water quality in rivers, streams, and other water bodies. They accomplish this task by filtering organic and inorganic nutrients and toxic materials as water passes through them, thereby preserving water quality. For example, when wetlands intercept water running off uplands, the suspended sediments in the water fall to the bottom of the wetlands. The associated nutrients are then available for uptake by wetlands plants and are not discharged to surrounding waters.

Community Values. Wetlands can serve as a valuable amenity to communities. They provide wildlife habitat, open space, and opportunities for recreation. For example, Huntley Meadows Park, a sizable publicly owned wetland area in Alexandria and Fairfax County, Virginia, contributes substantially to local quality of life and to maintaining and increasing local property values. Privately owned wetlands can also help increase the value of the adjacent upland areas of a parcel of land.

Plant and Wildlife Habitat. Wetlands perform many functions related to plant and wildlife habitat. According to Dr. William Mitsch, a leading authority on wetlands and Professor of Natural Resources and Environmental Science at Ohio State University, 80% of America's total breeding bird population, and more than half of the nation's 800 species of protected migratory birds, rely on wetlands for habitat, cover, and reproduction. As a result, the hunting and birding communities have a vested interest in protecting and restoring the wetlands that provide habitat and breeding grounds for the birds and animals with which they are concerned. Because hunters, sport fishermen, and bird watchers directly purchase equipment and spend a significant amount of money on travel-related expenses, including food and lodging, wetlands can provide a significant source of income for local economies. According to a U.S. Environmental Protection Agency report (U.S.

EPA 1988), waterfowl hunters spend over \$300 million annually on activities related to harvesting of wetland-dependent birds. Approximately 50 million people spend nearly \$10 billion annually on recreational activities relating to the observation and photography of wetland-dependent birds. Wetlands also harbor many unique and rare species of plants.

Fisheries. Wetlands are important habitat for healthy communities of fish and shellfish. As wetlands remove, process, and discharge organic and inorganic material in the waters they hold, these areas serve as valuable sinks, sources, and transformers of compounds that are utilized by plants and animals. Wetlands are used by many fish for breeding and spawning, and many species spend their entire life in these areas. In fact, almost all species of freshwater fish are dependent on wetlands to some degree. Over 95% of the commercially harvested fish and shellfish species in the United States are at least partially wetland-dependent. The fishing industry is important to the local culture of many areas, and it contributes a large amount of money to the regional and national economy.

The Chesapeake Bay is the largest estuary in the United States and has been one of the most biologically productive estuarine systems in the world. The Bay is the drainage catchment for a 64,000 square mile watershed that crosses state boundaries and includes Maryland, Virginia, Pennsylvania, the District of Columbia, and small areas of West Virginia, Delaware, and New York. In recent years, the Chesapeake has provided 20% of the oysters and over 50% of the blue crabs caught in the entire United States. More than \$100 million worth of seafood is removed from its waters annually. Wetlands are critical to the health of the Bay because they remove pollutants, nutrients, and sediments in the watershed. They are incubators of its abundant living resources including fish, shellfish, other aquatic organisms, waterfowl, and other birds and wildlife.

THE IMPORTANCE OF LOCAL GOVERNMENTS IN WETLANDS PROTECTION IN THE CHESAPEAKE BAY WATERSHED

In an effort to stem the tide of degradation in the Bay, the 1987 *Chesapeake Bay Agreement* was signed by Virginia, Maryland, Pennsylvania, the District of Columbia, the Chesapeake Bay Commission, and the U.S. Environmental Protection Agency representing the federal government. This historic agreement was designed to develop comprehensive solutions to conflicting demands on the Bay's resources. The Agreement includes a directive to develop a regional policy for the protection of tidal and nontidal wetlands, and it calls for a 40 percent reduction of nutrients entering the Bay by the year 2000. The 1988 *Chesapeake Bay Wetland Policy* established an immediate goal of no net loss of wetlands with a long-term goal of net gain.

When the 1987 *Chesapeake Bay Agreement* was signed, the Chesapeake Executive Council (comprised of the three state governors, the mayor of the District of Columbia, the administrator of U.S. EPA, and the chairperson of the Chesapeake Bay Commission) recognized the importance of local governments in achieving the bold goals

of restoring the Bay. As a result, the Agreement called for the establishment of a local government advisory committee to the Executive Council. The Chesapeake Bay Local Government Advisory Committee (LGAC) was formed in March 1988. It is comprised of 20 local government officials representing the 1,653 local governments within the Bay watershed in Virginia, Maryland, Pennsylvania, and the District of Columbia.

The 1992 *Amendments to the Chesapeake Bay Agreement* reaffirmed the 40 percent nutrient reduction goal beyond the year 2000 and were aimed at controlling nutrients at their source -- upstream in the Bay's main tributaries. Wetlands are critically important for improving and maintaining the water quality of these tributaries. As the target of Bay restoration moves upstream into communities along the Bay's tributaries, the role of local governments in the restoration effort has become even more important. Several directives and objectives also identify key areas of local concern. The 1994 *Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy*, the 1994 *Riparian Forest Buffer Directive*, and the population growth and development commitments of the original 1987 Agreement all explicitly acknowledge that local government participation is essential if the goals of the Bay Agreement are to be met.

In 1995, a *Local Government Partnership Initiative* was developed to more actively engage local governments in the efforts to protect and restore the Chesapeake Bay. The Local Government Partnership Initiative has two main objectives: 1) to establish a stronger working relationship and improve coordination with local governments to broaden the Bay Program's understanding of local perspectives concerning the watershed's protection and restoration; and 2) to identify local government needs and the technical, programmatic, and financial resources available to them. In October 1996, the *Local Government Participation Action Plan* was adopted by the Chesapeake Executive Council. The plan establishes a strategy to broaden the role of local governments in the Chesapeake Bay Program, provide local governments with additional assistance, and help coordinate local groups in achieving their water quality and wildlife goals.

THE ECONOMIC VALUE OF WETLANDS IN STATES WITHIN THE CHESAPEAKE BAY WATERSHED

Recreation: Sport fishing expenditures in Maryland totaled \$275 million and supported 8,300 jobs in the State. Retail sales from wetland-dependent migratory bird hunting totaled nearly \$20 million. Hunting expenditures in Pennsylvania totaled about \$541 million, and \$267 million in Virginia. Of these totals, migratory bird hunting accounted for \$16 million in Virginia and \$26 million in Pennsylvania. (1991 totals).

Commercial Fishing: The commercial fish harvest in Maryland contributed 7.7 million pounds of fish worth \$5.2 million in 1993. In addition, 57 million pounds of crabs were harvested, with a commercial value of \$35 million. (1993 totals).

Source: U.S. Environmental Protection Agency. *Wetlands FAQ's (Frequently Asked Questions) for Maryland; for Virginia; and for Pennsylvania.* U.S. EPA, Office of Water: Washington, D.C.

Local Authority to Conserve Wetlands

Local governments have substantial opportunities to promote wetlands conservation. Indeed, although certain regulatory tools are vested in the federal and state governments, there are many non-regulatory tools and legal mechanisms available to local governments. In the future, these tools will become even more important as communities take responsibility for their own local environments, and as citizens seek alternatives to regulatory mechanisms.

Before taking on the task locally, it is important to understand the federal and state regulatory overlay. The following descriptions briefly summarize the major federal and state regulatory laws and programs that protect the Chesapeake Bay's wetlands. These descriptions provide context but should not be relied upon as a full statement of all legal requirements that may be relevant to local government decision-making. Further references and guides to these laws and programs are identified at the end of this chapter.

Federal Regulation

The central piece of federal legislation that regulates activities affecting wetlands is the Clean Water Act (33 U.S.C. §§ 1251 et seq.). Section 404 of the Act (33 U.S.C. § 1344) requires any person or entity to obtain a permit from the federal government before discharging dredged or fill material into any waters of the United States, including wetlands.

The section 404 program is jointly administered by the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA). The Corps reviews permit applications, decides when to issue or deny permits, and carries out most of the enforcement responsibilities under the law. EPA's responsibilities include development of the environmental standards for issuing permits and the power to veto permit decisions of the Corps. EPA also has enforcement authority. The U.S. Fish and Wildlife Service, the Natural Resources Conservation Service (NRCS) in the Department of Agriculture, and the National Marine Fisheries Service have advisory roles in the program and provide some technical assistance. The NRCS is also involved in delineating agricultural wetlands and in the enforcement of the "Swampbuster" program, which prohibits participants in federal agricultural benefit programs from destroying wetlands on their lands.

Approximately 50,000 individuals and corporations apply to the Corps each year for permits to dredge or fill wetlands. According to a statistical report published by the Corps (U.S. Army Corps of Engineers 1995), over 80% of these applications are granted using a general permit mechanism. This approach provides for a speedy approval, on average within 16 days. The remaining permit seekers require more detailed individual permit applications, usually because of the nature of the activities or the significance of the wetland resources. Fewer than 1% of wetlands permit applications are denied, although

7 - 8% are withdrawn by applicants for various reasons. Actions may also be modified in connection with the permit review process to reduce their adverse impacts on wetlands.

The Corps estimates that up to 50,000 other activities affecting wetlands are authorized each year under the terms of general permits that do not require notice to the Corps.

Although the section 404 program is administered by the federal government, the Clean Water Act includes provisions (33 U.S.C §§ 1251, 1344, and 1362) by which states can assume responsibility for implementing the federal permit program in place of the Corps. As of 1996, only New Jersey and Michigan have fully assumed administration of the program.

The federal government can also defer to states' jurisdiction over certain activities within the section 404 program by issuing them "programmatic general permits." These permits identify specific activities or classes of activities that, when authorized by state regulatory programs, will be recognized as satisfying the federal regulatory program requirements with little (or limited) review by the Corps. Programs recognized under programmatic general permits include substantial portions of Maryland's and Pennsylvania's wetlands programs.

The Clean Water Act also specifically allows states and localities to implement laws that are more stringent than section 404 without federal oversight or approval. Moreover, whether or not states have their own regulatory programs for wetlands, states can significantly affect Corps permitting decisions through a water quality review process under the Clean Water Act. Section 401 of the Clean Water Act authorizes states to review federal permitting decisions for their effects on the waters of the state, including wetlands. If states deny section 401 certification for any Corps permit decision, whether it is a one-time only individual permit or a Nationwide Permit (or any other federal permit decision), they can block issuance of the permit. Alternatively, a state can place conditions on its certification and thereby impose safeguards beyond those contemplated in the proposed federal permit. A section 401 certification can be used to protect wetlands, rivers, lakes, estuaries, floodplains, and other water resources.

Another federal law relevant to state and local protection of wetlands is the federal Coastal Zone Management Act (CZMA)(16 U.S.C. §§ 1451 et seq.). The CZMA encourages state planning activities in the coastal zone and commits the federal government to refrain from conducting or permitting activities in the coastal zone that are inconsistent with state plans. Thus, states can use the CZMA to limit wetlands activities or other activities that require federal approvals.

WETLANDS LOSSES

When European settlers arrived in North America, there were approximately 221 million acres of wetlands in the contiguous U.S. By the mid-1980s, only 103.3 million acres of wetlands remained. Wetlands losses in the Chesapeake Bay region have been equally dramatic. Since settlement, Maryland has lost 73 percent, Pennsylvania has lost 56 percent, and Virginia has lost 42 percent of their original wetlands acreage.

These estimates reflect the acreage of wetlands converted to agricultural land use, land development, and other clearing and draining activities. They do not take into account the vast amount of wetland acreage that is severely degraded so that it no longer provides the same functions as fully functional wetlands. Degradation is often caused by the discharge of pollutants, habitat disturbance, introduction of exotic species of plants and animals that out-compete native species, and urban encroachment.

As wetlands are lost and degraded, the species that are dependent on wetlands for all or some of their habitat and life-cycle requirements are imperiled. An indication of how much valuable wetland acreage has been lost in the United States is reflected by estimates of the number of threatened and endangered species that are found in wetlands. Although wetlands comprise only 3.5 percent of the land area of the United States, it is estimated that about 50 percent of animals and 33 percent of plant species listed under the Endangered Species Act are dependent on wetlands.

The area draining into the Chesapeake has experienced rapid population growth in recent decades which has led to a decline in the basin's valuable wetlands. Wetlands account for approximately 1.2 million acres of the Chesapeake Bay watershed, over 80 percent of which are inland; the remainder are coastal and estuarine. According to a 1988 report by the Chesapeake Executive Council, between the mid-1950s and late 1970s, the Chesapeake Bay watershed's wetlands lost an average of over 2,800 acres annually. A 1994 technical report prepared for the U.S. Fish and Wildlife Service (Tiner *et al.* 1994) indicates that the watershed lost about 2.5 percent more of its wetlands between 1982 and 1989, at a rate of about eight acres per day. Forested wetlands sustained the greatest losses during this period. As the acreage of wetlands and their associated functions continue to decline, so has the overall health of the Bay.

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- Tiner, Ralph W., Irene Kenenski, Todd Nuerminger, John Eaton, David B. Foulis, Glenn S. Smith, and W. Edward Frayer. May 1994. *Recent Wetland Status and Trends in the Chesapeake Watershed (1982 to 1989): Technical Report*. U.S. Fish and Wildlife Service, Prepared for the Chesapeake Bay Program, U.S. EPA, Annapolis, MD.
- Tippie, Virginia K. 1984. "An Environmental Characterization of Chesapeake Bay and a Framework for Action." *The Estuary as a Filter*. Ed., Victor S. Kennedy.

State Regulation

Most states, including all those in the Chesapeake Bay watershed, have enacted at least some regulatory legislation to protect wetlands. Local government roles in these state programs vary. In some instances state laws directly enlist local governments in wetlands protection. In others, local governments have opportunities to affect state permitting and regulatory decisions.

Maryland

In 1933, Maryland enacted legislation to address programs affecting water resources. The legislation created a program to evaluate construction activities in any waterway or its floodplain for their potential to create flooding on upstream or downstream property, their potential effect on fish habitat and migration, and their effect on the control of erosion. This law provided the basis for some protection of wetlands in the state.

In 1970, Maryland enacted the state's Wetlands Act (Md. Code Ann. § 9-101 to § 9-603) to protect Maryland's tidal wetlands. The Act establishes a regulatory program to control proposed activities in tidal wetlands. Permits are required for activities in privately-owned tidal wetlands and are issued by the Maryland Department of the Environment's Water Management Administration. Licenses are required for projects in state-owned wetlands and are issued by the Board of Public Works (comprised of the governor, the comptroller of the treasury, and the state treasury) based upon recommendations from the Water Management Administration. A permit or license must be obtained before a person fills, dredges, or otherwise alters a tidal wetland.

In 1989, Maryland enacted the Nontidal Wetlands Protection Act (Md. Code Ann. § 8-1201 et seq.). The Act's goals are to attain no net overall loss in nontidal wetland acreage and function and to strive for a net resource gain in nontidal wetlands over present conditions. From its inception, this Act was designed to parallel many aspects of the federal regulatory program. However, the Maryland Act specifically differs from federal regulation in at least two respects: its prescription of specified buffer zones for wetlands and its regulation of the alteration of wetland vegetation and hydrology (an issue that has been somewhat complex under the federal law, which has focused on "discharges" of dredged or fill material into wetlands). The Maryland Nontidal Wetland Protection Act requires protection of a 25-foot buffer around all nontidal wetlands; the buffer increases to 100 feet around wetlands of special state concern and those adjacent to steep slopes or highly erodible soil. The Act's coverage of vegetation and hydrology recognizes that adverse effects on wetland functions come from many sources.

The regulatory program seeks to achieve no net loss, in part, through two types of compensatory mitigation efforts: permittee mitigation and programmatic mitigation. Permittee mitigation -- the replacement of destroyed wetlands with restored or created wetlands of equal or greater value -- is required for unavoidable impacts to nontidal wetlands over 5,000 square feet. Programmatic mitigation is performed by the State for nontidal wetland losses generally less than 5,000 square feet, using funds paid by permittees to the State Nontidal Wetlands Compensation Fund. The Fund is dedicated to the creation, restoration, and enhancement of nontidal wetlands.

The Nontidal Wetlands Protection law allows county governments to assume delegation of the program by developing qualifying nontidal wetlands protection programs, although as of 1996 no counties were exercising delegated jurisdiction. The law also provides that watershed plans prepared by counties and local governments can, if adopted by the Maryland Department of the Environment, be used to guide local permitting and decision-making.

The Army Corps of Engineers has issued a state programmatic general permit (SPGP) recognizing Maryland's wetlands permitting process for many types of activities in tidal and nontidal wetlands. Under the Maryland SPGP, the Department of the Environment may issue many permits that are considered sufficient to satisfy § 404 of the Clean Water Act without further action by the Corps.

Several other state laws are important for Maryland's wetlands. The Chesapeake Bay Critical Areas Law (Md. Code Ann. § 8-1801 et seq.) was enacted in 1984 to minimize adverse water quality impacts and protect the Chesapeake Bay. The law seeks to protect water quality, conserve valuable habitat, and accommodate future growth in the least polluting manner by regulating activities and land use planning in what are defined as Critical Areas: the waters of the Bay, the Bay's tidal wetlands and tributaries, and the area that lies within 1,000 feet of the landward boundary of state and private waters and wetlands. The act established a 100-foot vegetated buffer within the 1,000-foot critical area, within which specific activities are prohibited. For example, commercial forest harvesting is prohibited within the first 50 feet of the 100-foot buffer, and a 25-foot vegetated buffer strip is required for agricultural operations. The Critical Areas fall into three categories: intensely developed areas, limited development areas, and resource conservation areas. Each has a density limit and incorporated performance criteria that are directed at protecting water quality. The Chesapeake Bay Critical Areas Commission was charged with developing the criteria to guide planning and actions in designated Critical Areas. Local governments are responsible for developing and implementing their own Critical Area resource protection programs, based on the requirements developed by the Critical Area Commission.

Maryland's Shore Erosion Control Program (Md. Nat. Resources Article: Title 8-1001) is administered by the Maryland Department of Natural Resources' (DNR's) Forest Service. Among other activities, the law enables DNR to provide technical assistance to property owners and local governments having specific shoreline and bank erosion problems. The program, which has used some structural shoreline stabilization

techniques, now uses many nonstructural shoreline stabilization techniques including marsh grass plantings.

The DNR's Chesapeake Bay and Coastal Watershed Service has the authority to implement the State's responsibilities under the federal Coastal Zone Management Act (CZMA). CZMA provides authority to recognize and protect wetlands in the coastal zone in 16 coastal counties and Baltimore City. Federal permits in the coastal zone must be consistent with the State's Coastal Zone Management Program. The State's program is "networked," meaning that it is based on an array of existing State laws against which the federal activity must be reviewed for consistency.

Virginia

The primary state law affecting wetlands within Virginia's Chesapeake Bay watershed is the Chesapeake Bay Preservation Act (Bay Act). Enacted in 1988, the Bay Act was passed as a critical component of Virginia's response to the *Chesapeake Bay Agreement*. Two other state statutes affect Virginia wetlands throughout the state: the Virginia Wetlands Act and the Submerged Lands Act.

Virginia's Bay Act (Va. Code 10.1-2100 et seq.) is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring wise resource management practices in the use and development of environmentally sensitive land features. The Bay Act established a nine-member citizen board called the Chesapeake Bay Local Assistance Board to promulgate regulations to help meet this goal. Board members represent different geographic areas within "Tidewater Virginia" and various interests, including business, agriculture, land development, local government, and environmental management. Tidewater Virginia includes 46 cities and counties that border on tidal waters and the 43 town governments in Tidewater counties.

The Chesapeake Bay Preservation Area Designation and Management Regulations (VR 173-02-01) were first adopted by the Board in 1989 and amended in 1991. The Regulations recognize local government responsibility for land use decisions and establish a framework for compliance without dictating precisely how local programs must be implemented. The Act and accompanying regulations require local governments in the Tidewater area to develop Local Bay Act programs to incorporate water quality protection into their comprehensive plans, zoning ordinances, and subdivision ordinances.

Recognizing the magnitude of this task, the Local Assistance Board staged program compliance into three separate phases. Phase I involves a determination of the extent of environmentally sensitive lands within local boundaries, the mapping of sensitive lands, and the designation of Chesapeake Bay Preservation Areas. These are areas that have the potential to impact water quality most directly. Chesapeake Bay Preservation Areas include both Resource Protection Areas (RPAs) and Resource Management Areas (RMAs). RPAs are sensitive lands at or near the shoreline and include a buffer zone limiting activities landward; they include both tidal and nontidal wetlands. RMAs are

contiguous lands that are landward of the RPAs. Once these areas have been identified and mapped, Phase II involves the adoption of a comprehensive plan (or plan amendment). Phase III then requires the adoption (or revision) of a zoning ordinance to incorporate water quality protection measures consistent with the Bay Act's objectives.

The Virginia Wetlands Act (Va. Code § 28.3-1300) was enacted in 1972 to protect tidal wetlands. The Act is jointly administered by the Virginia Marine Resources Commission (VMRC) and local Wetlands Boards. The Virginia Institute of Marine Sciences (VIMS) provides technical assistance. To administer the permitting program, localities must adopt an ordinance which follows the outline of a model tidal wetlands zoning ordinance developed by the Virginia General Assembly (HB 861; Va. Code Ann. § 15.1-489, § 62.1-13.5). Permits are issued by a local wetlands board of five to seven members. Of the 46 eligible jurisdictions in the state, approximately 35 have assumed responsibility for administering this program. In localities that have not adopted the state ordinance, VMRC serves as the primary permitting authority. The VMRC requires compensatory mitigation on a limited basis to replace unavoidable wetlands losses. The VMRC has coordinated its permitting process under the Virginia Wetlands Act with federal permitting under section 404 of the Clean Water Act.

Although Virginia has no free-standing, comprehensive, nontidal wetlands program, two laws affect activities in the Commonwealth's nontidal wetlands. In 1989, the Commonwealth enacted a law (Va. Code § 62.1-44.15:5) to strengthen the section 401 certification program under the Clean Water Act through the issuance of a Virginia Water Protection Permit (VWPP). Under the law, the Virginia Department of Environmental Quality (DEQ) reviews permits for dredge, fill, or discharge activities or an alteration of interstate waters, for which an Army Corps individual permit is required or for which Virginia has conditioned the use of an Army Corps Nationwide Permit. Such activities require the applicant to obtain a VWPP from the DEQ.

The second law affecting nontidal wetlands is the Virginia Submerged Lands Act (Va. Code Ann. § 28.2-1200-1213, § 1300 et seq.). The Submerged Lands Act, administered by VMRC, regulates activities impacting the state-owned bottoms of bays, rivers, creeks, and shores, thus giving the Commonwealth some jurisdiction over riparian wetlands.

In Virginia, State responsibilities under the federal Coastal Zone Management Act are carried out by the VMRC.

Pennsylvania

The Pennsylvania Department of Environmental Protection has jurisdiction for the protection of wetlands under Chapter 105 of the Dam Safety and Encroachment Act of 1978. The program requires the Pennsylvania Department of Environmental Protection (DEP) to issue permits for activities and structures in watercourses, floodways, and bodies of water, including wetlands; the law is not limited to regulation of dredging and filling activities.

Responsibility for the program is divided between the central office, which provides guidance and oversight to assure uniform application of permit requirements and regulations, and six regional offices which conduct permit review, permit issuance, and permit compliance monitoring. A DEP Wetlands Protection Advisory Committee has been created to assist the DEP in developing wetland policy and regulations and to increase public participation in the policymaking process. In addition to submitting permit applications to the appropriate regional office, applicants must provide counties and municipalities with information concerning permit applications to enable them to comment or otherwise participate in DEP's consideration of a permit. The DEP has also developed partnerships with 43 of the Commonwealth's 67 county conservation districts to provide information on the program at the local level, to register general permits (maintaining records of activities authorized under general permits), and to perform on-site investigations to attempt to gain voluntary compliance (or to refer an investigation to a DEP regional office). Local municipalities can notify DEP if they have any concerns relating to a specific permit application and can request on-site inspections.

Compensatory mitigation is part of the Pennsylvania program. Pennsylvania has also created a wetland replacement fund to assist in providing compensatory mitigation for activities where a wetland impact for a given project is less than 0.5 acres; permittees contribute to the fund in lieu of constructing or restoring replacement wetlands on their own. The fund can also be used to receive and disburse contributions for voluntary wetland creation or restoration projects.

The Corps of Engineers has issued a state programmatic general permit (SPGP) recognizing Pennsylvania's permitting process for many types of activities in wetlands. Under the Pennsylvania SPGP, the Department of Environmental Protection may issue many permits that are considered to be sufficient to satisfy the requirements of § 404 of the Clean Water Act without further action by the Corps.

CONCLUSION

Federal and state laws are only a part of the wetlands conservation picture. Protection of wetlands and recognition of their local benefits are functions ideally suited to local governments. Local governments have substantial authority to conserve and protect wetlands, using at least five kinds of tools. These can be integrated into a larger

community strategy aimed at quality of life, economic development, and conservation of a community's heritage and resources. Many of the tools described here can also be used by local governments to protect valuable elements of the landscape other than wetlands, such as riparian forest buffers or open space. The following chapters examine each of the tools and variations of these tools in turn:

- Planning for wetlands conservation
- Regulation for wetlands conservation
- Incentives for wetlands conservation
- Acquisition for wetlands conservation
- Technical assistance, education, and outreach for wetlands conservation

Strategies for use of these tools are presented together with examples of their strengths and weakness, benefits and drawbacks. Real examples of their use by local jurisdictions in the Chesapeake Bay watershed are presented in order to provide a basis for comparison and sources of expertise. The last half of this guide consists of case studies designed to show how these tools have been used locally.

