

APPENDIX II. MARYLAND'S WETLAND MANAGEMENT FRAMEWORK

History of Current Regulatory Programs

Maryland has been a national leader in developing and implementing environmental programs. There are numerous federal, State, and local programs that directly or indirectly support wetland conservation. Programs are described below.

Federal Regulation

The Federal Government's authority over changes to the Navigable Waters of the U.S. began in 1899 with the passage of the River and Harbor Act (RHA). This law gave the U.S. Army Corps of Engineers authority to regulate activities in navigable waters to protect the course, condition, and capacity and maintain navigability in public waterways. In Maryland, the 1899 Act applies to the mainstem of the Potomac River to Cumberland and to all tidal waterways and tidal wetlands. The focus of the law was the protection of navigation. A variety of water quality-related federal statutes were enacted between 1948 and 1965. In the later 1960's and early 1970's the 1899 Act was used to protect the "ecological condition" of navigable water, with special emphasis on tidal marshes.

Clean Water Act (Federal Water Pollution Control Act)

The Clean Water Act is the primary federal statute protecting the quality of the Nation's waters. The Act, originally known as the Federal Water Pollution Control Act, was passed in 1956 to encourage States to voluntarily clean up their waters. This Act was amended in 1968 and 1972 to include regulatory provisions for improving water quality. The amendments in 1972 included Sections 401-404 and provisions for making violations a misdemeanor in Section 318. Section 404 prohibits the discharge of dredged or fill material into "navigable waters" unless authorized by the Corps of Engineers. In Maryland, the term "navigable waters" as used in Section 404 means all waters of the United States in Maryland, which are tributaries to tidal waters or the Potomac River, including their adjacent and contiguous wetlands. In 1977, the Act was amended by adding severe penalties for failure to comply with Section 404 and by changing its name to the Clean Water Act (CWA). Other amendments allowed States to assume implementation of the Section 404 program and to provide exemptions for some types of ongoing activities. All waters and wetlands that flowed eventually to tidal waters are considered to be under the jurisdiction of Section 404 in Maryland under 1977 amendments. In 1985 the U.S. Supreme Court affirmed in *Riverside Bayview Homes* that CWA regulatory jurisdiction includes adjacent wetlands to headwater streams. CWA Section 404 implementation responsibility is shared between the US Environmental Protection Agency (EPA) and the Corps of Engineers. EPA has developed the environmental analysis to be followed when evaluating a permit application, has permit veto authority, oversees state program assumption, determines the extent of "waters of the United States" protected under the CWA, and the scope of Section 404 exemptions. The Corps administers the day-today Section 404 permit program, and conducts or verifies jurisdictional determinations. The two agencies both develop policy and guidance, and share enforcement authority. A permit from the Corps for a discharge of dredged or fill material

into wetlands or other waters of the U.S. is subject to two federally mandated state approvals. These are the State's Federal Consistency Decision pursuant to Section 307 of the Federal Coastal Zone Management Act and Water Quality Certification pursuant to Section 401 of the Clean Water Act. These state approvals validate the Corps' authorization. In addition, an applicant must obtain all other state and local authorizations before a Corps authorized activity may be undertaken.

In 2000, the Corps of Engineers issued final regulations for Nationwide permits (see below) clarifying their jurisdiction over waters and wetlands and agricultural activities. The clarification that ephemeral streams and drainage ditches are regulated waters is potentially a great impact to agricultural landowners.

The Corps of Engineers uses two types of permits; General Permits and Individual Permits, to authorize regulated activities. Corps authorizations are generally subject to conditions imposed at the federal level or by the State through the Section 401 Water Quality Certification (WQC). Conditions of the State's WQC automatically become conditions of the Corps' authorization.

General Permits

General Permits are an essential part of the Corps' regulatory program and are used to authorize types of activities without requiring an individual application for a particular project. General permits, which include Nationwide and Regional Permits, contain specific project limitations (conditions) to ensure minimal impacts to the aquatic environment both individually and in the aggregate.

Nationwide Permits.

Nationwide Permits (NWP's), authorize a broad range of specific activities in wetlands and other waters of the U.S., provided that the activity meets the requirements of minimal impacts. Such activities might involve discharge of dredged or fill material, or construction of specified structures. The NWP's are re-authorized every five years, and are subject to Federal Coastal Zone Consistency (CZC) and WQC review by the State. Although the majority of the NWP's were suspended for use in Maryland when the Corps issued the Maryland State Programmatic General Permit (MDSPGP), the State continues to review the NWP's during each re-authorization period, particularly those permits that have not been suspended. This review is important because should the MDSPGP become unavailable for use for any reason, the now suspended NWP's would be reinstated in Maryland. Nationwide permits were most recently re-authorized and in effect on March 18, 2002 and are to expire on March 18, 2007. Most NWPs in the State of Maryland, except NWP #23, 27, 30, 32, and 37 were suspended as of May 7, 2002. The Baltimore district has also developed regional conditions for the reissued NWPs which can be reviewed at the District's homepage at www.nab.usace.army.mil/Regulatory/public_notices.htm.

Presently, all NWP's have been certified by the State subject to the condition that an applicant obtains all necessary permits and approvals from the Maryland Department of the Environment. The State's certification is necessary to validate the NWP.

Regional Permits.

Regional Permits may be issued by the Corps to authorize certain activities with minimal impacts in a defined region, such as Maryland, the Chesapeake Bay, etc. Any proposed regional permits are also subject to the State's CZC and WQC reviews. All regional permits in Maryland have currently been superseded by the Maryland State Programmatic General Permit.

Standard Permits

The standard permit process is used by the Corps to authorize activities that do not meet the conditions of the MDSPGP or other general permits. There are two types of standard permits: 1) Individual: This permit is for projects that have more than minimal impact and require authorization pursuant to Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. These are evaluated on a case-by-case basis and are released for comment through public notices; and 2) Letter of Permission: This permit is for minor work under Section 10 of the Rivers and Harbors Act and requires a limited notification process to resource agencies and adjacent property owners.

Applicants for an individual permit for discharges to waters of the United States, including jurisdictional wetlands, must demonstrate that this proposed discharge is for a water-dependent activity or that no upland alternatives exist to filling the wetland. The Corps will also require that the project be modified so that impacts to the wetlands are minimized after it has been demonstrated that no reasonable alternatives exist. Compensatory mitigation will be required for unavoidable and minimized aquatic resource impacts. The Corps may also impose conditions for a permit on a case-by-case basis. There are also provisions for holding public hearings.

Agencies including the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, Environmental Protection Agency, and others are notified of projects by public notice, and send comments to the Corps. Review agencies or the Corps may request that additional information be submitted to evaluate the application. The District Engineer has the authority to revoke or modify conditions of any permits. Any regulated work in waters of the United States, including jurisdictional wetlands, without a valid Department of the Army permit or beyond the scope of the permit is a violation. The landowner or his contractor may be ordered to stop work. The landowner may be required to remove the violation and restore the site, and may be subject to civil and/or criminal penalties.

State Regulation

Maryland authority governing nontidal wetlands and waterways closely parallels the federal controls, but evolved from three separate acts of the Maryland General Assembly. In 1933, the assembly recognized that man-made changes to a stream or other body of water may result in flooding, adverse impacts to fish habitat and migration, and increased erosion. The Waterway Construction Statute was passed to regulate activities in streams and their 100-year floodplains. In 1970, tidal wetlands were given state protection. Then a commitment to increase the protection of nontidal wetlands contained in the 1987 Chesapeake Bay Agreement resulted in 1989 legislation, which established a state nontidal wetlands program that began implementation in 1991.

Tidal Wetlands Act

In 1970, the Maryland General Assembly recognized that many wetlands had been lost or despoiled throughout the State by unregulated activities such as dredging, dumping and filling, and that remaining wetlands were in jeopardy. The assembly established the Tidal Wetlands Act, which restricts construction and development actions in tidal wetlands.

Prior to enactment of the Tidal Wetlands Act, over 1,000 acres of wetlands were being destroyed throughout tidewater Maryland every year. The Act states that unregulated activities will "affect adversely, if not eliminate entirely, the value of the wetlands as a source of nutrients to finfish, crustaceans, and shellfish of significant economic value" and will "destroy the wetlands as a habitat for plants and animals of significant economic value and eliminate or substantially reduce marine commerce, recreation, and aesthetic enjoyment". The Act also declares: "It is the policy of the State, taking into account varying ecological, economic, developmental, recreational, and aesthetic values, to preserve the wetlands and prevent their despoliation and destruction."