If a local governmental jurisdiction has any wetlands within its boundaries -- and virtually all do -- this guide will clearly illuminate at least a dozen different things that the local government can do to take these lands into account and to foster their conservation. The array of options is broad enough to encompass divergent geographies and political approaches. Wetlands conservation is truly a local issue -- too important to be left solely to state and federal regulators. An examination of the tools available to local governments shows just how much can be accomplished.

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The *Chesapeake Bay Agreement*, which establishes the overall goal of restoring the Bay, acknowledges that the planning efforts of local governments are vitally important to achieving these ambitious goals. The health of the Chesapeake Bay is dependent on the quality of water draining into the Bay, which in turn is dependent on appropriate land use patterns along the Bay's tributaries and the surrounding lands that drain into them. Thus, the Agreement relies on environmentally sensitive land use planning by local government to stem the tide of degradation in the Bay and eventually to promote its health.

LOCAL PLANNING FOR WETLANDS PROTECTION

Planning tools are available to all governments in the Chesapeake Bay watershed and provide an excellent opportunity to identify and conserve wetlands. Planning enables local governments to assure that economic development, placement of infrastructure, and community values all contribute to the decision-making processes that provide protection for important natural resources.

Planning provides significant advantages as a conservation tool. First, it enables communities to identify those resources that are most important to the community or

those that are most in danger of loss or degradation. Second, planning does not require the use of particular implementation approaches -- it can support a mixture of incentives, voluntary actions, acquisitions, regulation, and other approaches designed with community values in mind. Third, planning can be the basis for bringing diverse interests together to devise mutually acceptable solutions. Fourth, planning can serve as the basis for drawing on outside resources -- such as federal or state funds or technical support -- to accomplish locally desired objectives.

Planning that is intended to protect valuable natural resources falls short only where there is no attempt to implement a developed plan, or where the planning process loses sight of the objectives of conserving wetlands while also accomplishing desired economic goals.

Authority to Plan for Wetlands

Local government planning depends upon the authority granted by the State to the local jurisdiction to prepare plans or participate in cooperative planning. Each of the states in the Chesapeake Bay region has authorized local governments to plan for wetlands protection.

Maryland

The authority for local land use planning in Maryland rests primarily with the counties. Local authority to engage in planning is established by three articles of the Annotated Code of Maryland: Article 66B empowers noncharter counties and most municipalities; Article 28 empowers Montgomery and Prince George's Counties and applies to most of the towns within them; and Article 25A empowers charter counties. Charter counties are those counties whose authorities are prescribed in individual charters that set the terms for county government. Some other counties, called code-home rule counties, use a combination of authority found under 66B and 25A. The authority to plan is broad.

Maryland also has enacted additional planning authorities. In 1992, Maryland passed the Economic Growth, Resource Protection, and Planning Act, which amended Article 66B, but extended the changes to all counties and towns exercising planning and zoning authority. The Act instructs local governments to adapt their plans to include a set of established policies that include concentration of development, protection of sensitive areas, and stewardship of the Chesapeake Bay. The "Sensitive Areas Element," which is required for all plans, must describe how the jurisdiction will protect streams and stream buffers, 100-year floodplains, endangered species habitats, steep slopes, and other areas a jurisdiction wants to protect from the adverse impacts of development. Such planning must also conform to the Chesapeake Bay Critical Areas law, enacted in 1984. The

Critical Areas law requires local governments to develop programs to protect Critical Areas (a 1,000-foot area landward of state and private waters and wetlands), according to standards developed by the state's Critical Areas Commission (See Chapter 1).

Maryland's Nontidal Wetlands Protection Act also provides for the preparation of comprehensive watershed plans by counties and local governments that may be adopted by the Maryland Department of the Environment and used in regulatory decisionmaking at the State level.

Virginia

Virginia gives primary planning and zoning powers to the Commonwealth's counties and cities. In 1990, Virginia passed legislation that broadened the authority of these local governments to develop zoning ordinances to protect lands "of significance" for the natural environment (Va Code 15.1-489). These lands may include wetlands. This law, along with Virginia's Chesapeake Bay Preservation Act, acknowledges the critical relationship between local governmental land use controls through comprehensive planning and zoning and the protection of surface and groundwater resources, including wetlands.

Pennsylvania

Pennsylvania's Municipalities Planning Code (MPC) delegates the primary responsibility for regulating land use and development to local municipalities -- townships, boroughs, and cities. As a result, there are over 2,500 local government entities in Pennsylvania that each make decisions on guiding growth and development within their boundaries. Amendments to the MPC in 1988 expressly gave local governments the authority to plan and zone for the protection of wetlands. The Code states that zoning ordinances must be designed to "promote, protect and facilitate...preservation of the natural, scenic, and historic values in the environment and preservation of forests, wetlands, aquifers, and floodplains." (MPC Article VI, § 603).

This chapter explains the kinds of planning tools available to governments in the Chesapeake Bay region, and the ways in which these tools can be used to protect wetlands.

Comprehensive Local Land-Use Plans

Comprehensive plans are nonregulatory plans developed by local governments to determine the siting and conditions for future economic growth while providing for the general health, safety, and welfare of the community. Comprehensive plans are developed

by local planning commissions with public input through comments and public hearings. They are formally approved or adopted by the local government's governing body (e.g., board of supervisors, council).

Comprehensive plans specify how local governments will reach community goals. They guide decisions on adoption and amendment of zoning and subdivision regulations, and expenditure of public funds on roads, schools, utilities, parks and other infrastructure. They influence state and federal siting of facilities such as highways. They identify and target conservation and acquisition areas, guide government spending and borrowing choices, and influence private land use decisions.

Comprehensive plans do not themselves regulate activities, but instead establish the framework within which both regulatory and non-regulatory decisions will be made. They do not act as a regulatory trump card. Thus, if a local government approves a zoning ordinance, issues a specific permit, or takes some other governmental action that seems at odds with an existing comprehensive plan, the authorized activity cannot be halted by another party merely on the grounds that it does not conform to the adopted plan.

Development of comprehensive land use plans is an excellent opportunity for local governments, developers, conservationists, and planners to coordinate their visions of how conservation and development should be balanced to shape the social, economic, and environmental future of their municipality. Comprehensive plans can explicitly incorporate wetlands protection in their recommendations, or can simply include wetlands in an overall strategy that includes conservation provisions.

Each of the states in the Chesapeake Bay watershed has authorized its local governments to prepare comprehensive plans. For example, Pennsylvania's Municipalities Planning Code delegates the primary responsibility for land use planning to local municipalities. Counties are required to develop such plans, while cities, boroughs, and townships are merely authorized to do so. A comprehensive plan must include a statement of the municipality's objectives for its future development, as well as a land use plan. The plans must include a survey of natural features affecting development, including wetlands, and may include specific provisions for development and conservation of parks and recreation, public land, prime agricultural lands, flood plains "and other areas of special hazards."

Comprehensive planning in Maryland is carried out by counties and towns under several different articles under the state code, as explained above. Somerset County, Maryland, among others, has had success in planning for wetlands using the comprehensive planning process. The County's comprehensive plan states the explicit goal of respecting sensitive environmental areas, such as wetlands and the Critical Area Zone adjacent to streams, rivers and the Chesapeake Bay. The plan encourages regulations and other measures that will preserve environmentally sensitive areas and development standards to retain natural on-site features such as wetlands. The County has also developed the *Big Annemessex River Nontidal Wetlands Watershed Management Plan*. This watershed management plan is designed to protect habitat for threatened and

endangered species, to direct mitigation to suitable sites, to address issues of flood management and water supply, and to protect the water quality of the watershed. The Plan is also meant to protect valuable nontidal wetlands by identifying the nontidal wetlands resources and developing appropriate protection strategies based on a functional assessment. The Maryland Nontidal Wetlands Protection Act provides for using approved watershed plans for permitting and decision-making. The Somerset County plan was developed, in part, so it could be approved by the Maryland Department of the Environment and used to facilitate state decisions.

The Virginia Code requires that counties and cities prepare comprehensive plans and update them at least every five years. Plans are implemented through zoning ordinances and other measures and may include specific designations for categories of public and private use and development, including transportation systems, community service facilities, historic districts, and groundwater protection measures. The plans may also include capital improvements programs, subdivision ordinances, zoning ordinances, and zoning district maps. Comprehensive plans can be an important planning tool in Virginia because local planning commissions must certify that projected public projects are in accordance with any preexisting comprehensive plan. However, notwithstanding conflict with a preexisting comprehensive plan, local governments have the power to overrule a planning commission's decision.

Comprehensive plans that provide for the protection of wetlands through zoning, siting of capital improvements to avoid wetlands, coordination of procedures with state and federal programs, and other means can play a significant role in focusing development away from sensitive areas and targeting appropriate wetland areas for acquisition or special protection. Although comprehensive plans are not regulatory tools -- as local governments can adopt ordinances that are counter to a plan's goals -- they provide an opportunity for local governments to analyze their natural resources holistically before making decisions about the direction of development.

Critical Area Plans

Critical area plans are a specialized type of comprehensive planning specifically authorized under Maryland's Chesapeake Bay Critical Areas Law (Md. Code Ann. § 1801 et seq.). These plans are designed to meet the goals of the law and specifically work to minimize adverse water quality impacts, conserve valuable habitat, and accommodate future growth in the least polluting manner. Critical Areas fall into three planning categories: intensely developed areas, limited development areas, and resource conservation areas. Each has a density limit and incorporated performance criteria that are directed to protecting water quality. The Chesapeake Bay Critical Areas Commission was charged with developing the criteria to guide plans and actions in designated Critical Areas. Critical Areas Plans have been adopted by jurisdictions throughout Maryland, except for a few that received exemptions under the law and commission procedures.

Virginia's Chesapeake Bay Preservation Act also requires Virginia jurisdictions in "Tidewater Virginia" to protect water quality by complying with the Act and designating Chesapeake Bay Preservation Areas. The Act provides for the preparation of special plans by local governments to protect water quality. Governmental jurisdictions outside the region may adopt similar measures but are not required to do so (See Chapter 1).

The local plan adopted by Isle of Wight County, Virginia under this law includes performance criteria for land use and development within the Chesapeake Bay Preservation Area. The program includes a comprehensive plan that addresses protection of the Chesapeake Bay Preservation Areas and the state's water quality, a zoning ordinance that incorporates measures to protect the Preservation Areas and requires compliance with all land use and development performance criteria, a subdivision ordinance that incorporates measures to protect the water quality in the Preservation Areas and assures that all subdivisions in the Areas comply with land use and development performance criteria, and an erosion and sediment control ordinance.

Floodplain, Watershed, Riparian Zone, Wetlands, and Greenway Plans

Many planning tools are specifically focused on floodplain and watershed areas. Floodplains have long been an issue in local planning because of the potential for hazard and loss of property and life. Each of the states in the region provides authority for floodplain planning and regulation. Wetlands are often found in association with floodplains.

River and watershed planning has gained in importance recently because of increased understanding of the impacts of land use and land clearing activities on water quality, including wetlands and groundwater. Increasingly, river corridors in the region are viewed as environmental amenities that communities value highly. Planning related to these corridors can be a valuable contribution to the conservation of wetlands.

In Virginia, for example, the Middle Peninsula Planning District Commission (MPPDC), supported the 1987 establishment of the Dragon Run Conservation District and assists planning efforts in the District. The MPPDC is developing a watershed management plan. The Conservation District, which includes lands in four different counties, was established to protect and conserve fragile resource areas that perform valuable functions in their natural state and that are unsuitable for development and intense use. Areas designated as the Conservation District include wetlands and swamps and areas important for floodplain management, aquifer recharge, water storage, and critical wildlife habitat.

Plans can take a variety of forms. For example, Fredericksburg, Virginia, adopted a "City Watershed Property Management Policy" in 1991, which provides both for public

recreational use of city owned lands and for restrictions on land uses that threaten water quality functions. In 1992, the Rappahannock River Watershed Committee was formed to provide a foundation for effective and mutually beneficial water resources management. The Rappahannock River Watershed Plan was completed in October 1994.

Watershed planning is also used by Maryland counties, and is specifically encouraged by Maryland's Nontidal Wetlands Protection Act. The Act provides that the Department of the Environment may approve local watershed plans and use them to guide nontidal wetland permitting decisions. Such plans are also useful to local governments in establishing patterns for projected future land uses. The Parkers Creek Watershed in Calvert County, for example, contains nontidal wetlands, the only pristine saltwater/freshwater marsh on Maryland's Western Shore, and one of the largest contiguous tracts of forest in Calvert County. To protect this resource, Calvert County created the Parkers Creek Watershed Task Force. The Task Force conducted a functional analysis of the wetlands and drafted a Watershed Management Plan. One of the goals of the Plan is to address wetlands loss and mitigation on a watershed basis.

Planning for greenways, which are often adjacent to rivers or streams, lakes, or coasts, can have important economic benefits for communities. Greenways are natural corridors that are set aside to connect larger areas of open space, to provide for the conservation of natural resources, protection of habitat, and movement of plants and animals, and to offer opportunities for linear recreation, alternative transportation, and nature study. These linear protected areas also serve as buffers for waterways, helping to steer growth to more suitable areas. The World Wildlife Fund has noted that greenway efforts offer the potential to protect not only individual wetlands in a river or stream corridor, but also the wetlands' water supplies, buffer areas, and linkages with other areas. Greenways can make substantial economic contributions to communities as well. By enhancing the character and recreational opportunities in an area, greenways add to the quality of life for business and residents and can attract tourists and tourism-related business.

Greenway planning efforts are underway in Virginia, Maryland, and Pennsylvania. Although Virginia does not have a formal statewide effort, there are several counties working on greenway projects. Pennsylvania launched a statewide effort in 1996. Maryland's effort, which has been underway since 1990, is working to establish a statewide network of greenways. The Maryland Greenways Commission has published an atlas showing protected lands in each county along with existing and potential greenway corridors. Approximately 900 linear miles of greenway corridors are currently protected in Maryland.

Special Area Management Plans (SAMPs)

The federal Coastal Zone Management Act seeks to promote natural resource management in our nation's coastal areas. The purpose of the Act is to preserve, protect, develop, and restore the natural resources of the coastal zone, including wetlands, while balancing the need for "reasonable" growth.

The Act encourages states, local governments, and private groups to develop Special Area Management Plans (SAMPs) to protect specific resources. SAMPs contain a detailed and comprehensive statement of policies, standards, and criteria to guide public and private uses of lands and waters, as well as mechanisms for implementation. Federal funding is available to support SAMP efforts.

SAMPs have been used within the Chesapeake Bay watershed to deal with a variety of issues that affect wetlands, waters, and local land development. The Baltimore County Department of Environmental Protection and Resource Management has significant experience with SAMPs. The county has two major peninsulas in which sewers are being extended to resolve health and sanitation problems. The provision of these services in sensitive environments can be both beneficial and detrimental because of their potential to encourage more growth in areas already under ecological threat. As part of the permitting process, the county decided to undertake SAMPs to address questions about the potential secondary and cumulative impacts from additional development caused by extending the sewers. SAMPs have also been used in Virginia to assist in comprehensive planning in coastal jurisdictions.

Outside the Chesapeake Bay watershed, the Hackensack Meadowlands SAMP was undertaken to produce a comprehensive plan that would balance environmental protection and the economic development of the highly impacted area New Jersey area 10 miles outside of New York City. The Meadowlands were historically a freshwater white cedar marsh, but unplanned development, wetland conversions, and the siting of over 20 landfills in the 34-mile region, created an ecological regime vastly different and biologically impoverished compared to the freshwater-influenced system that existed prior to the 1920s. The Hackensack Meadowlands SAMP contains specific policies to guide remediation, enhancement, and protection of the region's natural resources, while simultaneously allowing development in less sensitive areas. The SAMP's Environmental Improvement Program addresses such issues as solid waste management and landfill closures; water resources protection and monitoring; flood control and stormwater management; contaminated land reclamation; wetlands protection, enhancement and management, including mitigation banking; remnant habitats; parks and recreation; air quality; historic and cultural resources; and environmental enforcement. The SAMP has proven to be a model for integrating area-wide master planning with federal environmental regulations.

SAMPs are useful because they are site-specific comprehensive plans designed to protect natural resources while allowing for reasonable economic growth. Because development of a SAMP requires a significant investment in gathering data, the process often leads to a better understanding of coastal resources and some of the conflicts between conservation and development a community may be experiencing. Investment in a SAMP can also lead to increased public awareness and appreciation of wetlands. One of the strengths of SAMPs is that they can be designed to address an extremely wide variety of coastal resource management problems, from the protection of wetland resources to infrastructure planning. In addition, because of their proactive nature, SAMPs can alleviate the often hostile and seemingly incompatible goals of wetlands protection and economic growth. SAMPs can be incorporated into broader planning processes and acquisition strategies in an area and can lead to a more comprehensive approach to wetlands protection. Perhaps most importantly, SAMPs can help to identify and protect the most environmentally sensitive and threatened wetlands in an area. Costs associated with the preparation and implementation of a SAMP are eligible for 100% funding through Coastal Zone Enhancement Grants through the Ocean and Coastal Research Management Office of the Department of Commerce.

Public Infrastructure Plans

Local governments can impact and direct growth in their municipalities through public infrastructure plans. For example, by restricting sewage hookups for residential and commercial residents in certain environmentally sensitive areas, development can be controlled.

In each of the states in the Chesapeake Bay watershed, capital improvement planning and other forms of planning are available options to local governments. These types of advance consideration can significantly impact the number of conserved wetlands.

In Pennsylvania, the Sewage Facilities Act (Act 537) is particularly important in the planning context. Indeed, in many local government jurisdictions - particularly in rural areas - it is the only planning device that is implemented. The Act requires municipalities to develop a ten-year plan for sewage facilities, subject to review and approval by the Department of Environmental Protection (DEP). The plans are updated every five years, and landowners may request that the plan be amended to authorize a proposed sewage system. When there is a new development, plan revisions must be initiated and approved by the local government and the DEP. In localities with comprehensive plans, the sewage facilities plan should be consistent with the comprehensive plan. In many Pennsylvania localities lacking comprehensive plans as well as zoning and subdivision controls, the sewage facilities plan often becomes the only avenue to influence growth and development and to take into account the effects of development upon wetlands and watersheds.

Infrastructure planning can be an important determinant of growth. As a result, it can either protect or impair wetlands. Careful targeting of public improvements and public approval of private utilities can play a significant role in wetlands conservation.

TOOLS THAT MAY ASSIST LOCAL GOVERNMENT PLANNING

The previous section identified the primary tools that are available to local governments to plan for the identification and conservation of wetland areas. This section identifies tools that can assist local governments in carrying out the planning processes identified above or in implementing plan objectives.

Environmental Guidelines for Development

In the context of comprehensive planning, many jurisdictions have adopted environmental guidelines for development. These guidelines are intended to facilitate and simplify the review of proposals for development and to assure that natural resources, such as wetlands, are fully taken into account in the planning process.

These guidelines first identify areas or land types of particular concern, value, hazard, or vulnerability. Once these lands are identified, the guidelines then specify what actions must be taken by developers and by the local planning commission to assure that the development is not inconsistent with the natural capacity of the land and its environmentally significant functions. Montgomery County, Maryland has used environmental guidelines to define the process for preparing a natural resources inventory for development sites and for protecting natural resources during the development process. The guidelines also provide detailed support for elements of the county's general comprehensive plan (and local area master plans) that deal with sensitive areas as required under Maryland state law. The guidelines direct the Planning Department to evaluate proposed wetland impacts with the following sequence in order of preference: avoid the impact, minimize the impact, rectify the impact by repair or restoration, reduce or eliminate the impact by preservation and maintenance activities, and compensate for the impact by replacing or providing substitute resources or environments.

Environmental guidelines may be adopted as separate portions of a comprehensive plan, a Critical Areas plan, or a capital improvements plan, issued as advisory guidelines by a planning commission, or independently adopted by ordinance. They are particularly useful in providing certainty for development interests so that environmental requirements can be taken into account before any project is planned or pursued. In addition, they can help a local government provide a consistent level of protection to a critical resource such as a wetland or riparian area.

Environmental Advisory Councils

Planning is not simply the development and approval of a document or even a set of maps identifying land use objectives. Rather, it is a process that must be flexible enough to deal with new issues and rising concerns. Neither the pattern of economic development nor the significance of ecological features is always well understood at the outset of the planning process. Accordingly, it is useful to develop a method for integrating environmental concerns into ongoing planning and decision-making.

Pennsylvania's General Assembly passed an act in 1978 that authorizes municipalities, or groups of municipalities, to establish environmental advisory councils (EACs). EACs are established by ordinance, and they are responsible for advising the local planning commission, park and recreation board, and elected officials on issues that affect the protection, conservation, management, promotion and use of natural resources in the area. Council members are appointed by local governing bodies, and it is recommended that one member also serve on the municipal planning board.

EACs can promote municipal wetlands protection by participating in updating the comprehensive plan or designing natural resource ordinances that specifically protect wetlands. The EAC in East Hanover Township, Pennsylvania, for example, developed a Natural Resource Inventory to assist the township in updating its Comprehensive Plan. The Inventory included a mapping project that identified the area's wetlands to aid in local decision-making. The EAC also developed and wrote a free-standing wetlands ordinance which was adopted by the Board of Supervisors in 1992. The Pennsylvania Environmental Council, a statewide conservation organization, has created The EAC Network to encourage the establishment of new EACs by Pennsylvania local governments and to promote the effectiveness of existing councils, strengthen their role in environmental decision-making, and encourage the Commonwealth to provide them with assistance.

Although EACs are formally recognized under Pennsylvania law, planning commissions in other states have made use of collaborative citizen groups to help identify and work on significant areas of environmental concern. In Virginia, several regional planning district commissions have organized councils to assist them in long-range planning involving environmental and other issues. For example, the Dragon Run Steering Committee plays a key role in identifying and addressing environmental impacts to the wetlands and other resources of a 40 mile long tributary to the Chesapeake Bay on Virginia's Middle Peninsula. Maryland counties have also created environmental planning organizations for advisory purposes. For example, Harford County's Environmental Land Preservation Commission, established in 1990, carries out key planning for the protection of stream buffers and open space.

Creation of an advisory body can elevate the importance of wetlands and other environmental resources as a community makes decisions about its development and infrastructure. Environmental advisory councils can serve an important role in identifying

opportunities for conservation and in developing responsive strategies that are consistent with community values.

Advance Identification (ADID)

The guidelines for the federal Clean Water Act (40 C.F.R. § 230.80) provide for a planning process to identify, in advance of permit applications, whether areas are suitable for discharges into waters of the United States, including wetlands. The advance identification process (ADID) is carried out jointly by the U.S. Environmental Protection Agency and the Army Corps of Engineers, in cooperation with local governments who are attempting to determine where wetland areas are and how they might be affected by development activities. Advance identification studies are typically conducted in areas that have important wetlands resources and either an identified or anticipated increase in development activity. States in which ADIDs are conducted have a consultation role that often includes local governments.

The advance identification process usually involves an assessment of wetlands functions and values in the area. This information is evaluated by the agencies to determine which wetlands in the study area have ecologically significant values and should be protected from future fill activities and to determine, in some cases, which wetlands are of lower value and could serve as fill sites. Results of the ADID study are informational and advisory, not regulatory. However, the results of an ADID study may be used to support a range of actions. For example, the Corps may issue general permits for certain activities in areas designated as suitable for disposal.

ADID studies can be designed to aid local and statewide zoning and planning efforts and preservation of wetland resources. Several advance identification efforts have been coordinated with efforts to adopt Special Area Management Plans (SAMPs, see above), and several have included mitigation banking components. For example, in West Eugene, Oregon, the ADID process led to the adoption of a § 404 general permit allowing local control over wetlands development. Because the ADID was incorporated into the City of Eugene's general comprehensive plan and land use law, the ADID effort also streamlined the regulatory process. Another ADID wetland mapping project was conducted in a 500-acre area of Quakertown Swamp in Bucks County, Pennsylvania because of concern for cumulative and water quality impacts on the land. The region had been recognized as significant by the Pennsylvania National Diversity Inventory and was under increased threat of urbanization. The mapping, predominantly carried out by the Bucks County Conservancy, enabled all parties to determine which wetlands are generally unsuitable for filling and provided technical information on the Swamp's wetlands values and functions to the local community.

ADID has not been extensively used in the Chesapeake Bay watershed but may provide a tool that can assist in the development of local plans and strategies.

CONCLUSION

Planning tools can be critical components of a wetlands strategy. Planning enables a community to evaluate its natural assets and to accommodate plans for future growth or development while protecting and enhancing these assets. Although planning alone is never sufficient to accomplish all of the wetlands protection that is needed, it provides an important foundation for the use of the other tools discussed in the succeeding chapters of this handbook: regulatory approaches, incentives, acquisition, and technical assistance. Planning can also be an important boost to voluntary conservation efforts and to the encouragement of an environmental ethic within the community. People and organizations work to protect what they care about, and they care about what they know. If planning can increase knowledge of the importance of wetlands and associated resources, that knowledge can itself produce action and responsibility.