The Tidal Wetlands Act mandated the mapping of tidal wetlands and the creation of a regulatory program to protect the State's tidal wetland resources. A map of the upland boundary of tidal wetlands was needed to establish regulatory jurisdiction for State and privately owned tidal wetlands. Maryland developed 2,400 scale tidal wetland boundary maps (1" = 200'), which delineate tidal wetlands boundaries and depict vegetation types. In addition, the resource was defined as either state or private tidal wetlands. State wetlands include all the open water and vegetated wetlands below mean high water, and are owned by the State of Maryland. Private wetlands include all tidal wetlands above the mean high water line, which are in private ownership. The Tidal Wetland Maps of Maryland were completed in 1972 using low-altitude photographs of tidally influenced areas of the coastal and interior bays of Maryland.

It should be noted that the majority of wetlands evaluated under the Maryland Program are State owned wetlands which include low marsh and open water wetlands (refer to Section III, Regulatory Framework for discussion of State and private wetlands).

Tidal Wetlands Program

Tidal wetlands are managed to provide reasonable use while furnishing essential resource protection. Licenses, issued by the State's Board of Public Works based on recommendations from MDE's Water Management Administration (WMA), are required for projects in State wetlands. The Board of Public Works is comprised of the Governor, the Comptroller of the Treasury, and the State Treasurer. Permits are issued directly by WMA for projects in private wetlands. A permit or license must be obtained before a person fills, dredges, or otherwise alters a tidal wetland. Typical projects include: shoreline protection projects including marsh creation, stone revetments, and bulkheads; piers; dredging; and stormwater discharges.

Construction of the following projects in tidal wetland areas require authorization from WMA: filling, dredging, bulkheads, revetments, boat ramps, jetties, cable crossings, storm drain systems, groins, breakwaters, vegetative stabilization, and similar structures. Applications are evaluated to insure that appropriate steps are taken to first avoid, then minimize impacts to tidal wetlands. Mitigation is required for unavoidable impacts, with the amount of mitigation based on

resources impacted, type of mitigation proposed, and location of the mitigation. In-kind and on-site mitigation is preferred and required wherever appropriate site conditions exist.

Most agricultural activities are exempt from requirements of the Act. Grazing is allowed without notification or approval provided that tidal wetland vegetation is not destroyed. Unlike the Nontidal Wetlands Act, aquaculture is not considered an agricultural activity. Aquaculture does not occur in vegetated tidal wetlands. Dredging of seafood products is exempt from this Act if the work is done by an operator licensed by the Department of Natural Resources (DNR). Harvesting of submerged aquatic vegetation is also exempt if no dredging is involved. The cutting of submerged aquatic vegetation requires a permit from DNR. Installation and operation of tide gaits, used by some farmers to prevent salt water from entering agricultural fields, is reviewed under standard permit requirements. Construction of mosquito ditches is not considered an agricultural activity, though it is reviewed by the Department of Agriculture (MDA). They are also exempt if approved by MDA. Projects such as farm roads are reviewed under standard review criteria.

In recent years, the regulatory program has limited the loss of vegetated tidal wetlands to less than one acre per year. More importantly, Maryland is realizing a net gain in tidal wetlands through mitigation and enhancement projects.

Nontidal Wetlands Protection Act

The 1987 Chesapeake Bay Agreement included a commitment to increase the protection of nontidal wetlands. To honor its commitment, Maryland created a special task force to develop a comprehensive wetland protection policy. Due to continued wetland losses and an existing inefficient regulatory framework, the task force recommended a new State law. In 1989, the Maryland General Assembly endorsed the task force recommendation by enacting the Nontidal Wetlands Protection Act.

The Nontidal Wetlands Protection Act seeks to protect these lands by regulating and restricting all activities that could impact nontidal wetlands or waters of the state. The Act also helps to insure “no net loss” in wetlands acreage and function, by requiring mitigation or compensation for any wetland losses. The Act also has provisions for the structuring of a smooth and expedient application review process, for dealing with developments in wetlands. The Act also directs the Department assist local governments in undertaking nontidal wetland management planning, and provide technical assistance; conduct educational programs; purchase, restore and create nontidal wetlands and adopt standards for planning, regulating, restoring, and creating, and enhancing nontidal wetlands.

The Nontidal Wetlands Protection Act also allows for delegation of all or part of the State program to local governments and provides for the development of watershed management plans. There are no currently delegated programs, though Prince George’s County briefly had a delegated program in the early 1990’s. Watershed management plans, developed in accordance with the Nontidal Wetlands Protection Act and the Code of Maryland Regulations (COMAR), can be used as the basis for regulatory decisions. The plans are developed in cooperation with local governments and specifically protect wetlands by incorporating them into a jurisdiction's land use decisions.

Nontidal Wetlands Regulatory Program

From its inception, Maryland's nontidal wetlands protection program was designed to parallel many aspects of Section 404 of the Clean Water Act (CWA). Regulated activities include:

- Removal, excavation, or dredging of soil or materials of any kind;
- Changing existing drainage or flood retention characteristics;
- Disturbance of the water level or water table by drainage, impoundment, or other means;
- Filling, dumping, discharging of material, driving piles, or placing obstructions;
- Grading or removal of material that would alter existing topography; and
- Destruction or removal of plant life.

Three aspects of Maryland law differ from federal regulation: authority over isolated wetlands, the alteration of vegetation and hydrology, and regulation of a 25-foot buffer. The regulation of these additional activities, plus clear jurisdiction over isolated wetlands, was intended to close loopholes that existed in the Section 404 program.

In a recent Supreme Court case (SWANCC vs. U.S. ACOE), the Corps' authority to regulate isolated wetlands was restricted by declaring that use of an isolated wetland by migratory birds is not alone justification for taking jurisdiction over these sites. The ruling stated that wetlands must have a "significant nexus" to navigable waters for the Corps to claim jurisdiction. By contrast, the Maryland Department of the Environment (MDE) has regulatory jurisdiction over impacts to all wetlands, isolated or not.

MDE also regulates the alteration of vegetation and hydrology in wetlands. This authority also differs from the Corps, in that the Corps may only regulate the placement of "fill" in wetlands.

MDE additionally regulates activities in a 25-foot buffer around nontidal wetlands, which the Corps does not. Buffer requirements are expanded to 100 feet for "nontidal wetlands of special State concern." Nontidal wetlands of special State concern are designated by regulation and mapped as having exceptional ecological or educational value of statewide significance.

The regulatory differences in Maryland's wetlands laws recognize that the benefits provided by a wetland depend on its hydrology and vegetation, and that activities immediately adjacent to a wetland may have as much effect on its function as activities in the nontidal wetland itself.

Program Highlights

Customer service is an important component of the legislation enacted by the Maryland General Assembly. As a result, an important step in the development of Maryland's nontidal wetlands protection program was permit coordination between the State and federal agencies involved with the regulatory process. To enhance coordination, the following actions were undertaken:

- Adoption of the 1987 U.S. Army Corps of Engineers (Corps) Wetland Delineation Manual and federal wetland definition in statute to ensure consistency with federal regulatory jurisdiction;
- Development of standard operating procedures to clarify respective State and federal roles in the permit application review process and to reduce duplication;

- Installation of the Regulatory Analysis and Management System (RAMS), a permit tracking system used by the Corps to insure a common database and facilitate efficient and effective communication;
- Creation of a Permit Service Center which receives, logs, and distributes all wetland and waterway applications for both State and federal agencies; and
- Issuance of the Maryland General Permit by the Corps on January 31, 1991 to facilitate the review and authorization of minor activities with minimal nontidal wetland impacts.

Additional actions taken to assist the individual permit applicant included the establishment of a toll-free permit tracking number (1-800-876-0200) and the establishment of regional offices in Salisbury (Eastern Shore), Prince Frederick (Southern Maryland) and Frostburg (Western Maryland).