RELATED CASE STUDIES

For more examples of how planning tools have been used in the Chesapeake Bay watershed, refer to the following case studies at the end of this handbook:

Comprehensive Plan: Lycoming County, PA	CS-1
Environmental Advisory Commission: East Hanover Twp., Dauphin County, PA ..	CS-2
Environmental Land Preservation Commission: Harford County, MD	CS-3
Environmental Guidelines: Montgomery County, MD	CS-4
Environmental Quality Corridors: Fairfax County, VA	CS-5
Watershed Planning: Middle Peninsula Planning District, VA	CS-6
Watershed Information and Planning: Elizabeth River, VA	CS-7
Heritage Greenway Planning: Lower Susquehanna River, MD	CS-8
Special Area Management Plan: Baltimore County, MD	CS-9
Special Area Management Plan: Northampton County, VA	CS-10
Utility Siting and Construction: Baltimore County, MD	CS-30

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Chapter Three:



Regulation

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Local governments have the authority to protect wetlands using a variety of forms of local regulation authorized by state laws. When coupled with wetlands planning, local government regulation can be a particularly valuable tool for wetlands conservation. Regulation by local governments can take a variety of forms, from zoning tools, to subdivision regulations, to direct wetland and floodplain controls.

Regulation in support of wetlands conservation is an important tool for local governments. Regulation has the advantages of enforceability and predictability. It allows landowners to know in advance what is lawful and what protective obligations apply. It also offers significant flexibility to local governments because of the wide variety of approaches that can be adopted -- particularly in the zoning context.

On the other hand, regulation is not always politically feasible or effective in protecting important wetland areas, particularly where existing development pressures are intense. Regulation works best when it is coupled with other tools, such as comprehensive planning or watershed planning and incentive mechanisms that encourage compliance. Incentive mechanisms can also be built into regulatory approaches such as performance-based zoning, transferable development rights, or bonus/incentive zoning.

ZONING TOOLS TO PROTECT WETLANDS

Zoning is the most common form of local land use regulation in the United States. It is used, among other things, to identify and protect resources important to the community and to coordinate the timing and character of the community's economic development. Zoning helps to minimize the conflicts between incompatible land uses and provides for the location of public services and infrastructure. Zoning's prevalence, public acceptance, and inherent flexibility make it a useful tool for local governments interested in conserving a community's wetlands.

Zoning is carried out by local governments under the powers given to them by state law. Local governments typically use zoning to divide their local area into zones (often called "districts"). In these zoning districts, the zoning ordinance prescribes which specific uses are authorized, which are conditionally authorized, and which are prohibited. For example, if an area is zoned as residential, a landowner may construct a house as a matter of right; whereas, certain kinds of commercial establishments may be authorized in the zone case-by-case only if they meet certain conditions (e.g., day-care centers, convenience stores). Industrial and most commercial uses may be entirely prohibited. The same kind of zoning may be used to establish building lot sizes or resource protection areas. Zoning ordinances in the Chesapeake Bay region can provide a basis for wise conservation of wetlands on private and public lands consistent with the economic and social goals of the community.

Before adopting a zoning ordinance, the local government prepares a comprehensive plan identifying land uses and objectives (See Chapter 2). But it is the zoning ordinance that actually regulates land use practices -- not the underlying comprehensive plan. Although the procedures for zoning vary state-by-state, and also within states based on the law governing the type of governmental unit doing the zoning (e.g., a county, city, township, borough, town), zoning is carried out in a similar fashion in most jurisdictions. In general, the zoning ordinance is developed by the locally appointed planning board and is enacted into law by vote of the elected local government after public hearings. Zoning ordinances are amended in the same fashion. Amendments to zoning ordinances are particularly important because localities whose existing zoning does not address wetland protection can amend their ordinances to take wetlands into account.

This chapter discusses several basic zoning tools that can be used to protect wetlands. There are many others available. Note that regulatory tools are useful not only for protecting wetlands themselves, but also for protecting the surrounding upland areas that contribute to the health of the wetlands. A wetland area surrounded by impervious surfaces -- such as roofs and parking lots -- is unlikely to maintain valuable wetlands functions. Rapid runoff from the impervious areas will bring sediment and pollutants into the wetland, degrading it and killing its living resources. The increased speed of the runoff

from impervious surfaces will dislodge wetland soils and vegetation, reducing the structural integrity of the wetland. Zoning can help protect both wetlands and the lands which drain into them, while still accommodating and encouraging appropriate community development.

Zoning tools that may be useful for wetland protection include cluster zoning, planned unit development, performance-based zoning, resource protection zones, overlay zones, transferable development rights, bonus/incentive zoning, large lot zoning, agricultural protection zoning, and urban growth boundaries. Each of these zoning tools is further illustrated by examples in the Case Study portion of this guide.

Cluster Zoning and Planned Unit Development

Because of concern with the adverse effects of sprawl -- both on the environment and on the costs of infrastructure, such as sewers, roads, schools -- many zoning ordinances provide for cluster development (sometimes called open space zoning) or for planned unit development. These techniques provide ways in which developers can set aside larger areas of open space to protect sensitive features such as wetlands, steep slopes, or recreational areas while concentrating the construction on a smaller area of the tract.

If a 50-acre parcel would, under typical residential zoning, support 90 houses on half-acre lots -- not counting roads and other infrastructure -- use of the cluster zoning approach might concentrate the 90 units on half the parcel, while dedicating the rest for open space, including wetlands. Even higher development densities are sometimes awarded for clusters to encourage open space preservation. For example, 110 units might be approved for the developed half of the parcel in exchange for the protection of the remainder of the parcel.

Planned unit development rules operate in a similar fashion, except that the developer is encouraged to propose a clustered development rather than required to do so. Cluster zoning and planned unit development can reduce the costs of new roads, utilities, and other infrastructure, while preserving sensitive areas such as wetlands and their surrounding uplands. The resulting open space can even become an amenity, often resulting in higher values for the clustered units.

These cluster approaches are particularly useful in areas where the remaining open land can be part of a larger assemblage of private and public lands that provide ecological and recreational values. Not only is this helpful from a practical perspective by preserving the biological and hydrologic functions of wetlands and their surrounding uplands, but also it increases the value of the developed area, making the economics of the development work. Moreover, experience has shown that the purchasers of units are likely to become

advocates for the continued protection, maintenance, and ecological functioning of the open space over the longer term, as it affects both their quality of life and their investment.

Resource Protection Zones

Some local governments use zoning to create resource protection zones. The zoning ordinances directly limit or prohibit incompatible development within these zones. Resource protection zones may, for example, protect wetlands that are essential to the water quality of a community's drinking water supply. Typically, the uses authorized within these zones are low intensity practices such as harvesting of wild crops, hunting and fishing, conservation activities, and temporary uses. Certain uses, such as construction of permanent structures or siting of waste disposal areas, are prohibited outright; whereas, other medium intensity uses may be allowed only under a conditional use permit.

Typical resource protection zones for wetlands established by local governments in the Chesapeake Bay region include stream buffer zones. These protect the fragile areas around streams from activities that may cause erosion, instability of the streambank, or the entry of pollutants into the waterway. Zoning ordinances use two general approaches to establish resource protection zones for stream buffers -- fixed buffers and floating buffers. A fixed buffer zone may, for example, prohibit any development within 200 feet from the mean high-water line of a perennial stream or within 50 feet of the margin of a wetland. Alternatively, a fixed buffer can be supplemented with a floating buffer zone based on site-specific characteristics, including soil and runoff characteristics (such as steep slopes) or the occurrence of wetlands within the limits of the fixed-buffer.

Resource protection zones are best used when the resource is well understood and its connection to the well-being of the public health, safety, and welfare can be readily demonstrated. Because activities are significantly restricted within the zone, particular care must be taken to assure that the limitations on the use of private property are proportional to the governmental concern to be addressed.

Performance-Based Zoning

Standard zoning ordinances identify specific geographic areas on the zoning map where certain uses are authorized, conditionally authorized, or prohibited as well as the terms and conditions for such uses in each zone (such as development densities or kinds of facilities). The standard approach thus dictates the form of development that is permitted to occur in an effort to achieve predictable results.

In contrast, performance-based zoning ordinances identify the performance criteria that must be met by any development in the zone, but allow broad variation in the forms of the development activities themselves. Performance-based zoning gives the developer flexibility in planning and designing the development as long as the local government's public objectives (performance standards) are fully met.

For example, a performance-based zone may set a standard for natural resource protection, such as preserving wetlands, and a standard for nonimpervious surfaces but be silent on such traditional matters as minimum lot size or building type. Depending upon how the developer decides to meet the standards, the developer in such a zone may build more or fewer structures, cluster them, disperse them, or mix different building types. The zoning requires only that the developer satisfy the protective requirements. Thus, performance-based zoning allows substantial creativity on the part of the developer in meeting the public's needs identified in the zoning ordinance. Performance-based zoning offers an exchange: the development community achieves greater flexibility (and hence ability to innovate for increased financial return). In exchange, the local community assures that its land use or resource concerns are addressed.

Performance-based zoning offers many advantages over standard zoning, but ordinances must be carefully tailored in order to assure that the objectives of the community's comprehensive plan are incorporated in the zoning requirements. In addition, the local government's professional staff dedicated to reviewing development proposals and site plans must be well-qualified since the determination of whether a given proposal will meet the performance criteria is more difficult than simply determining that the development meets standard zoning requirements.

Overlay Zones

Overlay zones are a type of resource protection zoning that is superimposed on traditional zoning to protect specially recognized values, while still allowing the underlying use in suitable forms. For example, an area may be zoned for commercial use, but part of the area may also be subject to an overlay zone to protect a sensitive watershed or wetland. Commercial uses in this overlay area would need to meet additional requirements -- such as reduction of impermeable area, greater control of runoff, or vegetation requirements -- in order to operate within the zone. Overlay zones may also include requirements which specify, for example, the percentage of land that must be set aside before calculating the subdividable and developable remainder.

Overlay zones are useful where there is a particular resource issue that cuts across a number of different development areas. They are particularly helpful for protecting wetlands in areas where wetlands lie within several different zoning districts. An overlay

zone may establish the basis for a buffer around a wetland area or special vegetation protection requirements. Overlay zones can also be used to designate areas where transferable development rights may be created and where they may be used. (See discussion below).

Transferable Development Rights (TDRs)

Transferable development rights (TDRs) are a variation on traditional zoning. They are used when it is desirable to limit development in a particular area to protect resources, such as wetlands, open space, or farm land, and to concentrate development in another area. Specifically, instead of simply imposing limits in sensitive areas, this approach recognizes development rights in the areas where development is limited but allows the rights to be used in other areas.

TDRs are based on the concept that the development rights associated with land can be severed from the land and used in another location. With TDRs, landowners in sensitive areas where development is limited (or even prohibited) by a zoning ordinance may sell their development rights to those wishing to develop in other areas of the community where development is desired. The purchase of these TDRs allows a developer in the receiving zone to exceed normal zoning or subdivision limitations on density, height, or other requirements. Thus, with TDRs, the wetland owner whose development opportunities have been limited by a zoning ordinance not only remains in possession of the undeveloped property, but can also derive an economic return on the development potential of the land. At the same time, developers in areas where development is desired or can be better tolerated can engage in even more intensive uses of their property.

TDRs can be used to protect wetlands and surrounding uplands but are best used when there is a substantial area to be protected and a practical limit on the developable land otherwise available within the local jurisdiction. Unless there is some demand for the use of the TDRs, there will be no purchasers; conversely, unless a significant number of TDRs are available, purchases will not be economically worthwhile for the developer. Thus, TDRs are most likely to be useful in the wetlands context where there is a fairly large area that is to be set aside from intensive development (probably containing both wetland and sensitive uplands, and perhaps lands in agricultural use), and at the same time there is a development demand that can be focused on specific areas where TDRs can be used. If a significant amount of unrestricted developable land is widely available in the jurisdiction, a TDR approach may not work well because there will be no advantage to a developer buying them. To date, TDRs have worked most successfully in areas where

they have been used to protect farmland and where suburban development pressures have been significant.

Bonus/Incentive Zoning

Bonus or incentive zoning shares some of the characteristics of transferable development rights, except that the additional development rights are generated and used by the developer itself rather than purchased from another landowner. Incentive zoning also resembles performance-based zoning, except that instead of setting a performance standard that all development must meet, incentive zoning sets both a standard set of conditions and an optional set of incentives that the developer may *choose* to meet in exchange for more flexibility. For example, an incentive zoning ordinance may allow a developer in a particular zone to build at a higher density than is normally allowed in that zone *if* the developer sets aside additional open space or adopts certain energy saving or transportation measures.

Incentive zoning can be effectively used to protect wetlands. For example, in an area where there is concern about rapid runoff of rainwater, incentive zoning may allow a developer to exceed height limitations or construct larger multiple unit dwellings than are normally allowed if the developer reduces impervious surface by providing underground parking, creates artificial wetlands, or establishes native vegetation on a sizable portion of the parcel. The developer is not required to do any of these things, but there is an incentive to propose one or more of them as part of the development plan.

Incentive zoning cannot be relied upon to accomplish all desired protection of wetlands in an area because its effectiveness ultimately depends upon numerous private decisionmakers deciding that the bonus is economically significant to them and compatible with their other project objectives. It is best used as a way of encouraging a trend toward desired behavior that already has other elements working in its favor. For example, in areas where stormwater or zoning requirements already favor maintenance of vegetated open space, incentive zoning may provide a bonus treatment where wetlands are restored as part of that open space.

Large Lot Zoning

Because zoning has traditionally concerned itself with community density and minimum lot sizes, one of the earliest land and wetland conservation approaches to arise was large lot zoning. For example, large lot zoning might require each house constructed within a zone occupy a building lot of at least 5 acres, or even 30 acres. The theory is that

spreading occupancy thinly across the landscape will conserve open space and reduce impacts to groundwater, wetlands, habitat, and other resources.

However, large lot zoning may also produce undesirable effects in some areas, including the promotion of exurban sprawl, the fragmentation of habitats and hydrologically sensitive areas (with roads, power lines, etc.), increased pressure on public services like roads, schools, and sewerage, and the exclusion of lower income residents who cannot afford such large parcels of land. Indeed, some forms of large lot zoning have been rejected by the courts where they are not closely tied to a proper public purpose. For example, local governments must demonstrate a purpose other than exclusion of lower income residents. Large lot zoning is still used in many jurisdictions, and some jurisdictions have maintained large lot zones over time in sensitive areas, but the tool has been justly criticized on conservation grounds as less protective than other tools discussed in this section.

Agricultural Protection Zoning

Development pressures often lead to the conversion of agricultural land to developed uses; this can have an adverse impact on agricultural wetlands. Agricultural zoning is used to keep productive or sensitive lands in agricultural use in designated zones. There are several types of agricultural protection zoning used in the Chesapeake Bay watershed.

One approach simply establishes large minimum lot sizes at a level that makes non-agricultural use unattractive. This approach can be effective, but it does not assure the continuation of farming. Clarke County, Virginia uses a variation on the large-lot zoning approach in agricultural areas. Subdivisions of agricultural land must produce parcels greater than 100 acres, or less than or equal to 1 acre. This requirement discourages 5-20 acre "farmettes" while concentrating development.

A second approach uses an area-based allowance to specify how many dwelling units may be built on the parcel, but -- like cluster zoning -- requires that the dwellings be built on small lots, leaving the rest of the parcel dedicated to agricultural uses. The area-based approach may also include requirements that the dwelling units be built on poor soils or areas where they will not impair farming activities. Area-based agricultural protection zoning may determine how many units can be built either by establishing a fixed density such as one housing unit for every 30 acres in the tract, or by using a sliding scale that allows proportionally fewer units as the size of the tract increases. The sliding scale provides proportionally *more* restrictions on larger tracts on the grounds that these are the most likely to remain economically viable for farming, while not prohibiting subdivision and development outright.

Several Maryland counties have adopted mandatory cluster zoning in agricultural areas. Several Virginia jurisdictions use the large-lot approach. Pennsylvania local jurisdictions have used several different forms of area-based agricultural protection zoning, as well as large lot zoning for the same purposes.

Urban Growth Boundaries

A local government may use its zoning authorities to define an urban growth boundary within which urban infrastructure and development are authorized and encouraged, and outside of which they are discouraged. The boundary line is used to accommodate foreseeable development needs in a relatively compact area within which municipal services can be provided. Outside the boundary, development is restricted or encouraged at a much lower density. This technique is used to control exurban sprawl and to encourage infill (development of vacant lots and rehabilitation or replacement of obsolete buildings) and compact development of urban centers. Frequently, this approach also streamlines development approval processes within the boundary to provide a further incentive for development to occur in this area.

The urban growth boundary has incidental benefits for wetlands, since certain wetland areas slated for protection may be outside the boundary and thus spared some of the development pressures they would otherwise experience. However, by concentrating development inside the growth boundary, particular care must be given to wetlands in the development area which may be adversely affected.

SUBDIVISION REGULATIONS AND RELATED PERMITS

Whether or not zoning ordinances are in place, most jurisdictions have enacted subdivision controls. Typically these ordinances regulate the size of new lots that can be subdivided from larger parcels of undeveloped land, specify the dedication of lands for utilities, roads, and sidewalks, prescribe requirements for stormwater management and other concerns, and indicate how buildings may be placed on buildable lots (setback requirements, minimum design requirements, etc). Subdivision ordinances can be used to require avoidance of wetlands by excluding wetlands and other sensitive areas from buildable lot areas. They can also be used to impose controls on larger developments so that disturbance of wetlands is minimized.

Related to subdivision regulations is the process local governments use to oversee particular development proposals, such as site plan approval and the issuance of grading permits and building permits. Ordinarily, any significant development will trigger a

requirement for local government approval of the site plan to be sure that all zoning and subdivision requirements have been met. These requirements include such factors as the provision of utilities, sewerage or on-lot disposal, traffic plans, erosion controls, open space, and safety. In addition to site-plan approval, many jurisdictions also require an application for issuance of a grading permit before any land clearing activities begin. This ensures that all necessary erosion and water quality controls are in place. Building permits are required by most jurisdictions before construction activities or substantial modifications of existing structures can be undertaken and are required even for activities by individual landowners. Each of these approval processes provides an opportunity to assure that the development activity is in compliance with required standards, including standards that may affect wetlands.

Wetland conservation and mitigation for wetlands impacts can be integrated into the standard approval processes if the proper ordinances are in place. There are also additional tools that can make subdivision regulation more effective, including the development of environmental guidelines and the use of proffers or exactions. (See below.)

Environmental Guidelines for Development

The effectiveness of subdivision regulations in protecting wetlands can be enhanced if the local government or planning board adopts environmental guidelines for development (See Chapter 2). These guidelines can set out the standard terms and conditions that must be taken into account for approving any development or subdivision. Typically, guidelines will cover the identification and long-term protection of environmentally sensitive features such as wetlands, as well as the techniques to be used during construction or other development activities, to prevent damage to these features.

Often, the comprehensive plan and zoning ordinance will identify and articulate broad goals and objectives. Environmental guidelines provide the next level of detail and specificity -- translating the broader goals and objectives into concrete actions that are applied as subdivision and development activities are approved. Montgomery County, Maryland, for example, has adopted environmental guidelines that, in the words of the guidelines themselves, "provide the detailed criteria and methods for implementation of these [plan] goals at the regulatory review level."

Exactions and Proffers

Subdivisions and development require approval by local governments. Because the development of subdivisions can produce additional costs for the host municipality -- by increasing the need for roads, public services, schools, park land, and open space -- many municipalities will grant subdivision plan approval only where some provision has

been made to provide for these services. Two basic approaches are used. In states that allow "exactions," the local government imposes conditions upon approvals that require the dedication of land, provision of certain amenities, or payment of money ("impact fees"). In states using the "proffer" system, the local government may not impose these conditions, but instead negotiates with the developer over what the developer may be willing to contribute. In practice, proffers often resemble exactions because developers desiring expeditious approval of their subdivision plans will agree to mitigate anticipated adverse impacts in order to satisfy local planning boards.

Exactions and proffers can be used to protect open space and features of common usefulness that may be adversely affected by increased development -- such as wetlands and riparian areas.

In Pennsylvania, a municipality may condition a subdivision approval upon the dedication of land for park or recreation purposes. To do so, the governing body must have a formally adopted recreation plan, and the dedicated facilities must be in accordance with the land development ordinance. Impact fees are also authorized in Pennsylvania under a 1990 amendment to the Municipalities Planning Code; however, the use of these fees is limited to off-site transportation road improvements.

Maryland provides for exactions. The use of impact fees is implied, though not explicitly stated, in Maryland's planning and zoning code under Article 66B. Specifically, eight counties in Maryland (Anne Arundel, Baltimore, Calvert, Carroll, Charles, Montgomery, Queen Anne's, and St. Mary's County) have the power to impose these types of fees. Typically, impact fees are used for infrastructure improvements, but they may be dedicated in some areas to parks and open space. Similarly, the use of exactions for the dedication of land varies in Maryland from county to county. In most counties the dedication of specific lands as a condition for subdivision approval is limited to public infrastructure, such as roads, sewers, and schools, but it may be available in some counties for the provision of parkland or recreational space.

Virginia uses the proffer system, which relies on negotiation between developers and local planning commissions. The use of proffers is only applicable for rezoning actions. Proffers are limited to counties in Northern Virginia and the Eastern Shore and to cities and counties that experienced more than a 10% increase in population between 1980 and 1990.

Exactions and proffers provide a direct means of land use regulation to provide for wetland conservation in the context of development of a particular site. However, these are generally not sufficient to provide comprehensive protection of a wetland resource because they depend upon the approval of specific development proposals, the timing and focus of which are not within the control of local governments. Exactions and proffers are, at best, a worthwhile supplement to a more comprehensive set of zoning tools aimed at the conservation of wetland areas.

WETLAND, FLOODPLAIN AND STORMWATER MANAGEMENT ORDINANCES

Local governments can also exercise direct regulatory power, apart from their zoning ordinances, to protect wetlands. Some ordinances directly regulate activities in and around wetlands and other water bodies. For example, Baltimore County, Maryland, adopted regulations to protect water quality, streams, wetlands and floodplains. The regulations provide for the delineation and reservation of areas along streams and their associated floodplains, wetlands, and steep or erodible slopes. Riparian areas must be left undisturbed to promote vegetation growth.

Many jurisdictions limit development activities in floodplains -- both to protect the integrity of the floodplain and any associated wetlands and to protect structures and development from flood damage. The use of these authorities at the local level, as authorized by state law, can seriously improve the protection of wetlands and the prevention of damage to property both on and off the site.

Ordinances can also require the preparation and implementation of stormwater management plans. These can be an important conservation tool because an effective plan will protect streams and wetland areas from excess runoff and nonpoint source pollution. An effective storm management ordinance will prohibit development in the 100-year floodplain and in defined buffer zones along stream corridors and drainage areas identified for protection. Many of these areas contain wetlands. In addition, under some circumstances wetlands can be an effective stormwater management structure. Some jurisdictions have encouraged the construction of wetlands in connection with development in order to control stormwater and provide other incidental wetlands values.

All three of the Chesapeake Bay states authorize local governments to manage stormwater. Pennsylvania requires stormwater management plans of all counties under the Stormwater Management Act. These plans must be reviewed and revised at least every five years. Within six months of adoption of a new plan, each municipality within the county must implement zoning and other ordinances consistent with the management plan. Maryland's law requires counties and municipalities to adopt ordinances to implement a stormwater management program and requires developers to submit stormwater management plans for approval. Virginia's law also authorizes local governments to adopt stormwater management programs.

INFRASTRUCTURE REGULATORY TOOLS

Local governments can protect wetlands through the regulation of public and private infrastructure. For example, local approval of sewage facilities can be conditioned on wetland protection activities. Because the provision of sewer service can promote development, it must be considered for both its direct and indirect impacts. Each state in the region has a role for local governments in the planning and approval of such facilities.

In Pennsylvania, for example, the Sewage Facilities Act's planning requirements authorize local governments to exercise authority over the approval of sewage facilities for private developments.

A related tool is a policy of consistency in public infrastructure. For example, under Maryland law, the state may not fund public works or capital improvement projects unless the project is consistent with the state's Economic Growth, Resource Protection, and Planning Policy or the plan of the local jurisdiction where the project is to be located.

The use of regulatory tools to affect infrastructure development can result in avoidance of wetlands loss, mitigation of unavoidable losses, and affirmative protection of wetlands.

CONCLUSION

Regulatory tools can be a powerful means of protecting wetlands while providing for development. Such tools are most useful where a planning process has identified a jurisdiction's natural assets and its development goals. There are many ways to structure zoning and subdivision regulation so that they achieve desired results while providing predictability and certainty to landowners. In addition, regulation of floodplains, stormwater, and location of public infrastructure can have a profoundly positive effect on wetlands conservation.

RELATED CASE STUDIES

For more examples of how regulatory tools have been used in the Chesapeake Bay watershed, refer to the following case studies at the end of this handbook:

Comprehensive Plan: Lycoming County, PA	CS-1
Environmental Advisory Commission: East Hanover Township, Dauphin County, PA	CS-2
Watershed Planning: Middle Peninsula Planning District, VA	CS-6
Wetland Protection Regulations: Calvert County, MD	CS-11
Wetland Protection Regulations: Baltimore County, MD	CS-12
Subdivision Ordinance: East Hanover Township, Dauphin County, PA	CS-13
Subdivision Ordinance: West Lampeter Township, Lancaster County, PA	CS-14
Subdivision Regulations: Prince George's County, MD	CS-15
Mandatory Cluster Development: Calvert County, MD	CS-16
Authorized Cluster Development: Kent County, MD	CS-17
Authorized Cluster Development: Monaghan Township, York County, PA	CS-18
Cluster Development with Transferable Development Rights: Talbot County, MD .	CS-19
Cluster Development Combinations -- TDRs and Overlays: Howard County, MD .	CS-20

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Wetland Mitigation Guidelines: Baltimore County, MD	CS-29
Utility Siting and Construction: Baltimore County, MD	CS-30

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Chapter Four:



Incentives

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Local governments can use incentive mechanisms to encourage landowners to conserve and maintain wetlands. Incentives include provisions in taxation of real estate that encourage conservation as well as approaches to capital improvement expenditures that have similar effects.

Incentive mechanisms are often desirable because they operate to encourage voluntary behavior that is consistent with a community's goals. Moreover, incentives can help increase acceptance of regulatory or planning objectives. Incentive mechanisms by themselves, however, cannot always accomplish the full task of protecting functioning wetlands in appropriate places. Incentive mechanisms tend to work best as supplements to other tools that can be targeted to particular parcels of land and particular water bodies. In addition, local governments may be limited in the types and quantities of incentives that can be offered by provisions in State laws. All of the states in the Chesapeake Bay region offer at least some opportunities for local governments to provide incentives for wetlands conservation.

REAL ESTATE TAX INCENTIVES

Local and state governments can influence land use and the conversion of wetlands or the maintenance of desirable land uses through provisions affecting taxes on real estate. Taxing wetlands differently from other lands provides incentive mechanisms

that can be used in combination with other conservation tools to encourage wetlands conservation.

Tax incentives come in two general forms: differential assessment and differential tax rates or tax relief. Each form of tax incentive must be authorized by State law in order to be implemented at the local level. All of the Chesapeake Bay watershed States have some provisions for tax incentives.

Differential assessment works by a local government reducing a landowner's tax bill by assessing the land at its value for farming, wildlife habitat, or open space instead of assessing it at its market value (for example, what it might sell for if developed to its maximum potential economic value -- such as what a developer might pay who wanted to build a mall on the property). The lower assessed value results in lower taxes on the property.

Local and state governments can also encourage landowners to keep their property in specific uses, such as wetlands or open space, by providing tax credits or relief from property taxes under certain circumstances. For example, these differential rates or tax credits are available under some circumstances when an owner enrolls property in a program with local or State land trusts.

This section examines a number of the programs available in Maryland, Pennsylvania, and Virginia that can be used to protect wetlands.

Maryland Environmental Trust

Since 1986, Maryland has offered a property tax credit for landowners who donate conservation easements to the Maryland Environmental Trust (MET) or a cooperating local land trust (See Chapter 5). Maryland Environmental Trust's program offers 100 percent 15-year property tax credits for "unimproved" land subject to a conservation easement. The unimproved portion of land enrolled in the easement is exempt from all state and local property taxes for fifteen years; thereafter, it is taxed only at its value subject to the easement and not at its highest use value. This property tax credit complements the income and estate tax deductions that also usually result from donations of conservation easements.

Because of the administrative costs associated with managing the easements, MET's program is available only to easements greater than 25 acres.

Maryland's Local Tax Credit Program

To encourage protection of open space parcels under 25 acres, the Maryland State Legislature passed State House Bill 6 in 1991, entitled "Property Tax - Credit - Conservation Land." The bill enables local governments to adopt an ordinance that grants up to 100 percent local property tax credits on land placed in a conservation easement

donated to a land trust, or land that has been acquired by the trust for resale to a government agency. Several Maryland counties, including Montgomery, Anne Arundel, and Harford Counties, have adopted such ordinances, although the ordinances differ from county to county.

For example, Montgomery County adopted a measure to offer a property-tax credit for qualified individuals and corporate land donors who place property in conservation easements. Under the tax credit program in Montgomery County, a landowner who conveys a perpetual conservation easement on a parcel of land would receive a 100 percent tax abatement on the parcel subject to the easement.

Anne Arundel County also adopted a tax credit from county real property taxes levied on conservation land that is used to assist in the preservation of a natural area, for environmental education, to promote conservation, or for the maintenance of a natural area or wildlife sanctuary. The tax credit is granted annually for as long as the property meets the definition of "conservation land." If the perpetual conservation easement on the real property is terminated, or if the land trust sells the real property to a person other than a government agency, the property owner is then responsible for all property taxes that he or she should have been responsible for if the property tax credit had not been granted.

Harford County's tax credit program is administered by its Environmental Lands Preservation Commission. The Commission establishes the criteria for eligibility and approves the tax credit for conservation lands subject to a conservation easement donated to a qualified conservation organization. It is not required that an applicable conservation easement allow for public access. The tax credit on qualified conservation land is granted for a period equal to the duration of the conservation easement and is subject to an annual cap of \$500.

Maryland: Agricultural Tax Incentives

Several counties in Maryland (Harford, Anne Arundel, Howard, Montgomery, and Washington Counties) have enacted local ordinances to provide property tax relief to landowners who enter their land in agricultural preservation districts or who sell agricultural preservation easements to the Maryland Agricultural Land Preservation Foundation. The main purpose of the state program is protection of the land and its surrounding environment as agricultural land and woodland. To be eligible for the state preservation program, a property must have at least 100 contiguous acres and must meet specific soil classifications. A property that is less than 100 acres may constitute a preservation district if it is characterized by special capabilities or production as a result of soil or hydrologic features.

Land enrolled in an agriculture preservation district is restricted by a recorded agreement between the landowner and the Maryland Agricultural Land Preservation Foundation, an agency of the state housed at the Maryland Department of Agriculture. The land may not be subdivided or developed and must be maintained in agricultural use

for a minimum of five years.

Once an agricultural land preservation district is established, the landowner is eligible to sell the development rights to the Foundation. (See Chapter 5). Apart from ensuring the preservation of his or her land through conveyance of an easement, landowners may also choose to participate in the program to receive tax credits from county real estate taxes. For example, Anne Arundel County grants a 10-year tax credit from county real estate property taxes on agricultural land and woodland if the property is enrolled in an agricultural preservation district as defined by state law (Agriculture Article of the State Code §2-509; Article 24, Title 2 of the County Code). Similarly, Calvert County, Maryland grants a tax credit against county and municipal corporation property taxes imposed on agricultural land that is located in an agricultural preservation district.

In Harford County, landowners can enroll their land in an agricultural preservation district approved through either the state program or the Harford County Agricultural Land Preservation Program. In order to establish an agricultural preservation district, landowners must make a minimum of a five year commitment not to develop their land. Harford County then offers up to a minimum of a 50 percent discount for seven years from county property taxes for landowners who register their land as an agricultural preservation district, and up to a 100 percent discount for landowners who sell the development rights of their property. The minimum size for a Harford County agricultural preservation easement is 50 acres.

Pennsylvania: Clean and Green Tax Incentives

In 1994, Pennsylvania enacted the Clean & Green Act (Act 319, 72 P.S. §§ 5490.1 - 5490.13). Clean & Green allows county assessors to assess land used for agriculture, agricultural reserve land, and forest reserve land at values based on that use value, and not on their often much higher market value. Landowners apply for use value assessment through the county board of assessment.

Property must meet certain criteria to qualify for agricultural use, agricultural reserve land, or forest reserve land under the program. To qualify for agricultural use, a property must have produced an agricultural commodity for three years prior to being enrolled and must be at least 10 acres or must produce \$2,000 per year in income from agricultural commodities. Agricultural reserve land must be at least 10 acres in area and may not be used for any commercial purposes. Forest reserve land must be at least 10 acres in area and stocked with trees capable of producing 25 cubic feet of growth per acre annually.

Although the Pennsylvania Department of Agriculture provides a method for determining use value, assessment is up to the discretion of the county assessor and the county commissioner. Landowners can often save up to 70 or 80 percent on their

property taxes through Clean & Green, and in some counties landowners can save as much as 98 percent on taxes.

The tax assessments under Clean & Green remain in effect as long as landowners meet the eligibility requirements of the program. If land is altered so that it no longer qualifies as agricultural use land, agricultural reserve land, or forest reserve land, the owner must pay roll-back taxes (the taxes saved under the differential assessment scheme) for the seven most recent years and interest on the roll-back taxes at 6 percent. Taxing bodies may forgive the roll-back taxes if the land is donated to a school district, municipality, volunteer fire or ambulance service, or cemetery. As of 1995, over 66,720 landowners in 44 counties (out of 66 eligible counties) have participated in Clean & Green. Over 5 million acres of Pennsylvania farm and forestland are assessed at lower rates under the program.

Some counties have not had much, if any, land enrolled in the Clean & Green program because the assessed land values in the area are too low. For example, in Schuylkill County, the ordinary method used to assess land utilizes 1960 market values; thus, Clean & Green land would not be assessed much below its market value for the purposes of differential taxation. The county is going through a county-wide reassessment for the year 1997.

Pennsylvania: Act 515

Pennsylvania has an additional mechanism for providing landowners with an incentive to protect natural resources. Act 515 (16 P.S. § 11941 et seq.) allows counties to enter into a covenant with landowners whose property is designated as farm, forest, water supply, or open space for the purpose of preserving the land as undeveloped. Water supply land is defined as land used for the protection of watersheds and water supplies, including land used for the prevention of floods and soil erosion, for the protection of water quality, and for replenishing surface and ground water supplies -- all of which are functions provided by wetlands.

Under the program the landowner agrees to retain the land in open space for a period of 10 years in exchange for a property assessment that reflects the value of the land as open space, and not at its market value. Approximately five counties participate in the program, including Bucks, Chester, Lehigh, Montgomery, and Northampton.

Virginia: Land Use Assessment Law

In 1971, the Virginia State Legislature passed the Land Use Assessment Law which allows local governments to adopt a program of special assessments for agricultural, horticultural forest and open space lands (Va. Code 58.1-3229 through 58.1-3244). The law was designed to encourage the preservation and proper use of property,

to assure that open spaces remain accessible to large populations of people, to conserve natural resources, to prevent erosion, to protect water supplies, to promote proper land use planning, and to promote a balanced economy.

Property must meet specific requirements to qualify as open space use. First, the open space use must be consistent with the goals and objectives of the officially adopted local land use plan. The open space land must also be a minimum of five acres but may be as small as two acres if other criteria are met. Finally, the open space must be within an officially designated agricultural or forested district, and the property must be enrolled in a perpetual easement with an appropriate organization.

Wetlands may qualify for open space if they are included in one of the following types of land uses: forest or nature preserves, bird or wildlife sanctuaries, watershed preserves, marshes, swamps and similar natural areas, floodways, including lands preserved for flood plains, coastal lowlands, tidal and nontidal wetlands, historic or scenic areas, and lands that are officially included in local land use plans to be maintained as open space, including greenways, stream valleys, forests and farmland.

Applications for differential assessment are submitted to the local assessment officer. Landowners must make a written commitment to preserve and protect the open space uses of the property in order for the property to be taxed on the basis of a use assessment. The assessment agreement must be for a minimum of four years and a maximum of ten years, after which time the agreement may be renegotiated.

CAPITAL IMPROVEMENTS PROGRAMMING

Capital improvements programming can create strong disincentives for development of land and wetlands. Local governments generally coordinate their long-range plans for extending or expanding public utilities or services such as roads, sewers, and drinking water. When these amenities are available to an area, growth is easily encouraged. When these services are not provided, development of open space and wetlands can be prohibitively expensive, thereby limiting growth.

Local governments can conduct long-range capital improvements planning that takes into consideration areas that have a high concentration of valuable wetlands or other sensitive environmental resources. If governments decide to restrict sewage and water services to a specific area, growth can be effectively limited or slowed.

CONCLUSION

Tax incentives and targeting of infrastructure can provide important assistance to wetlands protection efforts. Although these techniques are often insufficient by

themselves to prevent wetland losses, they can provide significant encouragement to landowners to maintain wetlands and surrounding upland areas.

Agricultural, open space, and woodland programs are generally not targeted directly toward wetlands conservation, but jurisdictions can encourage the use of these incentives in areas where wetlands are an important part of the landscape. Programs that are not directly targeted to protect wetlands can provide significant assistance to wetland conservation efforts.

RELATED CASE STUDIES

For more examples of how incentive tools have been used in the Chesapeake Bay watershed, refer to the following case studies at the end of this handbook:

Environmental Land Preservation Commission: Harford County, MD	CS-3
Installment Purchase Program: Howard County, MD	CS-23
Land Acquisition: American Chestnut Land Trust, Calvert County, MD	CS-31

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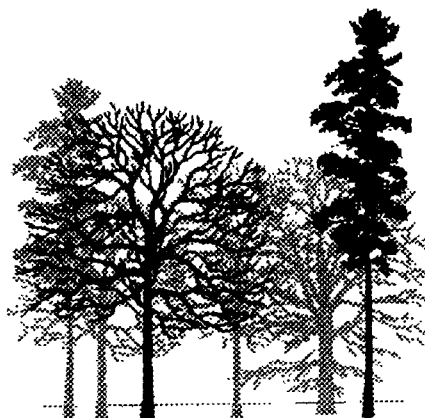
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Chapter Five:



Acquisition

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One way to conserve and protect wetlands is to acquire title to them. In this way they can be protected from development and degradation and can be managed and maintained to ensure their functioning. Acquisition of property interests in wetlands and their adjacent uplands by public and private entities, such as local governments and land trusts, offers the most comprehensive control over their future use. Although wetlands may be owned outright by obtaining full title to the property, partial acquisition strategies are often more desirable. The use of conservation easements, covenants, and deed restrictions can provide significant control over the management of wetlands without removing them from private ownership.

Acquisition is a very powerful conservation tool that is best used in combination with the conservation tools discussed in other chapters of this handbook. Acquisition is most powerful and cost-effective when it occurs within the framework of a local or

regional strategy -- specifically, when the most environmentally sensitive wetlands and related natural resources have been identified within the watershed of concern, and acquisition is prioritized to focus on those most vulnerable or valuable parcels of land.

This chapter addresses the different acquisition strategies available to local governments and communities, innovative ways to finance acquisition, and the various entities that can acquire wetlands or help to facilitate acquisition. Wetland conservation projects involving acquisition are often undertaken through partnerships among landowners, land trusts, local and state governmental entities, and local communities.

WHAT CAN BE ACQUIRED?

Although outright purchase or donation of full legal title to land ("fee-simple ownership") provides the most comprehensive protection for wetlands on those lands, this approach is not always appropriate, or even available, for many wetland areas of concern. Acquisition can be expensive, thus limiting the practicality and feasibility of an acquisition strategy. It can also sometimes be controversial, even when it is based only on transactions involving willing sellers of wetlands. There are legitimate public concerns over the best uses of limited public funds, as well as preferences in many communities for leaving lands in private ownership wherever possible. Moreover, lands that are not acquired by governments or tax-exempt land trusts remain part of the tax base and do not require direct government expenditures for management. Thus, it is important to consider what part acquisition should play in a wetlands conservation strategy and, where acquisition is desirable, what kinds of interests in land would best serve the conservation objectives.

Real property can be thought of as a bundle of different legal rights or interests. The "fee-simple" owner of land typically holds all of these rights -- the right to exclude others, the right to develop the land for economic return, and the right to will or deed the property to others, among other rights. A landowner can transfer some (or all) of these rights to others.

Thus, a local government's wetland conservation strategy should compare the acquisition of fee-simple ownership with acquisition of conservation easements or development rights from landowners who retain most of the other rights to their property. Other acquisition tools that may be important in a governmental wetlands conservation strategy include options, rights of first refusal, covenants, and reversioners.

Conservation Easement

Conservation easements are the most common and affordable acquisition tool to protect sensitive lands such as wetlands. A conservation easement is a legal conveyance of a property interest between a landowner and a qualified conservation organization,

typically a land trust or government agency. The easement may be either perpetual or for a specific term of years (often 25 or 30). The landowner retains title to the property, including the right to carry on any uses not covered by the easement, while the holder of the easement has the power to enforce the terms of the easement to prevent any incompatible uses.

In the wetlands context, a conservation easement may require the landowner to maintain wetlands as open space and protect them from impairment or adjacent development activity. Conservation easements can be tailored to take into consideration the particular property and the needs of the landowner. Thus, some conservation easements will allow the landowner to continue timber harvests or other activities, while others may limit or prohibit these activities.

Like other property interests, conservation easements are recorded in the permanent deed records maintained by the local government. The easement continues to apply to the land even if the land changes ownership. The organization that holds the easement is responsible for monitoring and enforcing the terms of the agreement.

Conservation easements can be created either by a landowner granting an easement by deed while retaining the underlying property, or by a landowner deeding away the property while retaining the conservation easement. The latter approach has sometimes been used where lands have been acquired outright by a government for a purpose that no longer requires them to be retained -- such as redevelopment or acquisition for public improvements that are no longer planned. In such a case, the local government may sell the land to recoup some of its investment, but retain a conservation easement to protect important natural features of the land, such as wetlands.

A number of states have established quasi-public organizations to accept, hold, and manage conservation easements. For example, the Virginia Outdoors Foundation has conservation easements on about 100,000 acres, and the Maryland Environmental Trust has conservation easements on about 50,000 acres. Voluntary conservation organizations can also hold conservation easements. Local Maryland land trusts hold over 22,000 acres of easements, and Pennsylvania conservancies hold easements on about 88,000 acres.

A private landowner who conveys a conservation easement to a governmental agency or conservation organization can often reap real estate and income tax benefits and reduce estate taxes. This is because the assessment of a parcel of land for real estate tax purposes is based on the fair market value of the land. That fair market value is often based on the land's potential for commercial, industrial, or residential development. Therefore, if a conservation easement is placed on a parcel, removing the potential for it to be developed -- or limiting development in particular ways -- its assessment value is lowered and the real estate taxes may be significantly reduced. In the same way, the value in the land is lowered for estate tax purposes. Indeed, conservation easements can be an important estate planning tool that also helps the environment. When the landowner or the second of two spousal owners dies, the federal and state taxes are lowered because of the effect of the easement in lowering the development value of the land. This strategy

often allows the heirs to retain the land rather than, as is sometimes the case, forcing the sale of the land to pay taxes on the estate.

In addition, if a conservation easement is donated, the value of the donation may support a charitable contribution deduction from federal and state income taxes. In Virginia, for example, if a landowner donates a conservation easement to the Virginia Outdoors Foundation, that gift is considered a charitable deduction for both federal and state income tax purposes. The value of the gift, for purposes of the tax deduction, is equal to the difference in the appraised fair market value of the land before and after the easement donation.

Acquisition strategies using conservation easements can also be encouraged by specific provisions in property tax laws. For example, since 1980, the state of Maryland has encouraged the donation of conservation easements through a property-tax credit. Through the program, if landowners grant a conservation easement to the Maryland Environmental Trust, or a cooperating local land trust, the land subject to the easement is exempt from all state and local property taxes for fifteen years; thereafter, it is taxed only at its value subject to the easement (that is, taxed as unimproved property).

Since the Maryland Environmental Trust does not accept donations of land that are under 25 acres, in 1992 the Maryland legislature authorized counties to adopt property-tax credits -- without an acreage minimum -- as a way to encourage the conservation of smaller parcels of land. Counties can adopt the program through enacting an ordinance, and three Maryland counties have adopted the tax credit. Montgomery County adopted a program that offers a 100 percent property-tax credit for landowners who donate perpetual easements to a qualified land trust. Harford County and Anne Arundel County have also adopted the property-tax credit, although their ordinances differ slightly from Montgomery County's. (See Incentives Chapter).

Conservation easement acquisition can most effectively help to achieve larger conservation goals if the land trust follows a plan that includes a prioritized acquisition strategy. For example, the Virginia Outdoors Foundation uses three documents to identify potential easement projects. The Critical Environmental Areas Survey identifies areas where conservation and preservation values require high levels of protection, the Virginia Outdoors Plan identifies areas with high recreation value, and each county's Comprehensive Land Use plan identifies areas with a high conservation value.

Flowage easements are another form of easement important for the conservation of wetlands. These provide for the unimpaired flow of water across another's land and can be helpful in restoring or creating wetlands. The U.S. Fish and Wildlife Service obtains flowage easements from adjacent landowners when restoring wetlands on public lands for waterfowl production or other purposes. By purchasing a flowage easement from an adjacent landowner, the wetlands restorer can ensure that the wetland will be able to expand to its maximum size and saturation levels on either a seasonal or sporadic basis even if such expansion exceeds the boundaries of the public land.

In the period from the mid-1960s through 1980, the Fish and Wildlife Service obtained 21,000 flowage easements, protecting 1.2 million acres of wetlands. Flowage

easements are a tool that can be utilized by municipalities and land trusts to ensure that private land adjacent to a protected wetland will contribute to the restoration or health of a wetland in particularly wet cycles when the wetland exceeds its average boundary.

Agricultural Conservation Easement

Under Maryland law, lands enrolled in an agricultural preservation district may offer their development rights for sale to the Maryland Agricultural Land Preservation Foundation. If the Foundation chooses to accept the offer, the Foundation will pay up to the full easement value of the land, that is, the difference between the appraised fair market value of the land and its agricultural value. Once the easement has been sold, the property is perpetually protected from further development with certain rights available only to the landowner who originally sold the easement. The Foundation requires a soil conservation and water quality plan for each property that is submitted for easement sale. The purpose of the plan is to protect the land from erosion, increase potential yield production, and reduce or eliminate the flow of sediment entering neighboring streams, rivers, and ultimately the Chesapeake Bay.

Under a similar program enacted in 1988, Pennsylvania law also provides that agricultural land included in Agricultural Security Areas may sell easements on their lands to the state or counties. Applicants must demonstrate that they have used conservation practices and best management practices for nutrient management and control of soil erosion. Through 1996, easements on 674 farms (83,911 acres) in 34 Pennsylvania counties have been acquired or approved for acquisition under this program.

While neither of these programs expressly targets wetlands, and indeed their purpose is to preserve viable agriculture, they may be useful in conjunction with other tools to protect important wetlands, buffer zones, or riparian areas in communities where development is beginning to threaten both agricultural activity and wetlands.

Deed Restrictions, Covenants & Reverters

A deed restriction is a general term for a legal mechanism that allows a private landowner to place limits on the things that can be done with a piece of land by entering into agreements in the course of a conveyance of land or an interest in land. To create a deed restriction, a property owner inserts clauses in the property deed in the course of a conveyance that restrict the uses of that land -- such as restricting wetlands from being filled. Deed restrictions can include conservation easements as well as covenants and future interests.

These restrictions may be considered part of an acquisition strategy because they are agreements between landowners. They do not depend on regulatory powers. If a local government or land trust becomes a landowner, it may be the beneficiary of deed

restrictions on adjacent or nearby property; or it may create such restrictions in the course of conveying property to others.

A covenant is a binding agreement two or more landowners enter into concerning use of their land. The agreement attaches to the land, so that even if the land is sold or subdivided, the covenant binds the new owners. For example, a developer subdividing a large parcel can require all of the buyers to agree to a covenant requiring them to protect a stream flowing through the property. The covenant would be mutually enforceable by all of the holders of the subdivided property -- or by the neighborhood association if one is established (as is often the case in condominium developments). Or, two neighbors could agree to a covenant requiring them to preserve a wetland running across their common boundary. A covenant may have a specific time limit written into it. Otherwise, it can only be ended by mutual consent of all the owners bound by it or by a court ruling that the covenant is no longer relevant or lawful.

A reverter clause may also be attached to a property deed when a landowner conveys or donates land. A reverter clause stipulates that if the land is not managed and used as specified in the deed, the property reverts back to the original owner or his heirs or to a designated third party such as a conservation group. The deed may specify restrictions on development, public access, or other uses. For example, when a landowner donates wetlands for a public park and duck breeding area, the landowner may wish to stipulate that if the new owners ever try to use the property for other purposes, the land will revert back to the original owner. Conversely, governmental landowners may attach reverters to lands that are conveyed into private hands. Such reverters can be used to assure that certain actions are carried out -- such as protection of wetlands by the new owners of a parcel slated for redevelopment.

Deed restrictions and covenants must be recorded in the land records to be enforceable against subsequent purchasers of land without actual notice of the restrictions. Recording the agreement ensures that any subsequent purchasers will be subject to the agreement. Responsibility for enforcing a covenant lies with the owners or successors in interest to those who were party to it.

Deed restrictions and covenants can be useful in situations where a landowner is subdividing land, or where a local government or conservation organization owns land adjacent to privately owned land where some mutual guarantees are desirable. They can provide an additional approach to wetlands conservation beyond the regulatory and incentive approaches and without requiring acquisition of additional property.

Options & Rights of First Refusal

Sometimes wetlands can be effectively protected by acquisition tools that are several steps short of the outright purchase of land. One useful tool is a right of first refusal -- a right which may be acquired by donation or purchase. A landowner creates the right by entering into an agreement with another party (such as a land trust or

conservation agency) that if he or she elects to sell the property, the landowner will first notify the party with the right and allow that party to match the offer within a limited period. This tool allows conservation organizations to prevent undeveloped agricultural land and other wetlands from passing into the hands of developers without an opportunity to preserve the lands. The right is often used where the landowner is inclined to hold onto the property for some period of time, but contemplates an eventual sale -- perhaps upon retirement from farming, or upon death and settlement of the estate. The right of first refusal is intended to assure that the landowner receives a full economic return upon sale of the property but allows for the possibility of a conservation use.

Options are another tool that provide an enforceable contract right to acquire property at a future time. Options are a contractual device whereby a landowner grants another party the exclusive right to purchase a property at a specified price within a specified period of time. The party acquiring the option is not obligated to purchase the land; however, the landowner is prevented from accepting offers from other potential purchasers during the term of the option. The World Wildlife Fund notes that options may either be donated by the landowner or they may be acquired at a fraction of the ultimate purchase price. The deadline imposed by an option may also be useful to gather the funds necessary to purchase a parcel or to find a suitable private purchaser. Options can be an important intermediate tool where outright acquisition is desired but is not immediately feasible.

Purchase of Development Rights

In states or counties with enabling legislation, transferable development rights (TDRs) can also be used to protect wetlands. As discussed in Chapter 3, landowners in areas subject to stringent development restrictions may be granted rights that can be sold for use elsewhere in the jurisdiction, specifically on other properties in less sensitive areas. Often TDR systems work by assigning rights to property owners in an area of ecological significance or a conservation area experiencing strong development pressure. These rights can then be transferred to -- and used in -- designated growth areas. Developers in designated growth areas can purchase these rights from the owners in the conservation area and build to a higher density.