There are two types of project approvals issued by the Nontidal Wetlands Program; a letter of authorization and a permit. Exempted activities, such as agricultural and forestry activities do not require MDE authorization. Certain other minimal impact activities are exempt, and may be issued an authorization to proceed to verify the exemption under specific circumstances. A letter of authorization may be issued for activities impacting less than 5,000 square feet of nontidal wetlands or less than one acre of isolated nontidal wetland. These activities do not require an alternative site analysis, public notice, or mitigation by the applicant. In these instances, MDE is responsible for mitigation. Examples include repair activities, utility projects, and construction of a private residence on a single lot. A permit is required for activities that do not qualify for an exemption or a letter of authorization. An alternative site analysis, public notice, and mitigation by the applicant are required. The State statute and regulations provide strict application review time frames.

Mitigation Program

When authorizations are issued for activities which will cause unavoidable losses of wetlands, the losses must be compensated with wetland gains to meet the "no net loss" goal. The primary means of accomplishing wetland gains to meet "no net loss" is through wetland mitigation. Wetland mitigation is the creation, restoration, or enhancement of wetlands, to compensate for wetlands that were or will be lost due to regulated activities or non-exempt agricultural activities. State tidal and nontidal wetland laws and federal laws have provisions for requiring mitigation, and follow guidelines in regulation and in a federal-State document *Interagency Mitigation Guidance*, produced in 1994 by the Interagency Mitigation Task Force (IMTF). The State definition of mitigation corresponds to the Federal definition of compensatory mitigation, which typically refers to the entire sequence of avoidance and minimization of wetland impacts, to be followed by compensation. State wetland laws also require avoidance and minimization of impacts, but restrict the term "mitigation" to compensation for lost wetland acreage and function. Mitigation is not required for temporary impacts to wetlands or impacts to the wetland buffer or expanded buffer.

Nontidal wetland creation projects establish nontidal wetlands on upland sites. These projects usually require the lowering the elevations of uplands by grading the soil for the purpose of increasing the frequency of soil saturation, flooding, and ponding.

Nontidal wetland restoration projects reestablish nontidal wetlands on sites where they were formerly located. For example, the blocking of drainage structures (ditches) from agricultural fields can result in nontidal wetland restoration. Restoration is the preferred mitigation option, when feasible, since former wetland areas are more likely to support successful projects in terms of desired acreage and function.

Nontidal wetland enhancement projects provide additional protection to, or improve the functions of, nontidal wetlands. Planting wetlands that are farmed or dominated by lawn grass is the most common type of enhancement project. Stream restoration projects, such as stabilizing the banks or restoring the natural meander pattern to a channelized stream, are examples of projects that can enhance existing nontidal wetlands. Enhancement projects do not increase the acreage of nontidal wetlands.

Wetland preservation projects protect wetlands from future impacts in perpetuity. Preservation can be used in conjunction with other types of mitigation. Wetland preservation generally receives one tenth as much mitigation credit as restoration or creation, according to the Interagency Mitigation Task Force guidelines. The high ratio is because additional wetland acreage is not gained from preservation. Preservation of wetlands of special State concern can receive more mitigation credit, such as one fifth as much as restoration or creation

Mitigation Requirements

Mitigation requirements, as detailed in *Maryland's Nontidal Wetland Mitigation Guidance* (Clearwater and Walbeck 1998), involve the replacement of wetlands according to the extent of impact, the type of resource impacted, and the method of mitigation. Acreage replacement ratios are used to determine the amount of mitigation required. Before any wetlands have been impacted by a project, the amount of each type of wetland to be lost (forested, scrub-shrub, and/or emergent) must be determined. Acreage replacement ratios are expressed as a relationship between two numbers. The first number specifies the acreage to be mitigated and the second number specifies the acreage of wetlands impacted. Vegetated tidal wetlands have mitigation requirements of 2:1. The ratio is increased to 3:1 for tidal wetlands with rare, threatened, endangered species or species in need of conservation. Nontidal wetland replacement ratios are 1:1 for emergent wetlands and 2:1 for wooded nontidal wetlands. The ratio is raised for losses to nontidal wetlands of special State concern by 50%, with ratios of 2:1 or 3:1 depending on vegetation type. Ratios are also raised 50% for using banks, with a minimum of 1.5:1, and increasing to 4.5:1 for mitigation of a nontidal wetland of special State concern by using a bank. Enhancement ratios are increased by a factor of 2.

Conversions of wetland type sometimes require mitigation. These conversions do not result in a loss of wetland acreage but do result in a loss of functions. These types of impacts are usually the result of projects involving golf course fairways or overhead transmission lines. Conversion of forested or scrub-shrub wetlands to emergent wetlands always requires mitigation. Conversions of forested wetlands to scrub-shrub require mitigation. The ratio is 1:1.

General Mitigation Site Selection Criteria

Lands preferred for mitigation usually have one or more of the following physical characteristics:

- Former wetlands that have been effectively drained for agricultural purposes (prior converted cropland);
- Former wetlands that may be degraded;
- Wetlands in agricultural production (farmed wetlands);
- Areas connected to existing nontidal wetlands, waterways or within the 100-year floodplain;
- Disturbed areas, such as sand and gravel mines; and
- Areas that are accessible to earthmoving equipment.

In addition to physical characteristics of a site, the site location is also considered. Onsite mitigation is generally the first preference because of the desire to replace wetlands within the same ecosystem and functional watershed as the destroyed wetland. It is believed that by replacing the same type of wetland in the same general location will replace lost function. If a watershed plan or other special management plan is in place, the plan may have identified pre-identified sites that are preferable for mitigation as a priority for mitigation.

Construction

In general, wetland restoration projects have been more successful than creation projects in establishing wetlands. Creations in tidal areas are frequently more successful because of the availability of a dependable, less variable water source to establish hydrology. Creation projects in nontidal areas typically involve more evaluation and precise grading to obtain estimated and desired water levels. Restoration sites are areas that at one time had appropriate conditions to exist as wetlands, thus restoration projects tend to “fit” better in the landscape. However, except for the Eastern Shore Coastal Plain, former wetland areas are scarce in most of the State. Mitigation by creation of wetlands will continue because of the lack of suitable restoration areas, and that fact that enhancement projects do not replace lost acreage.

In order to increase the likelihood of success for a creation project, techniques have changed over the years. In the late 1980’s and early 90’s, sites may have been accepted with excavations of up to three feet in depth. Excavations in recent times are more likely to be limited to one foot. If an area has ditches, the plugging of ditches has been encouraged as a means of re-establishing wetland hydrology rather than by excavation. With less disturbance to the mitigation site, the likelihood of success will improve.

Monitoring

The detailed monitoring methods in the IMTF guidance have not always been necessary to evaluate success or failure. For example, in determining survival of vegetation in wooded nontidal wetland sites, only those stems exceeding 10” in height are counted. This may not account for smaller specimens that may be successively colonizing the site.

The preference in regulation for onsite and in-kind mitigation can have some disadvantages in terms of monitoring. It has been increasingly difficult for agencies to monitor many small mitigation projects due to staff limitations. There is also uncertainty whether or not many small mitigation projects make a substantial contribution toward wetland function, though small natural wetlands may be important. For example, tidal fringe marshes may not be expansive, but they are ecologically significant because they provide a transitional “ecotone” between adjacent

tidewater and uplands. Mitigation banking and consolidated mitigation are possible alternatives to on-site and in-kind mitigation that may be more effectively and efficiently monitored and provide greater acreage and functional gains.

Success of Projects

In the MDE mitigation program, it has been found that strict adherence to annual monitoring standards does not necessarily improve success. The factors which most influence success of sites result from natural causes, which vary from year to year, resulting in varying hydrology and plant species composition and health. Drought, predation, or a single large storm can wipe out much of an initial planting. When failure is due to these conditions, the program often chooses to wait for another season and re-evaluate the site under more average or moderate conditions before deciding to require remediation.

In the short term, the most common “failure” arises from the difficulty in establishing woody vegetation. These plants seem most susceptible to drought and predation by herbivorous species. Despite the failure of planted seedlings to survive, the sites often become established with woody vegetation through natural means. The time for natural revegetation varies, depending on proximity to existing forest or other seed source. Vegetation may also be difficult to maintain in tidal emergent marshes, as plants may be subject to grazing and uprooting by herbivores such as geese.