In order to provide a guaranteed market, or assure the value of TDRs, some programs provide for repurchase of TDRs (or of a limited number of TDRs) by government agencies or conservancies where a viable commercial buyer is not available. This guaranteed purchase aspect can help foster the development of a market in TDRs. Moreover, purchase and retirement of TDRs can help support a regulatory-type wetlands protection program by providing value to the owners of wetland areas. For example, Calvert County, Maryland, has a transferable development rights program which allows farmers or land trusts to sell their development rights either in the market for use in designated receiving areas or to the county through its Purchase and Retirement program.

Through this program, the county obtains the development rights, the farmers or other landowners obtain a financial benefit, and the potential development authorized by the TDRs is not built because the rights are retired unused. Other programs designed to protect wetlands through use of TDRs may provide for some governmental purchase of the rights in order to assure that the programs operate as intended.

Fee-Simple Ownership

By acquiring fee-simple ownership, the purchaser -- or recipient of donated property -- gains full title to the land and all rights associated with the land. This strategy allows for permanent protection, maximum flexibility in management, and full control over public access.

Acquisition of fee-simple title is often more costly than other strategies. It is best used when the parcel of wetlands or uplands is uniquely valuable and is particularly threatened by development. Acquisition of a fee-simple title to a parcel of wetlands may also be used to protect a core area -- for example, a specialized habitat, or a vulnerable area along a river -- while adjacent areas may be protected by other methods -- for example, through acquisition of conservation easements or by zoning limitations.

If a local government or private conservation organization acquires fee title to a wetland area, it also accepts many responsibilities that accompany land ownership. Among these include liability for injuries that occur on the property, the monitoring, management and maintenance of the land, and the payment of property taxes if the acquiring organization is not tax exempt.

HOW CAN WETLANDS BE ACQUIRED?

State and Local Government Acquisitions: Park, Open-space, and Greenway Programs

Most states have established general state or local government funds to acquire land for conservation. These funds may be used to protect natural resources, recreational opportunities, or historic resources. In addition to receiving earmarked appropriations for acquisition programs, state agencies may also receive revenues through hunting and fishing licenses, federal revenue sharing programs, the federal Land and Water Conservation Fund, tax check-offs, the sale of license plates, real estate transfer taxes, bonds, or lottery revenues. Often, local governments can influence the use of these funds or draw upon them by providing local matching funds for conservation and acquisition.

Most states give local governments the power to acquire conservation land by donation or voluntary sale. Even in states where local governments have very limited powers, such authority exists. For example, Virginia's Open Space Land Act authorizes

public bodies to acquire by voluntary sale (including conservation easements) or to designate property for use as open space land in urban or urbanized areas, although it does not allow the use of eminent domain (condemnation of land) for this purpose. The Act provides that the use of the property for open space land shall conform to the official comprehensive plan for the area in which the property is located.

Pennsylvania allows its counties to acquire land for open space purposes, but does not grant the same power to local governments; the 1996 term of the Pennsylvania legislature is considering a proposal to allow local governments to acquire land for open space. Pennsylvania does, however, have a significant land acquisition program for natural areas and open space in which counties and local governments may seek state participation. The Keystone Recreation, Park, and Conservation Fund, created in 1993, is administered by the Department of Conservation and Natural Resources (DCNR). It assists local communities in acquiring wetlands and other areas for recreation, parks, and open space.

It is important to understand the limitations and powers of local governments in any particular acquisition proposal. It may be the case that even where a local government is limited in the purposes for which it may acquire and hold land or interests in land, wetlands may fit into more than one category -- such as protection of floodplains, water quality, farmland, or other bases. Thus, for example, Pennsylvania's program providing for the voluntary acquisition of conservation easements on agricultural lands within Agricultural Security Areas may provide local governments sufficient authority to protect a given wetland parcel within such an area. The easement program for farmland was added in 1988 to a pre-existing law that allows farmers to petition townships for the creation of Agriculture Security Areas.

Maryland's Program Open Space, outlined in more detail below, is a significant source of money for land acquisition. The state of Maryland has also passed a bill that provides for the establishment of a Maryland System of Heritage Areas. Effective October 1, 1998, the Maryland Heritage Area Authority may certify two Heritage Areas per year after considering proposals submitted by local jurisdictions. A Heritage Area is a developed area of public and private uses that is distinguished by physical and cultural resources which have played a vital role in the historic life and development of the community. Those resources must also contribute to the public through interpretive, educational, and recreational use. The Maryland Heritage Areas Authority may acquire property and provide loans, grants, and other financial assistance for projects in certified heritage areas. In addition to meeting minimum requirements for development and tourism opportunities, the Heritage Area Authority may not designate a heritage area unless it contains at least one or more natural or recreational resources of statewide significance. Thus, while a wetland is not likely to qualify independently as a heritage area, it is foreseeable that a wetland preservation project that provides significant educational and recreational opportunities, and that is part of a larger Heritage Area Management Plan, could be funded through the Act.

Land Trusts

Land trusts are local, state, or regional nonprofit organizations that are directly involved in conserving land. Land trusts can be private or quasi-governmental and generally focus their efforts on protecting specific natural, historic, scenic, productive, or recreational features. They usually concentrate on a specific state or geographic region, such as a watershed. Land trusts, broadly defined, can participate in numerous activities, including purchasing and accepting donations of land or conservation easements and monitoring the enforcement of such agreements. Landowners donating conservation easements to qualified land trusts can receive income and real estate tax deductions for their donations. Land trusts also can manage land owned by others, provide landowners with technical assistance on how to manage their land, serve as intermediaries to help others negotiate conservation transactions, research acquisition needs and priorities, and educate the public about land conservation benefits and opportunities.

Public or private organizations can make grants, matching grants, and low or no interest loans to localities or nonprofit organizations for land acquisition. In Maryland, Program Open Space provides funds to the Maryland Environmental Trust (MET), which then offers loans to local land trusts at no interest. These loans allow MET to accept permanent conservation easements from landowners. In Maryland, Calvert County recently established a \$1 million land trust revolving fund that offers loans to local land trusts for acquisition projects.

Land trusts also engage in pre-acquisition strategies -- acquiring wetlands and sensitive lands with the intent of reselling them to a governmental agency who will then manage the land. These arrangements are often structured to facilitate a local government's acquisition strategy because a private land trust often has the ability to negotiate an acquisition faster than does a public agency. Purchasing land from a conservation group may also save a government agency considerable money.

Land trusts in the Chesapeake Bay watershed are numerous and diverse in their focus, but all share a commitment to the conservation of dwindling available land and a desire to preserve natural resources, cultural heritage, valuable farmland, and a way of life prized by those living in the watershed. Virginia has fewer than 10 land trusts, Maryland has about 40, and Pennsylvania has about 50.

Virginia

The Virginia Outdoors Foundation is a quasi-governmental land trust ("independent instrumentality of the state") established by the General Assembly in 1966. The Foundation assists landowners in their efforts to protect private property and encourages the preservation of open space. As of 1996, the Foundation held easements on 96,100 acres of land in 39 counties and owned approximately 4,000 acres outright. It provides some limited assistance to local land trusts.

There are relatively few land trusts in Virginia because of the terms of the Virginia Conservation Easement Act. Although the Act authorizes nonprofit organizations to acquire easements on real property for the purpose of retaining or protecting scenic, natural or open-space values, it also contains some impediments to the establishment of a land trust. A land trust must be in existence for five years, or national land trusts must have a principal office in the state for five years, before they are permitted to hold conservation easements in the Commonwealth.

Maryland

The Maryland Environmental Trust (MET) is a statewide land trust established by the Maryland General Assembly in 1967. Its mission is to protect Maryland's natural environment -- farmland and forest land, wildlife habitat, waterfront, significant natural areas, and historic sites. MET receives money from the state legislature and from Program Open Space, the State Highway Administration, private foundations, and other sources to work with landowners to solicit donated conservation easements. MET is subject to the budgetary process of the state. MET also purchases easements when funding is provided by Program Open Space, The Nature Conservancy, private donors, or the Federal Highway Administration. For state administrative purposes, MET falls within the Department of Natural Resources, Public Lands and Forestry Division.

MET has three main programs: a local land trust assistance program, a conservation easement program, and a program to maintain the integrity of rural historic villages through rural conservation. The local land trust assistance program channels aid to local organizations, such as watershed groups, to help them acquire and manage land. The umbrella organization works with citizen groups to help them establish and operate local land trusts. Conservation easement programs offer potential income and estate tax deductions and a property tax credit to donors of easements. MET provides technical assistance, training, and grants for land protection, acquisition, and administrative expenses. MET will also hold conservation easements jointly with local land trusts and has enrolled over 50,000 acres in conservation easements since 1972.

Pennsylvania

The Pennsylvania Land Trust Association is an alliance of approximately 50 Pennsylvania land trusts. The Association is a private organization that serves as a clearinghouse for information and a unified voice for the state's land trusts. It provides some technical assistance to landowners and matches them with local land trusts.

The Keystone Recreation, Park, and Conservation Fund Act provides land trusts with grants for the acquisition of natural areas and open space. The Act was passed in 1993 as a fifty million dollar bond issue passed by referendum. As of July 1995, the

Keystone Fund is also supported by 15 percent of the State Realty Transfer Tax revenues. Under the Keystone program, the Department of Conservation and Natural Resources (DCNR) provides land trusts with grants to pay up to 50 percent of eligible project costs for the planning and acquisition of natural areas and open space. The Department also administers the Fund's Keystone Community Grant Program, under which a municipality can apply for assistance with projects including land acquisition.

The DCNR receives 25 percent of the Keystone Fund Realty Transfer Tax revenues for general purposes and another 10 percent of those revenues for work with land trusts. The bond revenues provide \$13 million for grant programs and an additional \$3 million in bond revenues for land trusts.

The Keystone Fund also established the Pennsylvania Rivers Conservation Program to foster grassroot efforts to protect streams and stream corridors. The Program is designed to conserve the state's rivers through the creation and implementation of local river conservation plans. It provides technical and financial assistance to river support groups and municipalities for the conservation of Pennsylvania rivers.

FINANCING MECHANISMS

Donations or Bargain Sales

Land can be acquired by land trusts or state agencies through an outright donation by the landowner of either the land itself or the development rights on it (through conservation easements). In this ideal situation, land receives permanent protection without any public expenditure. Landowners who donate land outright receive tax benefits, because the property's fair market value is considered a charitable contribution. With bequest donations, landowners retain ownership of their land until their death, when the land is turned over to the designated land trust or organization. Nonprofit groups can also acquire land through bargain sales, whereby a private landowner sells the land at less-than-fair-market value. Landowners can often receive a tax deduction for the difference between the full value and the sale price, which can be considered a charitable contribution (See Chapter 5 - Conservation Easements).

In areas where development is scheduled to occur, local governments can sometimes acquire title to lands or conservation easements during the site plan approval process discussed in Chapter 3. To mitigate the impact of the development, the developer may proffer certain amenities, including protection of these lands through transfer of title. Or, certain exactions may be required as a condition of approval, provided that they are rationally related to the impact of the development and roughly proportional to its impact.

Virginia uses the proffer system, while Pennsylvania and Maryland recognize the validity of exactions. For more information on exactions and proffers, refer to Chapter 3.

Dedicated Funding Through Bonds

In addition to providing funding through appropriations, states and local governments can raise funds for acquisition programs through bond issues, which are usually approved through local or statewide referenda.

Bonds can be used to initiate enduring statewide programs, or they can be used locally for specifically targeted acquisition projects. Maryland's Program Open Space (POS) was initiated in 1969 through a statewide bond bill known as the Outdoor Recreation Land Loan. Since then POS has been funded primarily by the state's real estate transfer tax. However, in the period 1991-1993, when the full amount of real estate transfer taxes were not available to the program, bonds were used to recapture some of the lost funds. Pennsylvania's Keystone Recreation, Park, and Conservation Fund Act ("Key 93"), passed in 1993, was also initially funded by a bond referendum.

Real Estate Transfer Taxes

Many states have established acquisition and conservation funds that are funded through real estate transfer taxes. This strategy is another way for governments to raise revenue for the acquisition of open space and wetlands. This mechanism is unique because funding for these programs is tied to development and growth. When land changes hands in states with these programs, a specified percentage of the purchase price of the property goes into a fund, or "land bank." The local government that manages the land bank can then use the money raised to buy land or conservation easements, or to support other preservation or restoration measures.

A land bank must be created through a state or local government passing enabling legislation. Land banks have a strong appeal to communities facing rapid development because they can tax incoming landowners whose arrival strains community resources and services and causes crowding. In general, communities with a high rate of real estate turn-over, such as resort communities or areas tied to a cyclical economy, make good candidates for land banks because the activity of the real estate market can generate revenues quickly enough to acquire easements on remaining open space.

Pennsylvania's "Key '93" receives money through a real estate transfer tax supplemented by a \$50 million bond issuance. The trust's Land Trust Grant Program

grants approximately \$3 million annually to land trusts to inventory and acquire natural resource lands.

Maryland's Program Open Space was established by bond in 1969 to deal with the rapid growth and land development the state was experiencing. The Program is funded by a one-half of one percent tax on the purchase price of residential or commercial property. State and local governments currently protect 483,000 acres, or 7.9 percent of all state land. Program Open Space provides over \$50 million annually for state and local acquisition and conservation programs and also awards grants to land trusts to acquire property that complements the state's acquisition strategy. Program Open Space also provides funds to the Maryland Agricultural Land Preservation Foundation (MALPF), which funds agricultural protection efforts through the purchase of development rights. The MALPF also raises funds through a transfer tax on agricultural land.

Tax Return Check-Off & License Plates

Many states have an option available for residents through which they may designate a specified amount of their state income tax refund toward natural land acquisition.

Virginia's Natural Area Acquisition Fund was established in 1988 to provide money to an acquisition program cooperatively run by the Department of Conservation and Recreation and The Nature Conservancy, a private national land trust. The Fund receives money through a taxpayer check-off box on each year's state tax forms. The Fund has financed the acquisition of Virginia's Natural Areas Preserves System, which consists of nine properties. Taxpayers have the ability to designate that all or part of their state tax refunds should go to benefit Virginia's natural and recreational resources. The purpose of the program is to create a system of Natural Area Preserves by acquiring natural areas identified as being of great biological significance. The Department developed an inventory of the Commonwealth's natural heritage resources to guide its acquisition strategy.

Pennsylvania has established a Wild Resource Conservation Fund, which is funded by voluntary tax refunds and conservation license plates. The two programs together raise a total of \$300,000 to \$600,000 annually. The funds are available for research and other projects related to the conservation of threatened and endangered plants and animals. Land may be purchased with fund moneys, but to date no land has been purchased through the program. Private organizations and municipalities can access the funds through a competitive application process.

Funds raised by Maryland's tax return check-off are equally split between the state's Division of Wildlife and Heritage and the Chesapeake Bay Trust. The Division of

Wildlife and Heritage, which is within the Department of Natural Resources, manages the state's nongame and endangered species. The Chesapeake Bay Trust is a nonprofit organization that funds other nonprofit and community organizations, schools, and public agencies through its small grants program. The Trust, which also receives funds from sales of the commemorative Chesapeake Bay license plate, awards grants to organizations for water quality enhancement, production of educational materials on the Bay, education and training, and the promotion of Bay conservation programs.

Pennsylvania's Friends of the Chesapeake Bay license plate program donates \$15 from the sale of each plate to the Chesapeake Bay Restoration Fund. Managed by the Department of Accounts, the Fund uses the money raised on environmental education and restoration projects related to the Chesapeake Bay initiative and its contributors.

Installment Sales

There are several options that can be used by a local government when a decision has been made to purchase property but funds are not presently available. Where the use of bonds is not a viable option because it violates constitutional limitations on borrowing or affects a local government's debt ceiling, other creative solutions may be available. Private land trusts can often provide an interim funding mechanism for local governments.

For example, a local land trust may use a lease-purchase arrangement to allow government to pay for land incrementally over a specified time period. Under a lease-purchase arrangement, a contract is established that grants possession or use for an indeterminate period while acquisition is paid for in periodic payments. These payment installations include principal, interest, and associated costs. A lease-purchase agreement does not necessarily bind a government to purchase but usually does involve a conditional agreement relying on the payment of interest and principal subject to annual appropriation. Insurance may be needed to secure a feasible interest rate.

The Trust for Public Land, a national land trust, has been successful in offering certificates of participation (COPs) as a variation on the lease-purchase agreement. COP arrangements typically involve a state or municipal agency, investors, and a nonprofit land trust or other intermediary. The intermediary organization works with a trustee bank to obtain funds to acquire a property and then leases it to government. Lease payments collected from the government are structured to include principal, interest, and related costs. The intermediary organization also sells COPs in the lease to investors. The government payments, which are tax-exempt because they serve a governmental purpose, are then disbursed to the investors. The cost of issuing COPs is generally higher than revenue bonds because investors do not have the same governmental assurances to retire the debt.

Another financing technique for land acquisition involves securitized installment sales in which the government borrows from the landowner and unconditionally promises to pay for the property over time. Under this scheme, the county or local government can purchase the development rights to a piece of property with a promissory note rather than cash. Payment for most of the principal is deferred until the end of the contract period, and in the meantime, the landowner receives semi-annual, tax-exempt, market rate interest payments. Financing for the final balloon payment can be secured by zero-coupon Treasury obligation bonds that are scheduled to mature at the expiration of the contract period. These bonds are available at steeply discounted rates.

This technique has been successfully implemented on a case-by-case basis using nonprofit organizations as intermediaries. If the arrangement is seller-financed, the seller can realize significant tax savings for a number of years. Howard County, Maryland has had success with this arrangement in the purchase of agricultural lands.

CONCLUSION

Acquisition strategies can take many forms. Outright purchase of wetlands may be desirable under some circumstances, but often some combination of partial acquisition techniques, incentives, and regulatory approaches can meet a local government's planning goals. Substantial creativity may be required to structure and fund an acquisition in a way that best protects the resource while also assuring that private ownership and other objectives can be met.

RELATED CASE STUDIES

For more examples of how acquisition tools have been used in the Chesapeake Bay watershed, refer to the following case studies at the end of this handbook:

Environmental Land Preservation Commission: Harford County, MD	CS-3
Watershed Planning: Middle Peninsula Planning District, VA	CS-6
TDRs with Purchase of Development Rights: Calvert County, MD	CS-22
Installment Purchase Program: Howard County, MD	CS-23
Installment Purchase of Development Rights: Virginia Beach, VA	CS-24
Land Acquisition: American Chestnut Land Trust, Calvert County, MD	CS-31

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Chapter Six:



Technical Assistance, Education, and Outreach

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Encouraging citizens to protect wetlands begins with improving citizens' understanding of the value of wetlands. Public education and outreach are of vital importance as components of any strategy to protect wetlands.

Local governmental outreach can include not only educating school children, but also educating educators, private landowners, developers, and others about wetlands values. When people better understand these unique systems and all of their functions, they often become avid supporters of wetlands protection and restoration efforts.

Although individuals and organizations -- private landowners, conservation groups, local land trusts, and local governments -- may understand the need to protect wetlands, they often do not have the resources or technical understanding necessary to achieve their conservation goals. Technical assistance can help overcome this difficulty. Such assistance is often made available to local governments and private landowners from state, federal and local agencies, and can be made available by local governments to their citizens.

Education, outreach, and technical assistance are all important components of any local government wetlands protection strategy.

EDUCATION & OUTREACH

Education and outreach can be accomplished by making available educational materials, such as reading materials, television commercials, radio announcements, videos, traveling exhibits, lectures, guided tours and field trips, and annual events. All of these outreach tools can be used to inform local communities about the values of wetlands in a

broad sense, and about particular issues in their areas, such as a particular wetland that is threatened by poorly planned development.

Education can be accomplished at many different levels. For example, school systems can establish training curricula to give teachers the tools to educate their students about the functions and values of wetlands; local governments can sponsor outdoor education programs at municipal and county parks; planning commissions can hold workshops and informational meetings; and community colleges can offer classes on specific natural resource management issues that are of particular interest in the area.

Although education and outreach materials are available to the public through federal and state agency programs, nonprofit environmental and conservation groups and consulting firms can also be an excellent source of information on wetlands. For example, Environmental Concern in St. Michaels, MD, publishes a curriculum guide for teachers of grades K through 12 called *Wow! The Wonders of Wetlands*. The curriculum includes 40 classroom and field lessons for students. The program is aimed at teaching children to make environmentally responsible decisions about wetlands, water quality, and land use.

The U.S. Environmental Protection Agency has a toll-free hotline that provides answers to questions about wetlands policy, science, and legislation and provides educational materials from many different federal agencies free of charge. The U.S. Environmental Protection Agency's Wetlands Information Hotline can be reached at (800) 832-7828.

Several counties throughout the Chesapeake Bay watershed have initiated storm drain stenciling programs to enhance awareness about citizens' connectedness to the Bay. For example, Prince George's and Anne Arundel Counties in Maryland stencil storm drains with messages reading "Do Not Litter, Chesapeake Bay Drainage." The Department of Public Works in Prince George's County installs and maintains the stickers; in Anne Arundel county, the program is financed by the county, but the labor is provided by citizens.

Conservation Districts in Blair and Bradford Counties in Pennsylvania have prepared traveling exhibits and displays designed to encourage participation of local governments in Bay Program initiatives. The Bradford County Conservation District built a display in an enclosed trailer that can travel to fairs, schools and other events. The trailer includes a map of the Bay watershed and highlights solutions to environmental problems in the areas. The Blair County Conservation District developed an exhibit to educate farmers about the impacts of soil erosion and nonpoint source pollution on the Bay.

The Centre County Conservation District in Bellefonte, Pennsylvania runs educational workshops on soil erosion control and other environmental issues for loggers, developers, and others. Their training courses for teachers are held in cooperation with the Pennsylvania Bureau of State Parks.

Several agencies in Harford County, Maryland work together to provide technical courses at the County's Community College. The Harford County Department of Planning and Zoning, the College's Environmental Technology Institute, the County's Department of Public Works' Bureau of Environmental Affairs, and state and federal officials have designed courses on stormwater management, water and sewer planning, erosion and sediment control, recycling, watershed protection, and buffer protection. The courses are geared toward contractors, developers, engineers, designers, realtors, inspectors, and homeowner development associations.

TECHNICAL ASSISTANCE

Technical assistance is available from federal or state agencies. Many of these programs are designed to assist state and local government agencies, private landowners, local land trusts, conservation groups, and others. Technical assistance to local governments from state agencies can include supply of data, maps, and other material, as well as direct technical help to solve specific problems. Technical assistance to local governments can help those agencies with limited staff and budget, by providing them with training, educational information, and other tools to aid them in implementation of laws and development of regulations to protect wetlands at the local level.

Technical assistance to private landowners through guidebooks, workshops, and one-on-one help can improve landowners' understanding of the values of wetlands, help them comply with environmental laws and regulations, and help them to become better stewards of the land. As landowners become more informed, they are able to make better decisions about how to manage their land.

This section identifies several of the technical assistance resources available to local governments and private landowners.

Chesapeake Bay Region

The Chesapeake Bay Program Office of the U.S. Environmental Protection Agency offers many different publications and resources on protecting the Bay. In addition, the Bay Program offers workshops, technical expertise, and substantial information concerning land use and watershed practices and conditions within the Bay watershed.

Maryland

Maryland's Office of Planning provides local governments with technical assistance to aid them in making sound land use decisions. Maryland's Economic Growth, Resource Protection and Planning Act, passed in 1992 (See Chapter 2), established a framework to guide local governments in the establishment of planning approaches that will meet future land management and environmental protection goals. The Office of Planning has developed an excellent series of publications for local governments, titled "Managing Maryland's Growth: Models and Guidelines," to aid in implementation of the Act and related planning, zoning, and design techniques.

The Maryland Department of the Environment provides technical assistance to local governments on wetlands issues. The Department can provide training on nontidal wetland identification, photo interpretation, stream assessments, watershed planning, and wetland creation, restoration, or enhancement.

The Maryland Department of Natural Resources provides technical assistance to local governments, watershed associations, and private landowners on how to protect, restore, enhance and create wetlands for the benefit of wildlife and water quality. The Department also provides training on how to conduct watershed/stream assessments and how to minimize the impacts of existing and future developments on water quality and wildlife habitat. The Department's involvement in improving the management of wetlands resources is part of an overall effort to improve the management of natural resources from a watershed/ecosystem perspective.

The Maryland Environmental Trust (MET), a statewide land trust established by Maryland (See Chapter 4), provides technical and financial assistance to local landowners and land trusts. MET has three main programs: assistance to local land trusts, a conservation easement program, and a program to maintain the integrity of rural historic villages through rural conservation. MET's Local Land Trust Assistance program channels assistance to local groups, such as watershed groups, to help them acquire and manage land. MET works with citizen groups to help them establish and operate local land trusts and provides technical assistance, training, and grants for land protection and acquisition projects and administrative expenses. MET provides technical assistance publications, including a *Land Trust Assistance Manual*, Land Trust Tutorial computer program, standard easement processing forms, and publications of *The Land Trust Alliance*.

Local jurisdictions themselves can be a substantial technical resource. For example, Anne Arundel County, Maryland, has developed a program to protect the Bay by encouraging reestablishment of emergent aquatic vegetation in the Bay's estuaries. The County's Planning and Zoning office provides up to \$2,000 worth of wetlands plants and other materials to citizens, communities, and private projects through their Environmental

Grant Program. The resources are provided to encourage citizens to aid in shoreline stabilization, beautification, habitat enhancement, and water quality improvements. The County provides project planning, design, and evaluation in exchange for citizen volunteer time and planting tools.