Size of a mitigation site may also influence project success. While small natural wetlands often provide important benefits for water quality and habitat diversity, small wetlands may be difficult to establish as mitigation sites. A recent study in Pennsylvania found that for nontidal wetland mitigation sites of less than .5 acres, the success rate was less than 60%. For sites exceeding .5 acres, success rate exceeded 80%. While no thorough analysis was performed to note why the smaller sites failed, researchers in Pennsylvania believe that several factors may have caused the higher failure rate: 1) the preference for onsite mitigation even in improper locations; 2) the greater time and expertise spent on larger sites where there was more incentive to have a successful site; and 3) a higher priority given to follow up and monitoring of larger sites by regulatory staff, due to staff limitations (Demanski, pers. comm.).

Improper construction of a mitigation site may also result in a failure to meet performance standards, though no detailed information has been compiled to determine how often this occurs.

Functions

No measurements are actually taken to measure functional performance, such as nutrient uptake. Functional assessment is based on a qualitative judgment that the wetland type, in its location, will replace the lost function. If the wetland lost is farmed, a landscape management area, or other highly disturbed site, then the approved design is intended to provide higher levels of function.

In preparing a Phase II design plan, applicants and permittees are required to describe how the project will replace lost function as well as acreage. The permit reviewer makes a record for the file on functions: biological functions (habitat including threatened and endangered species); water quality (filtering sediments or nutrients, or bank stabilization); hydrologic functions

(storing floodwaters, recharging or discharging groundwater) and human values (recreation). There are also categories for wetlands having limited functions (disturbed or degraded areas).

There is no generally accepted methodology for evaluating effectiveness of mitigation sites in restoring wetland function. There are some challenges in developing a functional assessment method for a mitigation site. First, the development of hydric characteristics is highly site specific, depending on organic material, amount and duration of inundation or saturation, disturbance, and soil type. Construction of mitigation sites typically involves some excavation. There is no standard for determining how quickly soils in an excavated area will, or should, optimally develop visual hydric characteristics or accumulate organic material. Second, some functions, particularly habitat for certain wildlife species, are best performed by forested wetlands. Forested wetlands are the most common type of wetland impacted by regulated activities, and thus are the most common plan for a mitigated wetland. However, an assessment of forested wetland function requires the observer to estimate over time what the wetland type, vegetative composition, and function will be. This makes predicting wetland function in a mitigation or other creation, restoration, or enhancement site difficult.

Recent research has examined use of reference wetlands, landscape features, and hydrogeomorphic (HGM) assessment to evaluate functions of mitigated wetlands. This approach requires the development of models calibrated on reference wetlands and comparison to the restored or mitigated wetland. This approach may more accurately predict how water moves in the wetland, and yield a better relative estimate for water quality and flood attenuation functions. However, as a method of evaluating habitat function in a mature vegetative community, HGM assessment remains limited.

Enhancement of existing wetlands may often be a more reliable approach for replacing lost wetland functions. However, enhancement has been a less preferred mitigation approach since lost wetland acreage is not replaced.

Techniques

Information on up-to-date techniques is exchanged formally and informally. Formal presentations on techniques may be given at conferences and workshops, such as the annual mid-Atlantic regulatory conference in Atlantic City. The Interagency Training Committee also offers a workshop on wetland mitigation/restoration that is regularly updated to incorporate new material and methods. Information is also exchanged informally between practitioners. Trade journals are also a source of information.

Recent technical information and scientific studies have described the importance of microtopography for water quality functions and habitat diversity. Factors limiting past success of mitigation sites have included construction techniques that grade land to a level surface, often resulting in compacted soil and reduced plant survival. Grading that allows uneven topography throughout a site creates more opportunity for habitat diversity flood attenuation and water quality improvement.

Programmatic mitigation

Programmatic mitigation projects are those projects undertaken by MDE using fees paid into the compensation fund. Mitigation through payment into the compensation fund is also referred to as

“fee in lieu” mitigation, since the permittee meets mitigation requirements by payment instead of undertaking an “on the ground” project.

The Wetland Compensation Funds are designed to accept monies from applicants who may find mitigation technically infeasible or who are unable to locate a suitable mitigation site. Monetary compensation may not substitute for the requirement to avoid or minimize losses of wetlands. Monies in the Compensation Fund are used only for the expressed purpose of wetland creation, restoration, and enhancement in order to achieve Maryland's goal of "no net loss" of wetlands.

A proposal to pay into the Nontidal or Tidal Wetland Compensation Fund should be part of the permit application and include a justification for using the Compensation Fund as opposed to undertaking a mitigation project. Monetary compensation may be accepted when the size of the loss is less than 1 acre; when mitigation is not technically feasible (e.g. spring seeps or vernal pools); or mitigation is not feasible onsite or offsite in the same county or watershed.

Monetary compensation proposals may be rejected if the Department determines that the mitigation requirements can be fulfilled on the site of the wetland impact or that the conditions listed above are not fulfilled.

Projects using compensation fund (fee in lieu money) have been constructed on public and private land, though use of public land is slightly more frequent. Programmatic projects may take considerable time to complete, usually 1-2 years. This is due to several factors: negotiations, site evaluation and design, execution of agreements, and construction. There is negotiation over contract issues, long term protection, landowner needs, and cost estimate calculations. The time frame for site evaluation usually includes collection of groundwater water data or other hydrology study for at least one growing season to prepare the design. Construction is usually limited to a period of several months in summer and early fall when sites are the driest and best able to support equipment.

Sites for programmatic mitigation may be difficult to find, particularly in more urban watersheds. However, MDE has also had difficulty in securing landowner permission for establishing wetlands for mitigation in the Coastal Bays sub-basin, despite having numerous technically suitable areas.

Compensation fees were calculated for each county in 1991, from a study of anticipated costs to construct mitigation projects. The study included costs for locating and acquiring land, designing, constructing, maintaining, and monitoring a mitigation site. The three major factors considered in developing the compensation fund fee structure in 1991 were: prevalence of cropland characterized by hydric soils; land acquisition costs; and construction and monitoring costs. Costs were calculated for each county and range from approximately \$12,000 - \$58,000 per acre and are unchanged since 1991. Tidal wetland compensation fund payments are generally \$75,000 per acre.

While no land has been acquired to date using the compensation fund, costs for constructing programmatic projects have exceeded the fee structure rate in nearly 25% of the cases. Several factors have caused the increase in project costs, mostly related to design and construction.

Grading has been more expensive than anticipated. Projects on private land can also be more expensive. Private landowners have in the past required use of their preferred consultant rather than a less costly government contractor retained by MDE to oversee the project. Private landowners may also desire other design elements to be incorporated into the mitigation site, such a deeper water area, which requires more excavation and higher construction costs. Negotiations are thus usually lengthier for projects on private land.

Construction of small wetland projects can also be relatively more expensive on a per acre basis than larger projects. This has been attributed to costs of mobilizing construction equipment, which is the same of for a larger site as for a small project.

Through the end of 2001, 37 programmatic mitigation sites totaling nearly 218 acres have been constructed. There were 341 projects for which compensation fund payment was accepted, for approximately 36 acres of impact and 65 acres of mitigation. The State is also responsible for compensating for losses due to letters of authorization, which are exempt from the mitigation requirement. Among the 20 sub-basins in the state, four show net losses ranging from .70 to 5.24 acres. Between 1991-2001 there have been approximately 407 acres of permanent authorized nontidal wetland impacts which required 428 acres of permittee mitigation; approximately 218 acres of programmatic mitigation; and 90 acres of other wetland gains. There is a net statewide gain of over 328 acres of wetlands through the regulatory program. However, after the mitigation site is constructed, there are delays of varying times before mitigation wetlands reach a level of functional performance equivalent to the lost wetlands. In emergent wetlands, water quality improvement functions may begin immediately after plants are established. In forested wetland mitigation sites, there may be a delay of decades before the mitigation site provides the same habitat functions as the forested wetland that was lost.

Seven of the programmatic sites have had some form of remediation, mostly for additional plantings. Two sites were treated for removal of invasive plants. Two sites were re-graded to adjust water levels.

MDE staff visits most programmatic sites each year, even those constructed over 5 years ago. MDE is currently working at its capacity for managing programmatic mitigation projects.

The current largest gap in programmatic mitigation, a net loss of 16.61 acres during the period from 1991-2000, is in the Coastal Bays watershed. This has resulted from two major factors: a lack of suitable public land for doing a project; and a lack of success for securing landowner permission to restore wetlands on private property. Several negotiations were terminated because of various reasons (sale of property, landowner changing mind, etc.). However, there are numerous technically suitable areas on private land. The Comprehensive Conservation Management Plan for the Coastal Bays includes recommendations for investigating mitigation areas and increasing mitigation acreage. In 2001, another programmatic site in the watershed was constructed to reduce the net loss to 5.24 acres.

Mitigation for Functional Losses

Regulations require that wetland function as well as acreage be replaced. Regulatory agencies generally evaluate wetland function using best professional judgment. The only entity that

regularly performs systematic functional assessments for proposed wetland impacts is the State Highway Administration. MDE records information on nontidal wetland function for each authorized project, if the site has been visited in the field.

Applicants are required to describe how their mitigation proposal will replace wetland acreage and function. On-site and in-kind replacement is usually presumed to replace lost wetland function, and has been the preferred mitigation approach. If the wetland area proposed for impact has limited function, the mitigation wetland is designed to provide greater functional benefits.

The State Highway Administration has used various methods for assessing wetland function for avoiding or minimizing wetland impacts and for mitigation. Best professional judgment was used in the early 1990's, giving a subjective determination of high, medium and low values. Best professional judgment is still used for smaller projects. Other techniques currently used are the Evaluation of Planned Wetlands for mitigation, though consensus on results has been difficult. The New England method has been useful in comparing effects between watersheds, and has more flexibility. The extent of impact and mitigation is a factor in selecting the assessment approach. The greater the impact, the more detailed the assessment.

Mitigation Success Standards

Mitigation projects are evaluated for presence of hydrology, presence or development of hydric soil characteristics, and vegetation to determine whether the project is successful. Monitoring is done during the growing season. To ensure the success of mitigation projects, annual monitoring reports must generally be submitted for five years after construction has been completed. If the mitigation project fails to comply with regulations, MDE may extend the required monitoring period for up to an additional three years.

Mitigation Banking

Mitigation banks may only be used after mitigation at the site of the impact has been deemed infeasible and the Department has approved of the mitigation bank site(s). Mitigation bank sites must still meet the same success standards and monitoring requirements as other mitigation sites. Bonding, however, is required for a longer time period, which generally extends for until the last credit is withdrawn or a five-year period, whichever is greater.

Persons interested in establishing a mitigation bank generally begin by consulting with the Department and federal regulatory and resource agencies. A field meeting is typically held to view the prospective site and advise on the technical capability of the site to support wetlands. Prospective mitigation bank operators must submit conceptual and final design plans, arrange to post a bond, and propose a long-term protection mechanism. The proposal to establish a bank may also be placed on public notice to solicit public comment. A banking agreement is signed between the bank operator, the Corps of Engineers, and other state and federal resource agencies. The agreement details specific information about the bank, confirms the amount of credit that is available, and describes how accounting will take place. As of March 2003 there was one approved entrepreneurial mitigation bank in Maryland.

Consolidated Mitigation

Consolidated mitigation is a form of mitigation, usually offsite, which occurs when one or more applicants or projects are mitigated for at the same site. Consolidated mitigation differs from mitigation banking in that for consolidated mitigation: 1) construction of the mitigation site is not required to take place before the impact; 2) mitigation ratios are the same as for any non-banking proposal; and 3) less coordination is required with various agencies. A specific part of the mitigation site is assigned to a particular permitted loss unless the site is used by a single permittee for multiple projects.

MDE maintains a list of available consolidated mitigation sites.

Agriculture and Wetlands

Maryland's Nontidal Wetlands Act specifically exempts persons conducting agricultural activities from the requirement to obtain a permit. A person is required to obtain a soil conservation and water quality plan from the soil conservation district (SCD) when new impacts to nontidal wetlands are proposed. SCD personnel are responsible for verifying the extent of wetlands affected by the new activity and assist in preparing the plans. Soil conservation and water quality plans include best management practices (BMP's) for protecting other wetlands, water quality, and preventing soil erosion. Plans also require mitigation for new wetland losses. Mitigation may be delayed if a farmer demonstrates to the Maryland Department of Agriculture that an economic hardship exists.

Soil Conservation District personnel submit concurrence sheets and maps or farm plans to MDE to document certain conditions and resources have been evaluated. On the sheets, the SCD personnel indicate whether or not the wetland proposed for impact is isolated, has significant plant or wildlife value, and the size of the disturbance. These conditions in turn will determine if mitigation is required. Size thresholds for requiring mitigation are similar to those used for other types of regulated activities. MDE reviews the proposal and returns it with concurrence with the findings of the SCD or if other requirements will apply to the proposed activity.

Exemptions allow for activities with minor wetland impact to proceed without a soil conservation and water quality plan. Ongoing agricultural activities in nontidal wetlands, including new drainage and maintenance of drainage structures, is allowed under the Maryland Nontidal Wetlands Act without new requirements. Mosquito ditching in nontidal wetlands is not considered an agricultural activity and requires a permit. Agricultural activities that resume in areas that were part of an easement or set aside program are also exempt from any requirement under this Act provided that the activities resume within five years after the set aside has expired.

Approximately 140 agricultural activities in nontidal wetlands have been submitted for approval since 1991. Most of these have been for the installation of BMP's to improve water quality, and are necessarily located in streams and wetlands. Some recent activities have been for clearing to allow movement of center pivot irrigation equipment. There have been 25 projects for which mitigation has been required. No landowners have requested mitigation deferrals due to economic hardships.

Forestry and Wetlands

Forestry activities are exempt from State wetland permit and mitigation requirements. In order to qualify for this exemption, the land harvested or managed for forestry activities must remain in a forested land use. A person conducting forestry activities must comply with certain best management practices through an erosion and sediment control plan. Among other best management practices, the area must remain as a wetland. Soil conservation districts are responsible for verifying the extent of wetlands and approving the sediment and erosion control plan. A registered professional forester must prepare the plan.

The Wetlands and Waterways Program has worked closely with the forest products industry in the development and application of best management practices specifically suited for harvesting operations in nontidal wetlands. Additionally, training and technical assistance in the use of the general permit for temporary stream crossings has been provided.

Waterway Construction Statute

Waterway construction regulations assure that activities in a waterway or its floodplain, an area defined as waters of the State, do not create flooding on upstream or downstream property, maintain fish habitat and migration, and protect waterways from erosion. Authorization is required for construction or repair of the following projects in a waterway or a 100-year floodplain:

- Dams and reservoirs;
- Bridges and culverts;
- Excavation, filling or construction;
- Channelization;
- Changing the course, current or cross-section of any stream;
- Temporary construction (e.g. utility lines); or
- Any other similar project.

Construction activities in waters of the State are guided by both statute and regulation. Title 5, Subtitle 5 of the Environment Article, Annotated Code of Maryland, establishes an administrative procedure that promotes public safety and welfare. This administrative procedure is further described in the regulations (COMAR) 26.17.04. These regulations govern the construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction or any change of the course, current, or cross section of a stream or water body within the State, including changes to the 100-year frequency floodplain of free flowing waters.

The requirements of both statute and regulation are combined in the permit application review process. During the evaluation of an application, WMA may require an applicant to address issues relating to:

- Safety, operation and maintenance of the structure;
- Ability of all on-site construction to withstand the impacts of the 100-year flood event;
- Flooding on adjacent properties;
- Erosion of the construction site or stream bank; and
- Environmental effects, such as the project's impacts on nontidal wetlands, existing in-stream fisheries, wildlife habitat, or threatened or endangered species.

The issuance of a permit at the conclusion of the permit application review process indicates that the project adequately preserves the public safety, promotes the general public welfare, and protects instream resources.

An exemption exists for activities that are part of an approved agricultural drainage system with a drainage area less than 2500 acres. Other activities that are for agricultural purposes, such as stream crossings, are regulated in the same manner as other activities. General waterway permits allow for such minor disturbances of less than 5000 square feet, minor maintenance and repair, and temporary construction to be authorized if notice is given to the Department of the Environment and certain conditions are followed.