Nonprofit organizations play a substantial role in technical assistance as well. The Chesapeake Bay Trust (See Chapter 5) is funded by Maryland's voluntary tax return check off and the sale of the commemorative Chesapeake Bay license plate. The Trust is a nonprofit organization that funds nonprofit groups, civic and community organizations, schools, and public agencies. The Trust has awarded almost 1,000 grants to groups for stream cleanups, tree and marsh grass plantings, erosion control projects, water quality monitoring, habitat restoration, and the development of awareness programs and educational material to promote a better understanding of the Bay.

Pennsylvania

In December 1995, Pennsylvania established the Community Conservation Partnership initiative. This program was established to provide technical assistance, training, and \$75 million in grants over four years to help communities conserve natural and cultural resources, provide outdoor recreation, enhance tourism and foster community development. Six grant programs were established by the Partnership, several of which are funded through the Keystone Recreation, Park and Conservation Fund which is managed by the Pennsylvania Department of Conservation and Natural Resources's Bureau of Recreation and Conservation (See Chapter 5). The Partnership initiative includes:

- (1) About \$3 million in Land Trusts Grants are available to nonprofit land trusts or conservancies for planning and acquisition of critical natural areas and open space which face imminent loss;
- (2) Rivers Conservation Grants are awarded to conserve and enhance river resources;
- (3) Rails-to-Trails Grants are awarded to plan, acquire or develop rail trail corridors;
- (4) Heritage Parks Grants are available to municipalities, nonprofit organizations, or commissions to conserve natural, cultural, historic and recreation resources in the Commonwealth's nine heritage park areas;
- (5) Urban Forestry Grants encourage the planting of trees in Pennsylvania communities; and
- (6) Eleven million dollars are available to municipalities for Community Grants for the rehabilitation and development of parks and recreation facilities, park

acquisition, technical assistance, and special funding for smaller communities.

The Department of Environmental Protection's Pennsylvania Rivers Conservation Program provides technical and financial assistance for local river conservation planning and implementation activities. The DEP has also created a wetland registry program to encourage landowners to register land on which they would desire wetland restoration or creation by the Department. The registry is used to link landowners with public and private entities and agencies interested in restoring wetlands.

The Center for Rural Pennsylvania was established by the state legislature in 1987 (Act 16, the Rural Revitalization Act) to promote and sustain the vitality of Pennsylvania's rural and small communities. The Center acts as an advocate for rural communities, maintains a database on rural trends and conditions, disseminates information, produces publications, sponsors workshops, and coordinates programs and resources to address local needs and opportunities. The Center also provides annual grants to rural communities for applied research and demonstration projects. The three areas of grants are:

- ◆ *Policy Research* - applied research initiatives leading to statewide policy and program recommendations awarded for over a year for up to \$50,000;
- ◆ *Model Projects* - demonstration initiatives that implement innovative yet replicable approaches to addressing rural issues funded for up to \$50,000; and
- ◆ *Rural Initiatives* - local or regional initiatives to develop or enhance local capacity building that are leveraged against existing funding and assistance through partnerships with other groups or organizations.

The Pennsylvania Environmental Council, a nonprofit organization, provides technical assistance to all of Pennsylvania local governments in identifying and using appropriate tools to guide growth in a manner consistent with environmental protection. The Council's manual, *Guiding Growth: Building Better Communities and Protecting Our Countryside*, shows local governments how to adapt the authorities provided under Pennsylvania law to address local and environmental concerns. The Council also operates The Environmental Advisory Council (EAC) Network to encourage municipalities to establish and use EACs to identify environmental issues, set objectives, and develop solutions.

Virginia

The Chesapeake Bay Local Assistance Department provides local governments in Virginia with financial and technical assistance to implement the Chesapeake Bay Preservation Act (See Chapter 1). The Chesapeake Bay Preservation Act established a cooperative program between state and local governments to reduce nonpoint source

pollution inputs to the Bay by reducing the negative impacts of land use and development. The Act requires local governments in the Tidewater region to identify, map, and protect Chesapeake Bay Preservation Areas. Local governments must also incorporate water quality protection measures into their comprehensive plans, zoning ordinances, and subdivision ordinances.

The Department provides technical assistance to local governments including: interpretation of the Bay Act regulations; review of local comprehensive plans and ordinances for compliance; advisory review of private development plans at the request of local governments; training for local government planners and engineers; and administration of a competitive grants program for localities and planning districts. In fiscal year 1996, the Department provided funding to 32 local governments in the Bay. The grants must be matched by local governments with cash or in-kind services. The grants are often used to help local governments hire planning, engineers, and enforcement personnel and to purchase computers. Training courses for local governments have covered such topics as stormwater management, site plan review and comprehensive planning, and agricultural water quality monitoring, assessment, and planning.

The Virginia Coastal Resources Management Program is a network of state agencies and local governments that administer coastal laws and policies to manage subaqueous lands, tidal wetlands, fisheries, point and nonpoint source pollution, and other issues. The program is administered by the Virginia Department of Environmental Quality (DEQ); federal funding is made available to state agencies and local governments through annual Requests for Proposals.

CONCLUSION

Often educational materials and technical assistance can contribute much to an area's conservation efforts. Individual landowner initiatives and collaborative community efforts can benefit greatly from some well-placed information and resources. Moreover, even in communities with a well-articulated strategy making use of the tools discussed in the previous chapters of this handbook, education can help build the case for community acceptance, support, and cooperation as the program is carried out. Although technical assistance and education are not a complete program in themselves, they are a critical component of any program that a community expects to succeed. There are many excellent educational resources and technical support programs available to the local governments and communities of the Chesapeake Bay watershed.

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The Center For Rural Pennsylvania, 212 Locust Street, Suite 604, Harrisburg, PA 17101; (717) 787-9555.

Centre County Conservation District, R.D. #5, Box 390, Bellefonte, PA 16823; (814) 355-6817.

Chesapeake Bay Local Assistance Department, 805 E. Broad Street, Suite 701, Richmond, VA 23219; (804) 225-3440.

Chesapeake Bay Local Assistance Department. 1995. *A Guide to the Bay Act: Virginia's Chesapeake Bay Preservation Act Program*. Chesapeake Bay Local Assistance Department: Richmond, VA.

Chesapeake Bay Local Government Advisory Committee. 1991. *Chesapeake Bay Restoration: Innovations at the Local Level*. U.S. Environmental Protection Agency. Washington, D.C.

Chesapeake Bay Program. December 1995. *Chesapeake Bay Communities: Making the Connection*. U.S. Environmental Protection Agency. Annapolis, MD.

Chesapeake Bay Program. 1995. *Catalog of Assistance Programs*. (800) YOUR-BAY. Annapolis, MD.

Environmental Concern. 1995. *Wow! The Wonders of Wetlands*. P.O. Box P, St. Michaels, MD 21663; (410) 745-9620.

Maryland Office of Planning. 301 West Preston Street, Baltimore, MD 21201-2365; (410) 225-4550.

Pennsylvania Environmental Council, 1211 Chestnut Street, Suite 900, Philadelphia, PA 19107; (800) 322-9214 (PA only), or (215) 563-0250.

Pennsylvania Rivers Conservation Program, Program Planning and Development, P.O. Box 8475, Harrisburg, PA 17105-8475; (717) 787-2316.

World Wildlife Fund. 1992. *Statewide Wetlands Strategies: A Guide to Protecting and Managing the Resource*. Island Press: Washington, D.C.

Case Studies:

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**Tools Used in the Chesapeake Bay Watershed
to Protect Wetlands**

The case studies presented in this section illustrate how many of the tools discussed in this handbook have been used by local governments in the Chesapeake Bay watershed. The purpose of this section is not to assess the tools' effectiveness in particular locations, but rather to show their use in the ordinary course of local governmental activities.

The tools are clustered by type, with planning-related tools being presented first, followed by regulatory and acquisition tools, but with significant overlap where these tools are used in combination with one another. Thus, for example, acquisition of development rights by local governments follows the case studies of transferable development rights. Likewise, a number of tools are discussed together to show how they integrate with one another in practice. For example, the discussion of Lycoming County's comprehensive planning includes the county's use of performance zoning to implement the plan.

The selection of specific jurisdictions is not based upon an assessment that these are either unique or the best examples of these tools in practice but, instead, is intended to show the range of jurisdictions that can and have used these conservation tools in ways that protect wetlands or have the opportunity to protect wetlands. References are provided for each case, along with contacts for additional information.

Comprehensive Plan: Lycoming County, PA

Comprehensive plans provide a basis for wetlands protection in public decision-making and establish the basis for further implementation of protective measures in the zoning and subdivision ordinances that implement comprehensive plans.

Lycoming County, Pennsylvania, adopted a comprehensive plan in which the environmental quality chapter sets a goal of preserving and protecting wetlands. The plan recommends the establishment of buffer zones around "valuable" wetlands, the promotion of "wetlands sensitive development design," the maintenance of wetlands for open space and recreational purposes, and the promotion of "the usage of urban wetlands to slow runoff, collect sediment, absorb toxins and other potential pollutants and improve water quality."

Comprehensive plans affect private activity primarily through the zoning ordinances that are developed to implement the plans. While Pennsylvania municipalities have independent powers of land use planning and zoning, the county has authority to zone for municipalities within the county that do not have their own zoning. Lycoming County has adopted zoning applicable in 14 of its townships that do not have their own zoning.

In implementing the comprehensive plan with respect to wetlands, the county has used performance zoning. The only requirements are that wetlands be identified, that proposals for developments that "disrupt" wetlands must show proof of state and Corps of Engineers approval, and that vegetated buffer zones (of 50 feet, or more in the case of steep slopes) be required to protect stream banks and shorelines. While this is a fairly modest approach to achieving the conservation plan goals, the goals of the comprehensive plan provide the basis upon which additional zoning requirements could be adopted.

References: Lycoming County Comprehensive Plan (1994), Chapter 4; Lycoming County Zoning Ordinance, Article 5.

For additional information contact: Lycoming County Planning Commission, 48 West 3rd Street, Williamsport, PA 17701; (717) 327-2230.

Environmental Advisory Commission: East Hanover Township, Dauphin County, PA

Local advisory commissions can promote municipal wetlands protection by participating in updating the comprehensive plan or designing natural resource ordinances that specifically protect wetlands.

East Hanover Township established an Environmental Advisory Commission that developed a Natural Resource Inventory to assist the township in updating its Comprehensive Plan. The Inventory included a mapping project that identified the area's wetlands to aid in local decision-making.

The East Hanover EAC also developed and wrote a wetlands ordinance which was adopted by its Board of Supervisors in 1992. The ordinance requires that all subdivision plans, land division plans, and building permit applications that result in a foundation inspection include a wetlands determination. If a wetland is identified, the applicant must demonstrate that activities within the wetlands margin will not degrade the water quality or wetland vegetation or have an adverse hydrological impact on the wetland. In the event a permit is granted by a state or federal agency for the encroachment or destruction of wetlands, East Hanover Township will request the state or agency issuing the permit to require a 1:1 wetlands replacement ratio of both acreage and function by the applicant.

Reference: East Hanover Township, Dauphin County, Pennsylvania, Ordinance 92-4.

For additional information contact: East Hanover EAC, 1552 Sandbeach Road, Hummelstown, PA 17036; (717) 533-8153; and The EAC Network, Pennsylvania Environmental Council, 1211 Chestnut Street, Suite 900, Philadelphia, PA 19107; (215) 563-0250.

Environmental Land Preservation Commission: Harford County, MD

Local governments can establish advisory organizations to assist in identifying environmental issues and planning for the protection of wetlands and other sensitive and important natural resources. Harford County established a 5-member Environmental Land Preservation Commission in 1990 to assist the county by "finding ways to protect environmentally critical areas in difficult economic times and, while in no manner dampening growth, trying to find ways to direct growth in rational ways in keeping with the County's rich natural endowment."

The Commission assists the County's Department of Planning and Zoning in developing innovative recommendations for environmental protection. It provides advice in setting priorities for environmental land preservation, provides and promotes education and technical assistance to land owners, promotes an environmental land preservation easement program, and engages in investigating, evaluating, and providing recommendations for innovative approaches.

The Commission prepares reports with detailed recommendations and opportunities for improving public policies, laws, and private voluntary actions. The Commission also carries out certain administrative functions allotted to it by county ordinance. For example, the Commission determines eligibility of real property for a conservation tax credit authorized by the county.

References: Harford County Bill No. 90-74; Commission on Environmental Land Preservation, *Report to the Harford County Executive and Harford County Council* (January 1, 1993); Harford County Bill No. 94-34.

For additional information contact: Harford Environmental Land Preservation Commission, c/o Harford County Office of Planning & Zoning, 220 South Main Street, Bel Air, MD 21014; (410) 879-2000 X3103.

Environmental Guidelines: Montgomery County, MD

Local governments can assist in the planning process and the evaluation of new development and infrastructure in their region by developing environmental guidelines. Montgomery County has developed and published guidelines to inform and influence staff recommendations to the Planning Board, "which may then choose to accept, reject, or modify these recommendations on a case by case basis."

The guidelines describe the process for preparing a natural resources inventory for development sites and protecting natural resources during the development process. They also provide detailed support for elements of the county's general comprehensive plan and local area master plans that deal with sensitive areas as required under Maryland state law.

Montgomery County's environmental guidelines contain wetland guidelines based on the state's Nontidal Wetlands Protection Act, which establishes a goal of no net loss in wetland acreage and function. The county guidelines require a minimum buffer of 25 feet around nontidal wetlands areas and of 100 feet around wetlands of special state or county concern or adjacent areas containing steep slopes or highly erodible soils. Wetlands and their buffer areas are to be "maintained in their natural condition unless the proposed disturbance is for a project determined to be necessary and unavoidable for the public good." Such projects may include the construction of road crossings, sewer lines, and storm drain outfalls for which no alternative exists; development of stormwater management facilities when it can be demonstrated that upland areas are infeasible; and certain habitat and wetland improvement efforts.

The guidelines direct the Planning Department to evaluate proposed wetland impacts with the following sequence in order of preference: avoid the impact, minimize the impact, rectify the impact by repair or restoration, reduce or eliminate the impact by preservation and maintenance activities, and compensate for the impact by replacing or providing substitute resources or environments.

The wetland guidelines provide an important local evaluative backstop to state and federal regulatory requirements. They encourage development and capital infrastructure investments to be made in ways that protect wetlands and that avoid triggering the need for state or federal regulation and review whenever possible.

Reference: Montgomery County Planning Board. Jan. 1993 (corrected June 1994). *Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County.*

For additional information contact: The Maryland-National Capital Park and Planning Commission, Environmental Planning Division, 8787 Georgia Avenue, Silver Spring, MD 20910-3760; (301) 495-4540.

Environmental Quality Corridors: Fairfax County, VA

A rapidly developing jurisdiction must pay particular attention to its natural areas and the linkages between them to ensure that they remain ecologically viable. Fairfax County, Virginia, has adopted a system of Environmental Quality Corridors (EQCs) as part of its comprehensive plan. The plan notes that neither low density zoning nor cluster developments alone are sufficient to protect and conserve the quality of the landscape. For this reason, the County's planning objective is to "identify, protect, and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County."

The core of the networked system is the County's stream valleys and includes all 100-year floodplains, all areas of 15 percent slopes adjacent to the floodplain or beginning within 50 feet of the stream channel where no floodplain is present, all wetlands connected to the stream valleys, and an adjacent corridor.

The plan encourages the dedication of lands for preservation where such dedication is in the public interest. It also provides that the County should consider the transfer of density within parcels of land where parcels are partially within the EQC. The plan is also used to evaluate site plan approvals in negotiating proffers with developers and is used in local governmental decisions about governmental land uses affecting stream valleys. While not an overlay zone, EQCs serve as an important planning tool for protecting wetlands.

References: Fairfax County Policy Plan: The Countywide Policy Element of the Comprehensive Plan (1990).

For additional information contact: Fairfax Office of Comprehensive Planning, 12055 Government Center Parkway, Suite 700, Fairfax, VA 22035; (703) 324-1210.

Watershed Planning: Middle Peninsula Planning District, VA

Watershed planning can provide the basis for coordinating activities that affect wetlands. Often, watersheds cross political boundaries, so it is important to involve a variety of jurisdictions in the planning and implementation effort.

In Virginia, the Middle Peninsula Planning District Commission (MPPDC), comprising six counties and three towns, developed the Dragon Run Conservation District (DRCD) to conserve the watershed of Dragon Run, which lies within four counties -- Essex, Gloucester, King & Queen, and Middlesex. Wetlands comprise 10 percent of the 153 square mile watershed.

The DRCD was established to protect and conserve fragile resource areas which perform valuable functions in their natural state and which are unsuitable for development and intense use. Areas designated as the DRCD include wetlands and swamps, areas important for floodplain management, aquifer recharge, water storage, and critical wildlife habitat. A Steering Committee consisting of members appointed from the four counties engages in planning and makes recommendations concerning the district. Steering Committee representatives include at least one member of the board of supervisors and two land owners from each county. While the Steering Committee engages in planning and makes recommendations, implementation is conducted by the counties assisted by the MPPDC. Three of the four counties adopted the conservation district as an overlay district.

The Dragon Run Management Program is a watershed planning and implementation project designed to protect the natural resources within the ecosystem. In addition to the planning effort, a local land trust, Friends of Dragon Run, purchases property in the watershed and operates collaboratively with the planning process.

References: Dragon Run Watershed Management Program Annual Reports, 1994, 1995.

For additional information contact: Middle Peninsula Planning District Commission, P.O. Box 286, Suluda, VA 23149; (804) 758-2311; and Friends of Dragon Run, P.O. Box 1062, Gloucester, VA 23061; (804) 693-3330.

Watershed Information and Planning: Elizabeth River, VA

The Elizabeth River Project in Virginia was formed in 1992 to encourage broad community involvement in restoring the environmental health of the Elizabeth River in southeastern Virginia. The Project also educates the public about the River's ecological, economic, and recreational importance. The Project received funding from the U.S. Environmental Protection Agency and the Virginia Environmental Endowment to conduct a comparative risk assessment of the river. A public conference in Norfolk, Virginia, on January 10, 1995, announced the results of the analysis that ranked the risks to the river.

In the second phase, the Project established a Watershed Action Team in April 1995, to provide recommendations on restoring habitat and living resources, improving water quality, improving sediment quality, and reducing toxics. Four volunteer task forces of more than 80 community leaders have been working together to develop the Watershed Action Plan. The four work groups are: Habitat & Living Resources, Water Quality, and Sediment Quality Task Forces and Toxics Reduction Team. The Watershed Action Plan was presented at the Project's third annual public conference of the Elizabeth River Project in June 1996.

The Elizabeth River Project also has a Wetlands Pilot Project, which is a partnership with the city of Norfolk. The project has targeted a one acre site for wetlands restoration. They plan to create a wetlands habitat park and a demonstration project to illustrate how wetlands can be used to filter stormwater.

For additional information contact: Elizabeth River Project, 109 East Main Street, Suite 305, Norfolk, VA 23510; (804) 625-3648.

Heritage Greenway Planning: Lower Susquehanna River, MD

In 1992, the Maryland Office of Planning established a Lower Susquehanna Heritage Greenway Coordinating Committee to determine the level of local commitment for protecting a greenway corridor in the Susquehanna River Valley. The committee's efforts resulted in the Lower Susquehanna Heritage Greenway, which was initiated to enrich the quality of life in the River Valley by conserving the cultural heritage, living resources, and natural features of the area. The greenway encourages a greater local understanding of the resources, enhances economic development, and creates an open space network for the region. The project is run by a committee which is made up of citizens and individuals from local government, municipalities, and state government.

The corridor being protected for the project winds along the banks of the Susquehanna River from the Conowingo Dam to the Chesapeake Bay. The corridor crosses two counties, Harford and Cecil, and includes the City of Havre de Grace and the towns of Perryville and Port Deposit. The tracts of land falling within the greenway are mostly large private farms and rural developments and are replete with unique aesthetic, historic, and natural resources. The State of Maryland, local governments, and public utilities also manage large open space land holdings in the corridor. The Greenway's planners feel that little or no land acquisition is required for continued protection of the Valley's resources.

The committee is currently working on development of an action plan for the Greenway which will include design standards for the trail, operation and management guidelines, suggestions for community involvement, economic development, tourism, and integration of the plan into the overall Chesapeake Bay initiative. Several sections of the Greenway have already been opened, including a three mile stretch in Harford County in Susquehanna State Park; a half mile stretch in Port Deposit, Cecil County; a 400-acre park in the town of Perryville at the head of the Bay; and a waterfront boardwalk in the city of Havre de Grace. The committee is also working to have the Lower Susquehanna Heritage Greenway designated as a state Heritage Preservation Area.

References: Lower Susquehanna Heritage Greenway Coordinating Committee. May 1993. *Lower Susquehanna Heritage Greenway: Overview*.

For additional information contact: Harford County Office of Planning & Zoning, 220 South Main Street, Bel Air, MD 21014; (410) 879-2000 X3103.

Special Area Management Plan: Baltimore County, MD

A Special Area Management Plan (SAMP) is a comprehensive approach to resource management that considers local, state, and federal interests within a geographic area. It can be applied to wetlands and can be used to provide greater predictability for government and private decisionmakers and to assure that secondary and cumulative impacts of planned activities are understood. Baltimore County has used the SAMP to deal with the expansion of sewer service into areas formerly served by on-lot systems, some of which are failing.

The Back River Neck SAMP was prepared by the County's Department of Environmental Protection and Resource Management in cooperation with the County Department of Public Works, the U.S. Army Corps of Engineers' Baltimore District, and the Maryland Department of Natural Resources. It focuses on lots to be served by the proposed sewer systems and those along the routes that might be served in the future. Much of the analysis was designed to minimize or avoid the impacts upon nontidal wetlands in these areas, which are important to the health of the Chesapeake Bay.

The SAMP calls for the delineation of wetlands. Wetlands are also functionally assessed using a method adapted for the area from common evaluation tools. The functions examined include ecological integrity, plant habitat, wildlife habitat, aquatic habitat, flood control, and water quality and are used to assist in decisionmaking. In addition, a uniqueness or importance score is applied independently. Certain wetlands are designated for preservation, such as those that are unique, in Chesapeake Bay Critical Area Habitat Protection Areas, riparian wetlands, or nontidal fringe wetlands within the 100 foot critical area tidal buffer. Most wetlands are evaluated based on the functional assessment. Using this assessment, for example, the SAMP contemplates that mature forested wetlands displaying increasing species diversity will be preserved, while immature forested wetlands may be developable. In order to accommodate development and mitigation needs, the SAMP found that in-kind, on-site mitigation for wetlands loss was "impractical" given the small lot sizes. Therefore, the County is establishing two wetland mitigation banks to mitigate for the direct impacts of the sewer projects and anticipated impacts of building permit approvals for development stimulated by the availability of sewer service. The banks will allow the pooling of mitigation in order to be more effective and ecologically viable.

The SAMP was not used to develop a "general permit" under § 404 of the Clean Water Act but instead will be used as the "reference information at the county, state, and federal level" for all permit decisionmaking.

Reference: Back River Neck Special Area Management Plan. May 26, 1995.

For additional information contact: Baltimore County, Department of Environmental Protection and Resource Management, 401 Bosley Avenue, Suite 416, Towson, MD 21204; (410) 887-3755.

Special Area Management Plan: Northampton County, VA

Building upon work initiated by The Nature Conservancy in cooperation with local churches, businesses, and communities, the Northampton County Board of Supervisors appointed a Sustainable Development Task Force to spearhead a Sustainable Development Initiative in September 1993. The Initiative was established to address poverty and coordinate economic development with environmental protection in this depressed area on the tip of the Delmarva peninsula. The County occupies the southern half of Virginia's Eastern Shore.

In 1992, the County received a grant from the Virginia Coastal Resources Management Program and the National Oceanic and Atmospheric Administration (NOAA). The grant partially supports the County's Special Area Management Plan (SAMP), which in turn finances the County's Sustainable Development Initiative through 1996. State and federal funds will sustain the remainder of the project. The planning effort helps to integrate conservation of coastal marshes and other areas with the development of sustainable industry and communities.

In 1994, the Sustainable Development Task Force published its Sustainable Development Action Strategy. The Strategy has three interdependent objectives: development of sustainable industries which capitalize on Northampton's assets while supporting their protection and enhancement; protection and enhancement of the assets on which Northampton's sustainable industries depend for their full development and ongoing success; and active involvement of the entire Northampton community throughout the sustainable development effort. Northampton County won a national planning award from the National Association of Counties for its planning effort.

Among other efforts, the County is currently developing a Heritage Trail that will link natural and cultural resources throughout the Eastern Shore via a series of trails and historic sites. Through this project, the County hopes to increase public understanding of the region's resources, secure their long term protection, and develop a sound economic base. The Initiative aims to improve quality of life in the County by developing a sustainable economy that consciously protects and celebrates the region's natural and cultural resources.

References: Environmental Law Institute. 1995. *Building on the Blueprint: How Virginia's Communities are Implementing Sustainable Development*. Environmental Law Institute: Washington, D.C.; Chesapeake Bay Program. Dec. 1995. *Chesapeake Bay Communities: Making the Connection*. U.S. Environmental Protection Agency: Annapolis, MD.

For additional information contact: Director of Sustainable Development, County of Northampton, P.O. Box 538, Eastville, VA 23347; (804) 678-0477.