Cumulative Impacts

Cumulative impacts are defined in federal regulation as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.” (40 CFR section 1508.7). Cumulative impacts are included among considerations for reviewing proposed activities in wetlands and other waters under the Clean Water Act. There is no State definition for cumulative impacts in Nontidal Wetlands Regulations, though review is supposed to consider cumulative impacts and a plan for addressing cumulative impacts is a required element of an approved comprehensive watershed management plan.

The following task describes a method that, if developed, would be useful in assessing cumulative impacts and other wetland trends. MDE staff are currently working on a pilot project to assess the feasibility of developing this method.

Information pertaining to permitted wetland impacts could be extracted from the MDE database (RAMS) and analyzed to track cumulative wetland impacts and wetlands trends. Location of impacts (point data) and other information including authorization date, acreage loss, wetland type, applicant, type of structures used, and restoration and creation methods, could be displayed using a spatial database program. A coding scheme could be used to indicate designated Smart Growth areas, wetlands, and other information necessary to identify densely impacted or sensitive areas. This spatial database could be used by MDE Programs and other agencies. This could include authorized and indirect impacts and losses from violations associated with permitted activities, exempt activities, and activities authorized by other regulatory programs within MDE.

Limitations in developing this product are mainly staff related. First, a computer program must be written to extract the information. The data must be modified to be compatible with spatial database software. The data must be downloaded to the spatial database and trends and cumulative impacts assessed. In addition, criteria and guidelines for selection and analysis of trends and cumulative impacts must be developed. Lack of resources to accomplish this task will delay its implementation.

The Maryland State Programmatic General Permit

The first Maryland State Programmatic General Permit (MDSPGP-1) was submitted in 1995, and approved in 1996. The MDSPGP was subsequently modified and re-authorized (as the MDSPGP-2) in 2001 for an additional five year period. The permit incorporates both federal and State regulatory standards and authorizes activities in coastal and inland waters and wetlands with minimal adverse environmental impacts. The permit also contains provisions for lessening redundancy in work by increasing cooperation and communication between the federal and state levels.

Development and Implementation

On September 15, 1995 after nearly three months in development, MDE submitted its vision of Maryland's programmatic general permit to be issued by the Baltimore District of the U. S. Army Corps of Engineers (Corps). This "new wave" programmatic general permit included:

- Activities conducted in tidal and nontidal wetlands;
- Alternative analysis and avoidance, minimization and mitigation requirements reviewed by the State;
- Non-reporting thresholds; and
- Suspension of Nationwide Permits.

The MDSPGP-2 was issued by the Corps on October 1, 2001. The goals of the MDSPGP are to provide a comprehensive protection program for waters of the State, including wetlands; reduce the administrative burden of the program for both the Corps and the State through interagency regulatory cooperation; improve the regulatory response time; and add predictability to the permit program.

Coordination and Cooperation

Activities with minimal individual and cumulative impacts are eligible for authorization under the MDSPGP provided that tidal and nontidal wetland impacts do not exceed one acre. Applicants apply by completing a Maryland/Corps Joint Permit Application, which is processed by the State based on a 3-tiered system:

Category I activities are processed solely by the State and are reported quarterly to the Corps. Activities are generally minor in nature, and include many types of maintenance and repair.

Category II activities are activities reviewed by the Corps to determine general permit eligibility. These include activities that are exempt or grandfathered from State Permit requirements; conducted within 150 feet of a federal navigation channel; are adjacent to or within a federal project or are a Section 10 and/or 404 violation..

Category III activities are processed by the State. During the evaluation process, MDE coordinates with the Corps, State and other federal resource agencies, and conducts joint interagency meetings, if necessary. The project is either placed on joint State/federal public notice by MDE, or on agency notification by the Corps. The Corps uses the information in the application, and comments received from the public and resource

agencies in response to the notice process and any interagency meetings to determine if the activity is eligible for MDSPGP authorization with or without special conditions.

Activities that require Corps authorization but that do not meet the terms and conditions of the MDSPGP-2 will be reviewed under alternative permit procedures. These procedures may include the Corp's individual permit process, letter of permission, or any appropriate, non-suspended Nationwide Permit.

Activities that require State authorization which are not regulated by the Corps (such as impacts only to wetland buffers) are simply listed as Category N/A, and evaluated solely by the State.

Wetland delineation and verification is also a shared between MDE and the Corps. The Corps is responsible for performing any pre-application jurisdictional determination (JD). The property owner may submit a delineation performed by an environmental consultant or request that the Corps delineate the limits of the waters of the United States on their site. The Corps will then issue a JD for the property. The JD is a legal document showing the extent of jurisdictional wetlands and waters on site, and is valid for five years. Not all wetlands are delineated by an official pre-application JD, however. For a joint federal/State wetlands application, a property owner may instead have an environmental professional delineate the extent of wetlands on site. In these circumstances, MDE and the Corps divide responsibility for verifying the accuracy of these delineations that are submitted as a requirement of the application, based upon the category of the application and the location of the site. MDE is responsible for field verifying all wetland delineations in Category I applications. However, the Corps and MDE divide responsibility for verifying wetland delineations for Category III applications, based upon the location of the site. Allocation of delineation verification responsibilities for Category III applications is as follows, according to county:

Corps

Anne Arundel
Caroline
Cecil
Charles
Dorchester
Harford
Howard
Kent
Queen Anne's
Montgomery
Saint Mary's
Talbot
Worcester

MDE

Allegany
Baltimore
Baltimore City
Calvert
Frederick
Garrett
Prince George's
Somerset
Washington
Wicomico

In all of these designations of responsibility for delineation verification, the agency listed is the lead agency, but may enlist the help of other agencies when needed. The Natural Resources Conservation Service (NRCS), typically performs delineation verifications on agricultural land.

Federal Comment and Review.

Another important aspect of the MDSPGP is that State and federal resource agencies have the opportunity to review and comment on any application. Activities potentially impacting sensitive resources can be identified by MDE using a geographic information system targeting threatened/endangered species and historical and cultural resources or by a resource agency monitoring applications on the RAMS permit tracking system. In addition, the Corps also retains discretionary authority to require an individual permit for any proposed activity. For instance, the Corps may require an individual permit if it determines that there are significant individual or cumulative impacts; impacts to threatened or endangered species; impacts to cultural or historical resources; impacts identified during the public interest review, or a federal resource agency requests a "kick-out."

An additional aspect of federal oversight is the Monitoring Committee, which consists of representatives from the Corps, U.S. Environmental Protection Agency, USFWS, NMFS, MDE, DNR and Maryland Historical Trust. Using quarterly reports that are submitted by MDE and other available information, this committee is responsible for evaluating the performance of the MDSPGP and refining its standard operating procedures.

For more information and complete text of the MDSPGP-2, visit the Corps' website at: <http://www.nab.usace.army.mil/>

Federal/State Certification of Wetland Delineators

The U.S. Army Corps of Engineers was directed by the 1990 Water Resources Development Act to establish a wetland delineator certification program. The 1989 Maryland Nontidal Wetlands Act also includes a provision for certification of delineators. Benefits of a certification program are:

- 1) To improve the quality of wetland delineations;
- 2) To provide applicants with greater knowledge about the qualifications of consultants performing wetland delineations; and
- 3) To reduce time spent by regulatory agencies in verifying wetland delineations.

The Corps of Engineers and the State of Maryland administered one of three nationwide demonstration programs in 1993. The test consisted of a written examination and a field practicum. Persons who passed the written exam were allowed to take the field practicum. The exam was administered by State and federal staff who successfully completed a sample test program. A total of 363 persons took the written test, and 122 people received a passing score of 80%. A total of 78 people took the field practicum and 67 people passed and received provisional certification. A small number of provisionally certified consultants (29) actually worked in Maryland. The report issued on the Baltimore District Wetland Delineator Certification Program recommended holding workshops on other special topics such as definitions, updated soil indicators, and completing application forms. The proposed Corps Wetland Delineator Certification Program has not been federally funded and final regulations have not been promulgated.

In 1993, the State decided not to use work of certified consultants as a means for determining which applications would be processed without a delineation check. Selective site visits at that time were unnecessary since all sites were visited in the field by the State regardless of which

agency had the lead for delineation verifications. However, current staff levels and increased workload has impacted the ability to visit every site. Therefore, today the quality of a consultant's work, extent of impact, workload, familiarity with the site, and project type influence whether or not a permit reviewer visits a site. A decision is made on the accuracy of the delineation within 45 days, regardless of whether or not the delineation is verified in the field. If there is not field verification, the reviewer makes a decision based on the supporting information submitted with the application.

Enforcement and Compliance of Wetland Regulatory Programs

Enforcement and compliance of Maryland's wetland regulatory programs is conducted by the agencies: Maryland Department of the Environment (MDE), U.S. Army Corps of Engineers(COE), and the U.S. Environmental Protection Agency (EPA).

Enforcement and Compliance in the State Program

MDE has an enforcement and compliance program for its permitted activities. There is the equivalent of 60 full time inspectors that evaluate compliance with all of the water-related permits. These include permits or approvals programs regulating: drinking water, tidal and nontidal wetlands, the National Pollutant Discharge Elimination Systems (NPDES), coal and mineral mining, oil and gas exploration and production, water appropriation, groundwater discharge, waterway and floodplain construction, dam safety, stormwater management, and erosion and sediment control.

The Department has discretion to allow a person or entity not in compliance to fix a minor problem without risk of a fine, or other civil or criminal action. Minor violations include minor record keeping violations or first offenses that present no imminent harm or potential harm to public health or the environment. More serious action may be taken in the case of a significant violation, or a minor violation that indicates a pattern of non-compliance. Most wetland violations are resolved by restoring the area affected by the illegal activity, or by receiving an authorization.

Inspectors may also provide Compliance Assistance to the regulated public. Compliance assistance falls into two broad types of actions. The first type of Compliance Assistance refers to the documentation by an inspector of a specific past or current violation that the regulated entity corrects in the absence of a formal enforcement action. The second type of Compliance Assistance is defined as occurring when an inspector documents a specific action or actions which the regulated entity has the option of undertaking to prevent the likelihood of potential future violations, and which action or actions the regulated entity undertakes voluntarily in such a manner and within such time period deemed acceptable to the Department, in the absence of a formal enforcement action. In either case, MDE must document the manner in which the regulated entity voluntarily achieved compliance. Compliance Assistance also includes education and outreach to the regulated community to help the regulated community understand the law and assists the regulated community in complying with the law's requirements.

Violations of wetland permits are often also in violation of sediment and erosion control plans. Erosion and sediment control regulations include provisions for administrative penalties. An administrative penalty is a fine assessed by the Department, often accompanied by an order to

bring an activity into compliance. While this penalty is allowed through sediment and erosion control law, it is not currently a remedy for wetland or waterway violations. Violations of the tidal and nontidal wetland laws and regulations are subject to civil or criminal fines only through the courts. In the late 1990's, legislation was proposed to amend wetland laws to allow for imposition of administrative penalties, but the measure was defeated.

Erosion and sediment control inspections have been delegated to 13 counties and 12 municipalities, though MDE retains oversight and review authority. MDE conducts inspections in non-delegated jurisdictions. Delegated counties are: Anne Arundel, Baltimore, Calvert (partial), Carroll, Cecil (partial), Dorchester, Frederick, Harford, Howard, Kent, Montgomery, Prince George's, and Worcester. Delegated municipalities are: Aberdeen, Baltimore city, Bel Air, Bowie, Gaithersburg, Greenbelt, Hampstead, Laurel, Rockville, Taneytown, and holdings of the Washington-Suburban Sanitary Commission.

Criminal investigations are managed by the Attorney General's Environmental Crimes Unit.

Actions that are the top priority for response are complaints and violations. MDE policy requires that complaints be responded to within 3-5 days. After complaints and violations, priorities are set by individual inspectors and their supervisors. Consideration is given to the nature of the impact, size of the project, and the resources that are impacted. Compliance for wetland permits and sediment and erosion control are done concurrently. Actions that are a lower priority are the authorizations for minor activities. These include Letters of Authorizations in the nontidal wetlands and waterways program, pier authorizations, general tidal wetland licenses, and general permits for tidal wetland activities. Authorizations to Proceed in the nontidal wetland program, which confirm that activities are exempt, are not investigated unless there is a complaint.

An inspection report is completed for every visit, and these are retained in the project file and in an Inspection and compliance database. Inspections are performed to verify that the projects are in accordance with the authorizations, other orders and violation notices.

In FY 2001, 3,676 inspections, audits, and spot checks were made to 1,825 sites with nontidal wetland or floodplain activities. There were 24 (1%) significant violations. There were 194 instances of compliance assistance. There were 17 enforcement actions in the form of show cause, remedial, or corrective actions. There were 20 penalty and other enforcement actions. In tidal wetlands, 1,083 inspections, audits, or spot checks, were conducted at 713 sites. There were a total of 4 significant violations (1%) and 24 various enforcement actions. The majority (20) were for compliance assistance. There were 4 instances of show cause, remedial, or corrective actions.

Section 404 Assumption

The Clean Water Act allows for States to assume responsibility for directly issuing Section 404 permits instead of the Corps, if the State has a comparable wetland/waterway program. In 1994 and 1995, Maryland sought legislative changes to fill outstanding gaps its program and to formally seek assumption of the federal program. The legislation was defeated both years and Maryland has made no attempts since that time to seek assumption.

Water Quality Certification

The Department of the Environment is responsible for issuing water quality certification (WQC) for proposed discharges into jurisdictional wetlands and waters of the State of Maryland, pursuant to Section 401 of the Clean Water Act. The WQC certifies that a proposed Section 404 discharge will not violate the State's water quality standards which are contained at COMAR 26.08.02. The WQC must be issued for all US Army Corps of Engineers Section 404 permit actions and for Corps' planning and navigation projects that include a Section 404 discharge.

The Department manages and regulates the waters of the State to protect the following beneficial water uses: water contact recreation, fish, other aquatic life, and wildlife, shellfish harvesting, public water supply, agricultural water supply, and industrial water supply. The WQC helps to protect these uses by ensuring that a proposed discharge will not violate the State's water quality standards. Generally, application for the WQC is part of the standard joint permit application. However, for proposed Section 404 activities that do not require a State permit, e.g. federal action in tidal areas, the State issues an individual WQC based upon a request from the federal agency.

Coastal Zone Consistency

Section 307 of the Federal Coastal Zone Management Act of 1972, as amended, requires that proposed federal activities affecting a state's coastal zone be consistent, to the maximum extent practicable, with a state's federally approved Coastal Zone Management Program (CZMP). Maryland's CZMP was approved in 1978 and established specific goals, objectives, and policies for the protection, preservation and orderly development of the State's coastal resources. Maryland's CZMP is a comprehensive and coordinated program, based on existing State laws and authorities.

The Department of Natural Resources, Coastal Zone Management Division, is the lead agency for Implementing the Maryland Coastal Zone Management Program. Other state agencies such as the Departments of Agriculture, Economic and Community Development, Environment, Transportation, Health and Mental Hygiene, and Planning, participate in the Program as networked partners. The Coastal Zone Management Program encompasses Maryland's coastal counties, those touching tidal water, and the City of Baltimore. These local governments, as well as the Coastal and Watershed Resources Advisory Committee, the Board of Public Works, and the local soil conservation districts, are important participants in the Program. The following federal activities must comply with the section 307 Federal Consistency requirements: direct federal actions; federal licenses and permits; and federal assistance to State and local governments. All U.S. Army Corps of Engineers' Section 10 and Section 404 permits must be determined consistent with the State's CZMP.

Maryland's CZMP is referred to as a "networked" program which means it is based on existing laws and authorities. For activities impacting wetlands, the Coastal Zone Consistency determination is issued as part of the State's wetlands authorization. For federal activities that do not require a State permit, the review and decision is made through MDE's Wetlands and Waterways Program. Although MDE is responsible for the official Coastal Zone Consistency decision, the decision is often based partially or entirely upon the findings of a variety of agencies within the CZMP network, depending upon the nature of the proposed activity.