Wetland Protection Regulations: Calvert County, MD

Local communities may adopt regulations controlling the impacts of development on wetlands. Because of a concern for the effect of development on wetland functions, Calvert County has established a goal of no significant loss of wetlands. The County passed regulations that "are intended to protect wetlands from the negative effects of siltation and nutrification caused by development" to achieve no net loss.

The County's regulations require the identification and maintenance of a minimum buffer zone of 50 feet of undisturbed natural vegetation around wetlands that are outside the Chesapeake Bay Critical Area (which have their own requirements). The required buffer zone may be reduced by the Zoning Officer if the developer can formulate alternative ways to minimize soil run-off problems.

The County's regulations provide that filling of wetlands for the construction of single-family detached residential dwellings will not be allowed. The regulations also address the effect of subdivision of parcels of land upon wetlands. The County has determined that lands may not be subdivided "in a manner that requires filling of wetlands for any activities except road crossing and stormwater management."

Reference: Calvert County Zoning Regulations 4-4.05.

For additional information contact: Calvert County Department of Planning & Zoning, 176 Main Street, Courthouse Annex, Prince Frederick, MD 20678; (410) 535-2348.

Wetland Protection Regulations: Baltimore County, MD

Wetlands can be protected by local government regulation where local governments have authority to do so. In Maryland, county governments have substantial authority to protect wetlands by regulatory means.

Baltimore County has adopted regulations for the protection of forest buffers "to protect water quality, streams, wetlands, and floodplains." The County Council's findings, set forth in the County Code, find that forest buffers:

Restore and maintain the chemical, physical, and biological integrity of the water resources; filter nutrients and toxics; reduce erosion and control sedimentation; stabilize stream banks; provide infiltration of stormwater runoff; maintain base flow of streams; provide the organic matter that is the source of food and energy for the aquatic ecosystem; provide tree canopy to shade streams and encourage trout and other desirable aquatic species; provide riparian wildlife habitat; provide scenic value and recreational opportunity; and minimize public investment in waterway restoration, stormwater management, and other water resource expenditures.

The regulations provide for design review, review of grading and building permits, management requirements limiting disturbance of land and vegetation, prohibitions of certain structures and activities, and enforcement procedures and penalties. The County has adopted very strict regulations to protect forest buffers. For example, vegetation within a forest buffer may not be disturbed except under very limited circumstances; soil disturbances, including grading, plowing, and cultivating, are prohibited; drainage or ditching is prohibited except by permit; pesticides may not be used except for spot spraying of identified noxious weeds; and grazing, the operation of motorized vehicles, and filling or dumping are prohibited.

The County's Department of Environmental Protection and Resource Management is authorized to grant a variance from the requirements for projects or activities where strict compliance would result in practical difficulty or unreasonable hardship, or for public improvement projects where there is no feasible alternative. Mitigation is required when variances are granted.

References: Baltimore County Code, Article IX, *Protection of Water Quality, Streams, Wetlands and Floodplains*, §§ 14-331 - 14-350.

For additional information contact: Baltimore County, Department of Environmental Protection and Resource Management, 401 Bosley Avenue, Suite 416, Towson, MD 21204; (410) 887-3755.

Subdivision Ordinance: East Hanover Township, Dauphin County, PA

Subdivision and building permit ordinances can be used to protect wetlands. East Hanover Township, Pennsylvania, amended its Subdivision and Land Development Ordinance and its Building Permit Ordinance in 1992 to explicitly provide wetlands protection. The amendments were developed by the township's Environmental Advisory Council, an appointed body authorized by Pennsylvania's Municipalities Code.

The subdivision ordinance states that the township "has determined that the public interest, health, safety and the economic and general welfare of its residents will be best served by providing for the protection and preservation of its ponds, lakes, reservoirs, water bodies, rivers, streams, water courses, wetlands, natural drainage systems and adjacent land areas from encroachment, spoiling, pollution or elimination, and by providing for their proper maintenance and use." The ordinance further finds that "[w]etlands in East Hanover and other areas form an ecosystem that is not confined to any one property owner or neighborhood." It notes the benefits of wetlands to the Township for drainage and flood control, subsurface water resources, habitat, pollution control, erosion control, and other uses.

The ordinances require that prior to preliminary plan approval for a proposed subdivision, a determination must be made on each lot to ascertain whether wetlands may be present. When the initial determination indicates that wetlands may be present, the ordinances require that wetlands delineations, confirming the presence of wetlands and defining their extent, must be performed. If the Township questions the delineation, the developer must seek a jurisdictional delineation from the Army Corps of Engineers.

The applicant must "demonstrate to the satisfaction of the Township that activities within the wetlands margin will not degrade the water quality, wetland vegetation, or have an adverse hydrological impact on the wetlands." The wetlands margin is defined as a transitional area of 50 feet from the delineated wetland boundary or to the limit of the hydric soils outside the wetland boundary, whichever is less.

The ordinances require the Township to request that state or federal agencies that authorize wetland loss by permit impose a compensatory mitigation requirement on the applicant of at least 1:1 replacement of both acreage and wetland function.

References: East Hanover Township, Ordinance 92-4, Ordinance 92-5.

For additional information contact: East Hanover EAC, 1552 Sandbeach Road, Humelstown, PA 17036; (717) 533-8153.

Subdivision Ordinance: West Lampeter Township, Lancaster County, PA

Municipalities can integrate wetlands protection into their land development regulations. West Lampeter Township, a township adjacent to the city of Lancaster, amended its subdivision ordinance in 1989 to protect wetlands.

The ordinance requires developers to identify the effect of the proposed use upon sensitive environmental or cultural conditions. Developers must map the wetlands and important wildlife habitats (identified by the Pennsylvania Natural Diversity Inventory) on property that has been determined to contain wetlands. The developer must demonstrate that it has all permits required by the state or the Army Corps of Engineers for activities affecting wetlands. In addition, the developer must provide a detailed description of the methods that are being used to: (1) avoid the disturbance of any wetlands during and following construction; (2) assure that the proposed use is compatible with important habitats; (3) mitigate the loss of existing habitats; (4) replace and/or create additional land areas that will have similar environmental traits; and (5) assure that activities associated with the proposed use will remain compatible with the site's important habitats over time.

References: West Lampeter Township Subdivision and Land Development Ordinance, Section 402.05; and Pennsylvania Department of Environmental Resources. 1990. *Wetlands Protection: A Handbook for Local Officials*. Environmental Planning Information Series Report #7. Prepared by the Environmental Law Institute.

For additional information contact: Lancaster County, West Lampeter Township, 852 Village Road, P.O. Box 237, Lampeter, PA 17537; (717) 464-3731.

Subdivision Regulations: Prince George's County, MD

Subdivision regulations prescribe the manner by which parcels of land may be subdivided for development and sale. They typically prescribe lot sizes, set-back requirements, roadway access, public facilities access, and other requirements. Many communities also use subdivision regulations to protect environmentally important features, such as perennial streams, shorelines, and wetlands.

Prince George's County, Maryland, has enacted subdivision regulations that include an environmental chapter. The environmental chapter covers floodplains, streams, wetlands and water quality protection, stormwater management, lands considered unsafe (due to flooding, erosion, unstable soils, or high water table), woodland conservation and tree preservation, grading plans, historic preservation requirements, and parkland. The wetland section provides that proposed subdivisions must be designed "to minimize the effects of development on land, streams and wetlands, to assist in the attainment and maintenance of water quality standards, and to preserve and enhance the environmental quality of stream valleys."

In addition to this performance standard, there are specific requirements for the protection of natural resources. For example, certain buffer zones are required. For nontidal wetlands outside the Chesapeake Bay Critical Area, the subdivision plat must provide a buffer of at least 25 feet measured from the edge of the wetland. The county's Planning Board may require an expansion of this buffer to include adjacent slopes of 25 percent or greater and adjacent slopes of highly erodible soils with a slope of 15 percent or greater. Where property is within an area covered by an adopted watershed plan, the subdivision must conform to that plan.

The use of performance standards - requiring the minimization of effects, assistance in achieving and maintaining water quality, and preserving and enhancing environmental quality of stream valleys - together with specific design requirements such as buffer zones, provides a basis for effective local protection of wetlands.

References: Subdivision Regulations of Prince George's County, Maryland. § 24-130.

For additional information contact: Prince George's County Department of Environmental Resources, 9400 Peppercorn Place, Largo, MD 20774; (301) 883-5810.

Mandatory Cluster Development: Calvert County, MD

Cluster development is a way of accommodating development of land with other resources and conservation interests. It increases the density of development on part of a parcel, while requiring that the remaining land be conserved in open space.

Calvert County requires cluster development for residential communities in rural areas. Within the Rural District, building lots within designated Farm Communities and Resource Preservation Districts must be grouped onto no more than 20 percent of the site. Within designated Rural Communities, building lots must be grouped onto no more than 50 percent of the site. In areas zoned as Residential R-1 and R-2 outside of town centers, building lots must be grouped onto no more than 50 percent of the site.

Cluster development provides a tool for protecting not only farmland and open space, but also wetland resources. In Calvert County, wetlands, floodplains, streams and stream buffers are recognized as suitable open space uses. Open space created by approved cluster development must be protected by legal arrangements such as covenants "to assure the preservation and continued maintenance of the open space for its intended purposes in perpetuity."

Reference: Calvert County Zoning Regulations 5-1.03.

For additional information contact: Calvert County Department of Planning & Zoning, 176 Main Street, Courthouse Annex, Prince Frederick, MD 20678; (410) 535-2348.

Authorized Cluster Development: Kent County, MD

Cluster development is a way to assure that open space - including wetlands and the surrounding upland areas important for their ecological health - is preserved even while development is allowed to occur. Development density is increased on part of the parcel in order to protect open space on the remainder of the parcel. Kent County, Maryland, allows its planning commission to approve cluster development in districts zoned as rural residential, provided that at least 30 percent of the site is retained in open space. Cluster development is not required but is available as a development option.

The county also provides for "enclave" development in the Agricultural district. Houses developed in enclaves must be grouped close together on small lots around an internal road to resemble farm buildings. Enclave development authorized under the county ordinance allows a maximum of 10 dwelling units per enclave, with a maximum lot size of 1 acre and no minimum lot size (except as required by set-back, yard and other requirements). Enclave development offers an approach that is particularly well-suited to agricultural lands.

Reference: Kent County Zoning Ordinance.

For additional information contact: Kent County Planning Commission, Court House, 103 North Cross Street, Chestertown, MD 21620; (410) 778-7475.

Authorized Cluster Development: Monaghan Township, York County, PA

Cluster development is a tool that can assist in the protection of open space and other desirable landscape features, including wetlands. Development density is increased on part of the parcel in order to protect open space on the remainder of the parcel.

Monaghan Township, in York County, Pennsylvania, has adopted zoning regulations that create a Rural Residential Zone, which allows both agriculture and low-density residential development. Rural clusters of single family dwellings are authorized as a conditional use. According to the township's regulations, this is "intended to accommodate the clustering of rural residences, while reducing the loss of significant natural features (e.g., steep slopes, woodlands, wetlands, floodplains, etc.)." The regulations provide a density bonus that increases as the amount of land dedicated to open space increases.

The applicant for cluster development must prepare a detailed natural and cultural inventory of the site, which identifies 100-year floodplains, wetlands, streams, ponds, other water bodies, and various other features. The open space dedication consists only of these identified natural or cultural features and other open space that "links" such features together on the parcel of land.

Reference: Monaghan Township Zoning Ordinance, Section 454.

For additional information contact: York County Planning Commission, York County Government Center Building, 100 West Market Street, York, PA 17401; (717) 771-9870.

Cluster Development with Transferable Development Rights: Talbot County, MD

Talbot County, Maryland, has both cluster development and cluster development with transferable development rights (TDR). These tools protect open space and can, indirectly, benefit wetlands.

In the area zoned as a rural agricultural conservation district, the authorized cluster development density for parcels over six acres is 3 dwelling units plus 1 dwelling unit for each 10 acres. This is a greater density than is authorized for ordinary subdivisions in the district, which are 3 dwelling units plus 1 dwelling unit for each 20 acres. The higher density for cluster development encourages the retention of open space. Open space preserved in connection with cluster development must be explicitly preserved by Reservation of Development Rights Agreements "which prohibit future residential, commercial, or industrial development" on the open space.

Talbot County has combined its cluster development option with a transferable development rights option. This alternative allows the landowner to "almost double the density of a cluster subdivision by transferring additional development rights to the subdivision" from another property within a rural agricultural conservation district. With transferred development rights, cluster development density is authorized at 3 dwelling units plus 1 dwelling unit for each 5 acres of land. The minimum lot size for cluster development with TDRs is one-half acre, rather than one acre as in ordinary cluster development. The rural agricultural property from which the TDRs are transferred is protected from development by a recordation of the transfer, with ten acres protected for each TDR that is transferred.

Other provisions governing subdivisions in the rural agricultural conservation district provide that "the landscape shall be preserved in its natural state insofar as practical, by minimizing tree and silt removal. Topography, tree cover, and natural drainageway shall receive priority as fixed determinants of road, site and structure configuration." In addition, areas of the site with "environmental constraints," such as wetlands, are not to be disturbed by development, but may be included in calculating the allowable density.

References: Talbot County Code, Title 19.

For additional information contact: Talbot County Office of Planning & Zoning, 11 North Washington Street, Easton, MD 21601; (410) 822-2030.

Cluster Development Combinations -- TDRs and Overlays: Howard County, MD

Cluster development in sensitive areas can promote conservation of wetlands, retain open space, and protect agricultural uses. When coupled with transferable development rights (TDRs), substantial conservation can be encouraged.

Howard County mandates cluster development in rural areas of the county zoned as Rural Conservation (RC) districts. Within the RC district, maximum residential density is one dwelling unit per 4.25 acres; however, the units must be clustered. No subdivision building lot may be larger than 60,000 square feet. The remainder of the original parcel must be covered by a permanent conservation easement. On the conservation parcel, authorized uses include farming, conservation uses, and other limited uses.

The county allows, but does not require, cluster development in the Rural Residential (RR) district. The RR district is a portion of the county where extensive subdivision has already taken place. Clustering in the RR district is at the same density as in the RC district.

Howard County has also created an overlay district for the RC and RR districts in order to provide additional incentives for the protection of the RC district. The overlay district allows the transfer of density (development rights) among qualified parcels. The "sending" parcels must be in the RC district - thus providing greater protection opportunities for lands in this district.

References: Howard County Zoning Regulations, Sections 104, 105, 106; Chesapeake Bay Program. Dec. 1995; and *Chesapeake Bay Communities: Making the Connection*. U.S. Environmental Protection Agency: Annapolis, MD. pp. 27-28.

For additional information contact: Howard County Department of Planning & Zoning, 3430 Courthouse Drive, Ellicott City, MD 21043; (410) 313-2350.

Transferable Development Rights: Shrewsbury Township, York County, PA

Transferable Development Right (TDR) programs can be used to protect agricultural areas and to differentiate between uses of lands by protecting the best agricultural lands.

Shrewsbury Township requires that, in the Agricultural Preservation District, all single family dwellings must be located on lands "not of first quality for agriculture." Wherever this limitation prohibits an owner from using the full density of dwellings allowed for the owner's parcel based on acreage, the development rights may be transferred to another parcel consisting of lands that are unsuitable for agricultural use and in an "agriculturally inferior" area of the Township.

Although this TDR program does not assist in preserving wetlands, it provides a model that could be adapted to wetlands protection.

References: Shrewsbury Township Zoning Ordinance, Sections 5.00-5.06.

For additional information contact: York County Planning Commission, 100 West Market Street, Suite 201, York, PA 17401; (717) 771-9870.

TDRs with Purchase of Development Rights: Calvert County, MD

Transferable development right (TDR) programs sometimes do not perform as well as expected because they depend heavily upon an active market for development in areas designated as TDR receiving areas. To encourage the continued use of TDRs in light of this barrier, some local jurisdictions have supplemented TDR programs with programs that rely on government purchase and retirement of TDRs.

One such jurisdiction is Calvert County, Maryland, which has created a program to "purchase, retire and permanently remove" TDRs in order to preserve farm land from development. The Purchase and Retirement Fund is made available for purchase of TDRs upon application of land owners holding the TDRs. A Board made up of 5 members appointed by the County Commissioners carries out a variety of agricultural preservation duties including administration of the Fund. It is responsible for reviewing applications for sale of TDRs using established criteria to determine which applications should be accepted. A detailed point system considering such factors as agricultural use and activity, size, soils, and location is used.

The Purchase and Retirement Fund is supported by the county's share of the state real estate transfer tax. All counties in Maryland have the right to use up to 75 percent of the state real estate transfer taxes collected in their county if they have a certified agriculture preservation program. Money for the Fund also comes from county funds that were originally set aside for matching the state program.

Reference: Calvert County Agricultural Preservation Rules and Regulations (1995).

For additional information contact: Calvert County Department of Planning & Zoning, 176 Main Street, Courthouse Annex, Prince Frederick, MD 20678; (410) 535-2348.

Installment Purchase Program: Howard County, MD

Howard County, Maryland has been successful in its development and implementation of a tax-exempt installment purchase program for acquiring development rights on agricultural lands. The county has developed a scheme under which it buys development rights from farmers with a thirty-year promissory note rather than cash. The note represents a promise to fulfill the terms of the sale, and payment for most of the principal is deferred until the end of the contract period. In the meantime, the farmer receives semi-annual, tax-exempt, market rate interest payments, as well as small principal payments every two years. Under this scheme, the bulk of capital gains taxes are deferred until the final payment at the end of the thirty-year contract, or when the estate is probated if the owner should die earlier.

Contributing to the success of this program is the fact that the agreements between the county and the landowner are "securitized." This enables the landowner to cash out of the program by selling his or her interest in the installment payments in the marketplace as certificates of participation.

The final balloon payment which the county is obligated to pay at the end of the thirty-year contract period is secured by zero-coupon Treasury obligation bonds that are scheduled to mature in thirty years. These bonds are steeply discounted, enabling the county to buy bonds with a future value of about \$24 million for approximately \$2.4 million.

Howard County's success rate under this financing scheme has been tremendous. By July 1990, the County had commitments to purchase development rights on more than 4,100 acres. The county paid about \$5,500 per acre, about one-third of the appraised value of the land.

Under Maryland law, Howard County is a "charter county," which means that it is given significant authority to initiate and manage its own debt. Other counties in Maryland and in other states are structured differently and would require enabling legislation to adopt a similar program.

Reference: Lincoln Institute of Land Policy. 1993. *Land Conservation through Public/Private Partnerships*. Eve Endicott, ed. Island Press: Washington, D.C.

For additional information contact: Howard County Department of Planning & Zoning, 3430 Courthouse Drive, Ellicott City, MD 21043; (410) 313-2350.

Installment Purchase of Development Rights: Virginia Beach, VA

The City of Virginia Beach, Virginia adopted an ordinance on May 9, 1995 establishing a general obligation bond that allows the city to assume up to \$58 million of debt. The bond designates funding for the newly established Agricultural Reserve Program (ARP). Although the Virginia Beach ordinance specifically excludes wetland acquisition from its ARP, other communities could enact a similar ordinance that includes wetlands acquisition. Through ARP, the City acquires development rights in designated areas within the southern portion of the city through the purchase of agricultural land easements. Landowners who meet certain eligibility criteria may sell an easement to the city while holding fee simple title to the land and continuing to farm. The city acquires the development rights to the land in perpetuity by executing installment purchase agreements with the landowners.

The installment purchase agreements offered by the city in exchange for a conservation easement on the land are paid in full approximately twenty-five years after execution of the agreement. Farmers receive interest payments every six months and receive the principal payment at the end of the twenty-five years.

In the initial phase of the program, twenty farmers owning 2500 acres in agricultural lands submitted applications to participate in the program. The applications must be reviewed and eligible properties appraised. When the appraisals are completed, the city will make offers to acquire conservation easements on qualifying properties. Offers to landowners with approved applications are to be made in the latter half of 1996.

Upon the execution of the easement, the city will purchase zero coupon bonds. The zero coupon bonds purchased at the closing provide income for the farmer's semi-annual interest payments, as well as the principal balloon payment in 25 years. The City Council provides additional funds to the bondholders, including a one and one-half cent increase in the real estate tax and at least \$550,000 in other general fund revenues and surpluses annually.

For additional information contact: Virginia Beach Department of Finance, Building 1, Room 220, Municipal Center, Virginia Beach, VA 23456; (804) 427-4681. Virginia Beach City Attorneys Office, City Hall Building, Room 260, Municipal Center, Virginia Beach, VA 23456; (804) 427-4531.

Resource Protection Zone: Charles County, MD

Resource Protection Zones (RPZs) are a type of overlay zone used to impose special requirements not specifically addressed by the underlying use-based zone. RPZs can be used to protect wetland areas found in industrial, commercial, residential, agricultural, or other zones.

Charles County, Maryland, has defined an RPZ for all county streams located outside the Chesapeake Bay Critical Area. The purposes of the zone are to "preserve floodplains in a natural state; preserve wetlands associated with floodplains; preserve significant habitat associated with stream valleys or in other locations; prevent soil erosion and sedimentation by protecting steep slopes associated with stream valleys; protect persons and property from environmental hazards such as unstable or highly erodible soils and flooding; filter nutrients, toxics, and sediment from stormwater; protect scenic values; provide recreational opportunities; and minimize public investment in floodplain stormwater management."

The zone is defined as an area encompassing the outermost *combined* limits of the 100-year floodplain and a buffer. The minimum buffer, defining the outer limit of the RPZ, is 50 feet from the stream channel (or 100 feet for larger stream channels). Where adjacent nontidal wetlands are present, the buffer extends 25 feet beyond the outer edge of the wetlands (within a development district) or 50-100 feet beyond the outer edge of the wetlands (outside of a development district). If the 100-year floodplain extends beyond the buffer as adjusted for adjacent nontidal wetlands, the edge of the floodplain constitutes the edge of the buffer. The buffer is extended 50-100 feet if the minimum buffer includes or is within 25 feet of a steep slope.

The RPZ provides a modest basis for conserving wetlands and stream corridors in the County. Certain land uses are prohibited within the RPZ: mining and excavation, dredging (except when permitted by state law), deposition of fill or waste, alteration of the stream bed, and clearing of vegetation and grading. Certain land uses are permitted subject to conditions designed to protect the zone: agriculture with vegetative filter strips, timber harvesting, utilities where no reasonable alternatives exist, non-motorized recreational trails, and construction of single-family homes on lots platted prior to October 1992. Any plats prepared for recording must indicate the zone and contain a note stating: "There shall be no clearing, grading, construction, or disturbance of vegetation in the Resource Protection Zone except as may be permitted by the Charles County Planning Commission." For developments adjacent to the RPZ, or authorized in the zone under the limited conditional uses, a performance bond must be posted with the County to cover any possible damage to RPZ lands during construction. The bond is released only after the work done under the applicable grading permit has been approved by the County.

Reference: Charles County, Maryland, Zoning Ordinance, Part III §§ 167-182.

For additional information contact: Charles County, Office of Planning & Growth Management, P.O. Box B, LaPlata, MD 20646; (301) 645-0692.

Overlays and Buffer Zones: Harford County, MD

Overlay zoning provides a means to protect natural resources of particular value wherever they might occur within a local jurisdiction, regardless of the underlying use-based zone. Harford County established an overlay zone in 1982 to limit certain uses that could affect wetlands and stream valleys. In 1985, the County amended the zoning ordinance to define buffers for wetlands and streams in the overlay zone.

The overlay zone limits development activities, such as residential, commercial or industrial development. Within the overlay zone, buffer zones also limit disturbance of soil and vegetation, through the prohibition of such activities as timber harvesting. The ordinance requires the protection of a natural buffer of 75 feet from the margin of a wetland. Streams and their adjacent lands are included in the overlay zone to a distance of 150 feet from the stream bank or 50 feet beyond the 100-year floodplain, whichever is greater. The stream buffer is 75 feet on each side of tributaries that drain an area of 400 acres or more; smaller streams have a buffer of at least 50 feet, plus an additional distance to account for steep slopes.

References: U.S. Environmental Protection Agency. 1992. *Protecting Coastal and Wetlands Resources: A Guide for Local Governments*. U.S. EPA, Office of Water: Washington, D.C. EPA 842-R-92-002.

For additional information contact: Harford County Office of Planning & Zoning, 220 South Main Street, Bel Air, MD 21014; (410) 879-2000.

Performance Based Zoning: Queen Anne's County, MD

Performance based zoning uses the characteristics of land to determine the allowable development capacity. Queen Anne's County, Maryland, uses a simple version of performance based zoning to determine residential site capacity.

Residential site capacity is the portion of a parcel that can be used in calculating the applicable density. Performance based zoning is used to assure that areas containing important resources such as wetlands are not pressured by development, by excluding them from that part of the land that developers have an expectation of developing. Queen Anne's County has adopted an approach to the calculation of the developable area of a parcel of land that is designed to exclude key resource areas from the developable base.

First, the County determines the total resource protection land area for the site. The resource protection area consists of wetlands, other waters, buffers, and forests, in various quantities. The resource protection area is deemed to include 100 percent of the site's acreage that is in rivers, floodplains, and wetlands. It also includes 100 percent of streams and buffer zones, except in agricultural areas where only 80 percent of the acreage of streams and buffer zones is included in the total. Woodland acres are included at 100 percent in the Chesapeake Bay Critical Area, 60 percent in other upland areas, and 50 percent in agricultural areas. The sum of these categories gives the resource protection area for a given site.

Second, the County calculates the parcel's open space requirement by multiplying the base site area by the applicable open space ratio determined by ordinance for each zoning district.

Then the *greater* of the resource protection area total or the open space total is *subtracted* from the base site area to obtain the "net buildable area." The net buildable area is used to determine how many dwellings may be constructed on the parcel. It is multiplied by the applicable net density (from the zoning ordinance) to obtain the number of dwelling units permitted. This number is compared to the number of dwelling units calculated by multiplying the base site area by the applicable gross density (also from the zoning ordinance). The smaller number is the number of allowable units for the site.

Similar procedures are used to determine the maximum amount of floor area and impervious area, and the minimum landscape surface area for nonresidential development in the County.

Performance zoning can be used both directly and indirectly to protect wetlands and their surrounding uplands in development areas.

Reference: Queen Anne's County Zoning Ordinance, § 5300-5305.

For additional information contact: Queen Anne's County Department of Planning & Zoning, 107 North Liberty Street, Centerville, MD 21617; (410) 758-1255.

Floodplain and Wetland Protection Regulations: Howard County, MD

Many wetlands are located in the floodplains of rivers and streams. These valuable wetlands improve flood control and limit pollution and damage to waterways by slowing the flow of floodwaters as they recede. Floodplain protection regulation, while aimed primarily at preventing damage to structures and loss of life, can also protect wetlands.

Howard County, Maryland, like many other jurisdictions in the Chesapeake Bay watershed, includes floodplain preservation regulations as a part of its regulations on subdivisions of land. Most land within the 100-year floodplain is protected in some manner. The regulations state that "developers are encouraged to dedicate and deed the land" in the floodplain to the county as "open space." Absent such dedication, the developer must grant the county a perpetual easement for access and deed the land either to a property owners' association or include it within the boundaries of the subdivision lots. However, the floodplain land is not counted as meeting any part of the requirement for minimum lot size (with limited exceptions in certain rural districts).

The county also has requirements for the protection of wetlands and streams. Grading or removal of vegetation is not permitted within 25 feet of any wetland; within 50 feet of any intermittent stream, or perennial stream in non-residential zones; or within 75 feet of a perennial stream in residential zones. Wetlands may not be included within the boundaries of residential lots but must be included in required open space unless this cannot be reasonably achieved. Wetland buffers, however, may be located on residential lots as long as at least 25 feet of usable yard exists between the dwelling and the buffer.

Reference: Howard County Subdivision and Land Development Regulations, Sections 16.114-.116.

For additional information contact: Howard County Department of Planning & Zoning, 3430 Courthouse Drive, Ellicott City, MD 21043; (410) 313-2350.

Wetland Mitigation Guidelines: Baltimore County, MD

Construction and other local development activities often have adverse affects on wetlands. In these instances, wetland mitigation is typically required by the Army Corps of Engineers for permitted activities and by state governments. In addition, local governments may impose mitigation requirements for wetlands impacts. These local requirements may be satisfied by compliance with federal or state requirements, or they may also be imposed directly by the local government, including cases where the activity does not require a federal permit or mitigation at the federal level.

Baltimore County, Maryland, has adopted detailed wetland mitigation guidelines. The county generally prohibits the destruction or harmful alteration of wetlands or streams; but where impacts are authorized, mitigation must occur. After avoiding adverse impacts, project applicants must adhere to the following sequence: minimize the impact by limiting the degree or magnitude of the action; rectify the impact by repairing, rehabilitating or restoring the affected environment; reduce or eliminate the impact over time; and, finally, compensate for the impact by replacing or providing substitute environments.

The County's guidelines give detailed examples of each type of mitigation and how it might be applied. For example, minimization includes "constructing longer bridges to cross floodplains instead of channelizing streams" and redesigning the project by "widening an existing road instead of building a new one." Examples of restoration include "replanting native wetland and riparian vegetation."

Where compensation is used, the guidelines provide that the restoration or creation activity must restore lost wetland functions *and* acreage at a 1:1 ratio or higher. A greater than 1:1 ratio must be required if the wetland adversely affected is a forested wetland, if uncertainties exist about the probable success of the proposed restoration or creation, if one or more functions cannot be replaced, or if a period of time will pass between the wetland loss and the compensation.

The guidelines establish a presumption that compensation will be with the same kind of wetland as the one adversely affected. However, the project applicant may overcome this presumption by showing that the affected wetland was already degraded and that another type of wetland will have greater functional value, or by showing that it is technically infeasible to restore the same type of wetland due to factors such as persistent exotic species or changes in watershed hydrology. To the extent possible, compensatory mitigation is to be located according to the following order of preference: 1) on-site; 2) within the same subdrainage basin or next higher order stream; or 3) within the same major drainage basin.

Detailed application requirements, financial capability demonstrations, monitoring requirements, and survey requirements are set out in the County's guidelines.

References: Baltimore County, Maryland, Wetland Mitigation Guidelines.

For additional information contact: Baltimore County, Department of Environmental Protection and Resource Management, 401 Bosley Avenue, Suite 416, Towson, MD 21204; (410) 887-3755.

Utility Siting and Construction: Baltimore County, MD

Local governments can affect wetlands through the regulations and guidelines covering utility placement and construction by both public entities and private utilities. Baltimore County, Maryland, has environmental guidelines that directly address the relationship between utilities and wetland areas.

The County guidelines governing utility placement and design provide that disturbance of wetlands and streams should be avoided or minimized "through the use of practical alternatives such as designing the utility line in a proposed or existing roadway or using an existing right-of-way." Where this is not feasible, "locating the utility line parallel to the outer edge of the wetland, along the toe of an adjacent slope, or at the outer edge of the forest buffer is preferred." The guidelines call for a "minimum 50 foot undisturbed buffer" between watercourses and the edge of the utility right-of-way.

Stream crossings should be avoided, but where stream crossings are required, the guidelines provide that they should be perpendicular to the channel to minimize disturbance of stream bank vegetation and to reduce cuts on the stream bank. Crossings should also be in areas with low, well-armored banks, to reduce damage. Utility construction practices must not alter the hydrologic regime. The post-construction contours of waters and elevations of wetlands in a project area must be the same as the original contours and elevations. In addition, no material may be placed in any location or in any manner "so as to impair surface or subsurface water flow into or out of any wetland area."

Permanent work on utilities "shall not restrict or impede movement of aquatic species, or restrict or impede the passage of normal or expected high flows" or cause the relocation or impoundment of water. The County has also developed detailed wetland mitigation guidelines.

References: Baltimore County's Environmental Policies and Guidelines for Public and Private Improvements.

For additional information contact: Baltimore County, Department of Environmental Protection and Resource Management, 401 Bosley Avenue, Suite 416, Towson, MD 21204; (410) 887-3755.

Land Acquisition: American Chestnut Land Trust, Calvert County, MD

The American Chestnut Land Trust (ACLT) was founded in 1986 by a group of local landowners who were concerned about development pressure in Calvert County. The first order of business of the newly formed trust was the purchase of a threatened 436-acre parcel of land. The Trust financed the acquisition by raising \$500,000 through charter memberships at \$2,500 each, enrolling the land in the Calvert County Agricultural Preservation program, and selling \$400,000 worth of transferable development rights to pay off the mortgage. Since that time, the American Chestnut Land Trust has broadened their focus to the preservation of the 5,500 acre forested watershed of Parkers Creek. The parcel contains the Trust's namesake -- the largest American chestnut tree left in the state.

The Trust has now purchased 790 acres within the watershed, helped individual landowners protect another 485 acres, and assisted the state Department of Natural Resources and The Nature Conservancy (TNC) with acquisition of an additional 600 acres. ACLT is currently assisting TNC and the State to negotiate the protection of 1,000 acres through land and easement purchases.

Among the tools utilized by the American Chestnut Land Trust are Calvert County's \$1 million revolving loan fund and the county's agricultural preservation program. In the Parkers Creek watershed, development rights sell for about \$2,400 an acre, making this one of the Trust's most important tools for raising money to purchase sensitive land.

The Trust has also innovatively used "pass through" purchases to facilitate acquisition. In pass through purchases, the Trust finds a landowner willing to sell his or her property and a buyer willing to purchase the property with conservation easements on it. When the land is targeted for development, the purchaser often cannot afford the asking price if they have no intent of developing the property. In such cases, the Trust can purchase the property from the landowner at a "bargain sale," or a price lower than its appraised value. This allows the seller to get a tax write-off for the difference because he or she has sold to a nonprofit organization. The Trust then enrolls the land in the Calvert County Agricultural Preservation program, donates a conservation easement to the Maryland Environmental Trust, and sells it to the conservation buyer.

In less than 10 years, the Trust will have purchased or facilitated preservation of more than a third of the watershed's acreage. In a small geographical area where a landowners cannot afford to make outright donations of land or conservation easements, the organization has achieved success by relying upon use of an innovative combination of acquisition tools.

For additional information contact: American Chestnut Land Trust, P.O. Box 204, Port Republic, MD 20676; (410) 586-1570.

Appendix I:
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Appendix II:

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Contacts

Contacts

Alliance for the Chesapeake Bay
6600 York Road, Suite 100
Baltimore, MD 21212
(410) 377-6270

Alliance for the Chesapeake Bay
P.O. Box 1981
Richmond, VA 23216
(804) 775-0951
(Chesapeake Regional Information
Service)
800-662-2747

Alliance for the Chesapeake Bay
225 Pine Street
Harrisburg, PA 17101
(717) 236-8825

American Chestnut Land Trust
P.O. Box 204
Port Republic, MD 20676
(410) 586-1570

Anne Arundel County Planning and
Zoning
P.O. Box 2700
Annapolis, MD 21401
(301) 222-7441

Audubon Society of Central Maryland
P.O. Box 1326
Ellicott City, MD 21041-1326

Audubon Council of Pennsylvania
1104 Fernwood Avenue, Suite 300
Camp Hill, PA 17011
(717) 763-4985

Baltimore County
Department of Environmental Protection
and Resource Management
401 Bosley Avenue, Suite 416
Towson, MD 21204
(410) 887-3755

Blair County Conservation District
1407 Blair Street
Hollidaysburg, PA 16648
(814) 696-0877

Bradford County Conservation District
R.R. #5, Box 5030-C
Towanda, PA 18848
(717) 265-5539

Bucks County Conservancy
85 Old Dublin Pike
Doylestown, PA 18901
(215) 345-7020

Calvert County Department of Planning &
Zoning
(Parkers Creek Watershed Management
Plan)
176 Main Street
Courthouse Annex
Prince Frederick, MD 20678
(410) 535-2348

The Center For Rural Pennsylvania
212 Locust Street, Suite 604
Harrisburg, PA 17101
(717) 787-9555

Centre County Conservation District
R.D. #5, Box 390
Bellefonte, PA 16823
(814) 355-6817

Charles County
Office of Planning & Growth Management
P.O. Box B
LaPlata, MD 20646
(301) 645-0692

Chesapeake Audubon Society
P.O. Box 3173
Baltimore, MD 21228-3173
(410) 203-1819

Chesapeake Bay Critical Area Commission
45 Calvert Street, 2nd Floor
Annapolis, MD 21401
(410) 974-2418

Chesapeake Bay Foundation
164 Conduit Street
Annapolis, MD 21401
(410) 268-8833

Chesapeake Bay Foundation
1001 East Main Street, Suite 710
Richmond, VA 23219
(804) 780-1392

Chesapeake Bay Foundation
214 State Street
Harrisburg, PA 17101
(717) 234-5550

Chesapeake Bay Local Assistance
Department
805 E. Broad Street, Suite 701
Richmond, VA 23219
(804) 225-3440

Chesapeake Bay Program Office
U.S. Environmental Protection Agency
410 Severn Avenue, Suite 109
Annapolis, MD 21403
(800) YOUR-BAY

Chesapeake Bay Trust
60 West Street, Suite 200A
Annapolis, MD 21401
(410) 974-2941

Dragon Run, see Middle Peninsula
Planning District Commission

Ducks Unlimited, Inc.
1709 New York Avenue, NW, Suite 202
Washington, D.C. 20006
(202) 347-1530

Eastern Shore Land Conservancy
P.O. Box 169
Queenstown, MD 21658-0169
(410) 827-8056

East Hanover EAC
1552 Sandbeach Road
Hummelstown, PA 17036
(717) 533-8153

The EAC Network
Pennsylvania Environmental Council
1211 Chestnut Street, Suite 900
Philadelphia, PA 19107
(215) 563-0250

Elizabeth River Project
109 East Main Street, Suite 305
Norfolk, VA 23510
(804) 625-3648

Environmental Concern
P.O. Box P
St. Michaels, MD 21663
(410) 745-9620

Fairfax Office of Comprehensive Planning
12055 Government Center Parkway, Suite
700
Fairfax, VA 22035
(703) 324-1210

Fredericksburg, City of
Planning Department
(Rappahannock River Watershed Plan)
P.O. Box 7447
Fredericksburg, VA 22404
(703) 372-1179

Friends of Dragon Run
P.O. Box 1062
Gloucester, VA 23061
(804) 693-3330

Gaithersburg, City of
31 South Summit Avenue
Gaithersburg, MD 20877
(301) 258-6330

Hackensack Meadowlands Development
Commission
1 DeKorte Park Plaza
Lyndhurst, NJ 07071
(201) 260-1700

Harford Community College
401 Thomas Run Road
Bel Air, MD 21015
(410) 836-4000

Harford County Office of Planning &
Zoning
220 South Main Street
Bel Air, MD 21014
(410) 879-2000

Harford Environmental Land Preservation
Commission
c/o Harford County Office of Planning &
Zoning
220 South Main Street
Bel Air, MD 21014
(410) 879-2000

Howard County Department of Planning
& Zoning
3430 Courthouse Drive
Ellicott City, MD 21043
(410) 313-2350

Isle of Wight County
Office of Planning and Zoning
P.O. Box 80
Isle of Wight, VA 23397
(804) 357-391

Planning and Code Administration
Kent County Planning Commission
Court House, 103 North Cross Street
Chestertown, MD 21620
(410) 778-7475

Keystone Recreation, Park, and
Conservation Fund, see Pennsylvania
Department of Conservation and Natural
Resources, Bureau of Recreation and
Conservation

Lancaster County
West Lampeter Township
852 Village Road
P.O. Box 237
Lampeter, PA 17537
(717) 464-3731

Land Trust Alliance
1319 F Street, NW, Suite 501
Washington, D.C. 20004-1106
(202) 638-4725

Lycoming County Planning Commission
48 West 3rd Street
Williamsport, PA 17701
(717) 327-2230

Maryland Agricultural Land Preservation
Foundation
Maryland Department of Agriculture
50 Harry S. Truman Parkway
Annapolis, MD 21401
(301) 841-5860

Maryland Department of Agriculture
Office of Resource Conservation
50 Harry S. Truman Parkway
Annapolis, MD 21401
(410) 841-5700

Maryland Department of Natural
Resources
Chesapeake & Coastal Watershed Service
Coastal Zone Management Division
E2 Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
(410) 974-2784

Maryland Department of Natural
Resources
Wildlife & Heritage Division
E1 Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
(410) 974-2870

Maryland Department of the Environment
Nontidal Wetlands and Waterway Division
B3 Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
(410) 974-3841
(moving to 2500 Broening Rd., Baltimore
21224)

Maryland Department of the Environment
Tidal Wetlands Division
B3 Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401
(410) 974-3871
(moving to 2500 Broening Rd., Baltimore
21224)

Maryland Environmental Trust
100 Community Place
Crownsville, MD 21032
(410) 514-7900

Maryland-National Capital Park and
Planning Commission
Environmental Planning Division
8787 Georgia Avenue
Silver Spring, MD 20910-3760
(301) 495-4540

Maryland Office of Planning
301 West Preston Street
Baltimore, MD 21201-2365
(410) 225-4550

Montgomery Co. Park & Planning Dept.
MD-Natl. Capital Park and Planning
Commission
Environmental Planning Division
8787 Georgia Avenue
Silver Spring, MD 20910
(301) 495-4540

Middle Peninsula Planning District
Commission
(Dragon Run)
P.O. Box 286
Suluda, VA 23149
(804) 758-2311

National Audubon Society
Mid-Atlantic Regional Office
1104 Fernwood Avenue, Suite 300
Camp Hill, PA 17011
(717) 763-4985

National Marine Fisheries Service
1335 East-West Highway
Silver Spring, MD 20910-3226
(301) 713-2325

National Marine Fisheries Service
Chesapeake Bay Program Office (F/HP3)
410 Severn Avenue, Suite 107A
Annapolis, MD 21403
(410) 267-5660

Northampton County
Director of Sustainable Development
P.O. Box 538
Eastville, VA 23347
(804) 678-0477

Ocean and Coastal Research Management
Office
Department of Commerce
Silver Spring, MD
(301) 713-3155

Parkers Creek Watershed Management
Plan, *see* Calvert County Department of
Planning & Zoning

Piedmont Environmental Council
P.O. Box 460
Warrenton, VA 20186
(540) 347-2334

Piedmont Environmental Council
1111 Rose Hill Drive
Charlottesville, VA 22903
(804) 977-2033

Pennsylvania Department of
Environmental Protection
Bureau of Dams, Waterways and Wetlands
P.O. Box 8554
Harrisburg, PA 17105-8554
(717) 783-6827

Pennsylvania Department of Conservation
and Natural Resources
Bureau of Recreation and Conservation
(Keystone Recreation, Park, and
Conservation Fund)
Room 555, Forum Building
Harrisburg, PA 17120
(717) 787-7672

Pennsylvania Environmental Council
1211 Chestnut Street, Suite 900
Philadelphia, PA 19107
(800) 322-9214 (PA only)
(215) 563-0250

Pennsylvania Land Trust Association
Chairman of Membership
(610) 965-4397
or c/o Western Pennsylvania Conservancy
316 Fourth Avenue
Pittsburgh, PA 15222-2075
(412) 288-2777

Pennsylvania Rivers Conservation
Program
Program Planning and Development
P.O. Box 8475
Harrisburg, PA 17105-8475
(717) 787-2316

Prince George's County Department of
Environmental Resources
9400 Peppercorn Place
Largo, MD 20774
(301) 883-5810

Program Open Space
E-3 Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401-9974
(410) 974-3581

Queen Anne's County Department of
Planning & Zoning
107 North Liberty Street
Centerville, MD 21617
(410) 758-1255

Rappahannock River Watershed Plan, *see*
Fredericksburg, City of Schuylkill County
Planning & Zoning Commission
401 North 2nd Street
Pottsville, PA 17901
(717) 622-5570

Somerset County Technical and
Community Services
Office of Planning of Zoning
11916 Somerset Avenue
Princess Anne, MD 21853
(410) 651-1424

Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902
(804) 977-4090

Talbot County Office of Planning &
Zoning
11 North Washington Street
Easton, MD 21601
(410) 822-2030

The Nature Conservancy
Home Office
1815 North Lynn Street
Arlington, VA 22209
(703) 841-5300

The Nature Conservancy
Maryland Field Office
Chevy Chase Metro Building
2 Wisconsin Circle, Suite 300
Chevy Chase, MD 20815
(301) 656-8673

The Nature Conservancy
Pennsylvania Field Office
1211 Chestnut Street, 12th Floor
Philadelphia, PA 19107-1400
(215) 963-1400

The Nature Conservancy
Virginia Field Office
1233-A Cedars Court
Charlottesville, VA 22903-4800
(804) 295-6106

Trust for Public Lands
666 Pennsylvania Avenue, SE
Washington, D.C. 20003
(202) 543-7552

U.S. Army Corps of Engineers
Regulatory Branch
20 Massachusetts Avenue, NW
CECW-OR
Washington, D.C. 20314-1000
(202) 761-0199

U.S. Department of Agriculture
Natural Resources Conservation Service
Wetlands and Watersheds Division
P.O. Box 2890
Washington, D.C. 20013
(202) 720-3534

U.S. Environmental Protection Agency
Wetlands Division
Wetlands Strategies and State Programs
Branch
401 M Street, SW
Washington, D.C. 20036
(202) 260-9043

U.S. Environmental Protection Agency
Wetlands Division
Wetlands and Aquatic Resources
Regulatory Branch
401 M Street, SW
Washington, D.C. 20036
(202) 260-7791

U.S. Environmental Protection Agency
Wetlands Information Hotline
(800) 832-7828

U.S. Fish and Wildlife Service
4401 North Fairfax Drive, Room 400
Arlington, VA 22204
(703) 358-2201

Virginia Beach Department of Finance
Building 1, Room 220
Municipal Center
Virginia Beach, VA 23456
(804) 427-4681

Virginia Beach City Attorneys Office
City Hall Building, Room 260
Municipal Center
Virginia Beach, VA 23456
(804) 427-4531

Virginia Institute of Marine Science
Wetlands Program
P.O. Box 1346
College of William and Mary
Gloucester Point, VA 23062
(804) 642-7000

Virginia Marine Resources Commission
Habitat Management Division
P.O. Box 756
2600 Washington Avenue
Newport News, VA 23607-0756
(804) 247-2200

Virginia Outdoors Foundation
203 Governor Street
Richmond, VA 23219
(804) 225-2147

Western Pennsylvania Conservancy
316 Fourth Avenue
Pittsburgh, PA 15222-2075
(412) 288-2777

World Wildlife Fund
1250 24th Street, NW
Washington, D.C. 20037
(202) 293-4800

York County Planning Commission
York County Government Center Building
100 West Market Street
York, PA 17401
(717) 771-9870

Appendix III:

List of Wetlands Workgroup Members

**Wetlands Workgroup Membership
Living Resources Subcommittee
Chesapeake Bay Program**

Chair

Carl Hershner, VA Institute of Marine Sciences
Wetlands Workgroup Chair as of January 1997

Frank Dawson, MD Department of Natural Resources
Former Wetlands Workgroup Chair

Members

Rick Ayella
Tom Barnard
Carin Bisland

Terry Clark
Lee Crockett
Barbara D'Angelo
Tom Filip
Steve Funderburk
Tim Goodger

Harry Knight
Fran Koch
Anne Lynn
Pam Mason
Peter May
Michael McCarthy
Karen Mulligan
Vivian Newman
David Norris
Ira Palmer
Matthew Perry
Walter Pomeroy
Tony Redman
Tony Watkinson
Bruce Williams
Elizabeth Zucker

Affiliation

MD Department of the Environment
VA Institute of Marine Sciences
US Environmental Protection Agency/Chesapeake
Bay Program Office
MD Department of the Environment
National Oceanic and Atmospheric Administration
US Environmental Protection Agency - Region III
US Army Corps of Engineers
US Fish and Wildlife Service
National Oceanic and Atmospheric Administration/
National Marine Fisheries Service
Citizens Advisory Committee
PA Department of Environmental Protection
National Resources Conservation Service
VA Institute of Marine Sciences
DC Environmental Regulations Administration
US Fish and Wildlife Service
US Army Corps of Engineers
MD Wetlands Committee
VA Department of Game and Inland Fisheries
DC Environmental Regulations Administration
National Biological Service
Citizens Advisory Committee
Local Government Advisory Committee
VA Marine Resources Commission
US Army Corps of Engineers
Chesapeake Bay Foundation

Coming Soon: Phase II of This Handbook

This document, *Protecting Wetlands: Tools for Local Governments in the Chesapeake Bay Region*, is the first phase of a two-phase project. The second phase, a guide to federal and state wetlands protection programs, will be a companion document to this handbook describing how local governments can participate in federal, state, and regional activities and decisions about wetlands. Federal and state technical assistance and informational resources will be discussed as well. The second phase document is expected to be printed by the Spring/Summer of 1998.

For more information or to receive a copy of Phase II of this handbook, please contact :

Wetlands Workgroup Fellow
Chesapeake Bay Program
410 Severn Avenue, Suite 109
Annapolis, MD 21403
1-800-YOUR BAY
FAX: (410) 267-5777

Chesapeake Bay Program

The Chesapeake Bay Program is a unique regional partnership leading and directing restoration of Chesapeake Bay since 1983. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the U.S. Environmental Protection Agency (EPA), which represents the federal government; and participating citizen advisory groups.

In the *1987 Chesapeake Bay Agreement*, Chesapeake Bay Program partners set a goal to reduce the nutrients nitrogen and phosphorus entering the Bay by 40% by the year 2000. In the *1992 Amendments to the Chesapeake Bay Agreement*, partners agreed to maintain the 40% goal beyond the year 2000 and to attack nutrients at their source--upstream in the tributaries. The Chesapeake Executive Council, made up of the governors of Maryland, Pennsylvania, and Virginia; the mayor of Washington, D.C.; the EPA administrator; and the chair of the Chesapeake Bay Commission, guided the restoration effort in 1993 with five directives addressing key areas of the restoration, including the tributaries, toxics, underwater bay grasses, fish passages, and agricultural nonpoint source pollution. In 1994, partners outlined initiatives for habitat restoration of aquatic, riparian, and upland environments; nutrient reduction in the Bay's tributaries; and toxics reductions, with an emphasis on pollution prevention.

The 1995 *Local Government Partnership Initiative* engages the watershed's 1650 local governments in the Bay restoration effort. The Chesapeake Executive Council followed this in 1996 by adopting the *Local Government Participation Action Plan* and the *Priorities for Action for Land, Growth and Stewardship in the Chesapeake Bay Region*, which address land use management, growth and development, stream corridor protection, and infrastructure improvements. A 1996 riparian forest buffers initiative furthers the Bay Program's commitment to improving water quality and enhancing habitat with the goal of increasing riparian buffers on 2010 miles of stream and shoreline in the watershed by the year 2010.

Since its inception, the Chesapeake Bay Program's highest priority has been the restoration of the Bay's living resources--its finfish, shellfish, bay grasses, and other aquatic life and wildlife. Improvements include fisheries and habitat restoration, recovery of bay grasses, nutrient reductions, and significant advances in estuarine science.