The Program has two objectives that relate to non-tidal wetlands:

- 1) To protect coastal terrestrial areas of significant resource value – areas having scenic, scientific, geologic, hydrologic, biological or ecosystem maintenance importance, such as non-tidal wetlands, endangered species habitat, significant wildlife habitat, and wintering and resting areas of migratory birds
- 2) To promote the maintenance of natural buffers along, and natural drainage ways feeding to coastal tributaries and estuarine waters, to minimize adverse environmental effects of coastal developments and activities.

Regulatory Database: Maryland Department of the Environment and the U.S. Army Corps of Engineers

The Maryland Department of the Environment (MDE), Wetlands and Waterways Program, documents statewide regulatory tidal and nontidal wetland impacts, losses and gains from regulated activities. These data are collected in a database, shared by MDE and the Corps, and reported annually by 6-digit and 8-digit watershed. The annual reports include wetland impacts, losses, and gains resulting from permanent and temporary impacts, permittee mitigation, programmatic gains, and voluntary gains. Statistics for Nontidal Wetlands and Waterways Division are completed for the period from 1991 to 2001 and are reported in the Nontidal Ledger Sheet. The Tidal Wetlands Division is working on extracting this information from the MDE database and will report on the period from 1996 to 1999.

MDE compiles data for all authorized impacts to wetlands, floodplains, and waterways through an electronic reporting form, which is completed by project reviewers as part of the project authorization and completion process. The reporting form includes the following information: project category and activity number under the MDSPGP, ADC map book and latitude/longitude coordinates, 6-digit watershed, proposed wetland impacts (permanent, temporary, and type change), approved wetland impacts by total (wetland, buffer, expanded buffer, waterway, 100-year floodplain, nontidal wetlands of special state concern), approved wetland impacts by wetland type, wetland type changes/conversions, hydrology source, hydrologic connection, functional loss rating (rated high to moderate, low, none or undetermined). The functional loss rating includes a qualitative assessment of losses to biological, water quality, and hydrologic functions, and human values. The reporting form includes a mitigation worksheet, requiring much of the same information stated previously for authorized wetland, stream and floodplain impacts.

The Nontidal Wetlands Ledger Sheet reports programmatic statistics annually for the southern, central, western, and eastern regions of the State. The ledger sheet includes eighteen categories of data based on either authorization type or wetland type. Impact minimization statistics (proposed versus approved impacts) and permit mitigation statistics are also reported. Information from the Nontidal Ledger Sheet is provided to the Corps for reporting of MDSPG implementation.

Records of violations are maintained in a separate database managed by the Compliance Program. The Compliance Program requires that unauthorized activities cease and that the wetland be restored or the violator obtain an authorization. If authorized, the loss is recorded in the regulatory database with other authorized losses.

Table App. II-1. Summary of acreage data compiled in the ledger sheet for each region

Authorization Type	Wetland Type
Number of authorizations	Approved permanent wetland impacts
Approved permanent wetland impacts	Approved wetland type conversions
Approved wetland impacts under the MDSPGP	Approved temporary wetland impacts
Approved temporary wetland impacts	*Wetland creation and restoration
*Wetland creation and restoration	*Wetland enhancement
*Wetland enhancement	Net permanent wetland impacts (report with and without mitigation acreage)
*Net permanent wetland impacts	+Wetland mitigation required of permittees

* = excludes mitigation acreage + = excludes contributions to the wetland compensation fund
 Net Permanent Impacts = (wetland creation and restoration) – (approved permanent wetland impacts)

Local Regulation

There are a vast number of local laws that have jurisdiction over impacts to wetlands and water resources. Some of these local laws were brought about through mandates by State laws, such as those dealing with forest conservation or stormwater management. These State laws (discussed in further detail in “Other Regulatory Programs” on the following pages) are enforced primarily at the county level. Other county laws affecting wetlands may be in addition to State laws. For a listing of county regulations dealing with wetlands and water resources, consult Table IV-2; County Level Wetland and Waterway Regulations.

Other Regulatory Programs and Laws

Stormwater Management

In 1982, legislation was passed to manage stormwater runoff to reduce stream channel erosion, pollution, and flooding to avoid adverse impact on land and water resources. The new Maryland Stormwater Design Manual and standards were adopted in COMAR in 2000. The new regulations are applied statewide, with mandatory local government implementation. The majority of local ordinances under the revised regulations have been finalized. The principal state agency is the Department of the Environment, who reviews local programs at least every three years

The 2000 Stormwater Design Manual provides various indirect protection mechanisms for wetlands, wetland buffers, and streams, and directly controls all stormwater discharge from new or re-development in upland areas. The new regulations require the following parameters be considered in all new or re-development plans: water quality, ground water recharge and quality, stream channel protection, reduced overbank flooding, restricted (or even prohibited) floodplain development or expansion.

General Performance Standards for Stormwater Management.

The State has developed fourteen performance standards that must be met at development sites. The following development activities are exempt from these performance standards in Maryland: 1) additions or modifications to single family structures; 2) developments that do not disturb more than 5000 square feet of land; and 3) agricultural land management activities.

Watershed Factors for Best Management Practice (BMP) Selection and Location

The selection and design of BMP's is influenced by the nature of the downstream water body that will receive the stormwater discharge. In certain cases, improved environmental performance is needed to fully protect natural resources within a particular watershed or receiving waters. The areas of concern, as identified in the Manual include:

- 1) Maryland Critical Area, Intensely Developed Areas – The “10% Rule” mandates that post development stormwater phosphorous loads must be reduced to 10% below pre-development loads.
- 2) Coldwater Streams (Use III and IV) – The design objective for these streams is to maintain habitat quality by preventing stream warming, maintaining natural recharge, preventing bank and channel erosion, and preserving the natural riparian corridor.
- 3) Sensitive Streams – these are defined as streams with a watershed impervious cover less than 15 percent. The design objectives for sensitive streams are to maintain habitat quality through the same techniques used for cold-water streams, with the exception of stream warming.
- 4) Wellhead Protection – These are areas that recharge existing public water supply wells. The design objective is to prevent possible groundwater contamination by preventing infiltration of polluted (“hotspot”) runoff.
- 5) Reservoir Protection – These are watersheds that deliver surface runoff to a public water supply reservoirs or impoundments. In some cases, it is necessary to achieve greater levels of pollutant removal from stormwater runoff (such as bacteria pathogens, nutrients, sediment or metals).

- 6) Shellfish and Beach Areas (Use I) – These are watersheds that drain to specific shellfish harvesting areas or public swimming beaches. These areas require a higher level of BMP treatment.

Location and Permitting Factors

In addition to permit authorization by MDE, Wetlands and Waterways Program, the Manual requires specific criteria for location of stormwater BMP's in jurisdictional wetlands, stream channels, the 100-year floodplain, stream buffers, and forest conservation areas. These criteria include setbacks, upland treatment alternatives, treatment prior to discharge in all wetlands, diversion of excess stormwater flows, stream channel protection volumes (1-year extended detention flow), and no grading or filling within the 100-year floodplain.

Stormwater Credits.

The six stormwater credits include natural area conservation (forests, wetlands, buffers, easements), disconnection of rooftop runoff, disconnection of non-rooftop runoff, sheet flow to natural buffers, open grass channels, and environmentally sensitive development (combination of BMP's).

Strategies to Reduce Impervious Cover

Environmentally progressive site design practices that are designed to minimize the creation of impervious cover include narrower roads and sidewalks, reduced parking areas, open space, and shared and/or permeable driveways and parking.

Water Supply

The Water Supply Program consists of several interrelated Divisions: Engineering and Technical Assistance, Safe Drinking Water Act (SDWA) Rule Implementation, Source Protection and Administration, and Water Rights.

Surface Water Assessment and Protection Program

In 1996 the Safe Drinking Water Act Amendments require states to develop and implement source water assessment programs to evaluate the safety of all public drinking water systems. States are required to develop these programs with public input, submit draft program descriptions to the EPA by February 1999, and complete the assessments by May 2003. The Maryland Department of the Environment (MDE) is the lead agency in Maryland for developing the Source Water Assessment Program. Both a Technical Advisory Group and a Citizens Advisory Group provided significant input in the development of the Maryland Program.

Source Water Assessment is a process for evaluating the vulnerability to contamination of the source of a public drinking water supply. The three main steps in the assessment process are: delineating the drainage area that is likely to contribute to the drinking water supply, identifying potential contaminants within that area, and assessing the vulnerability of the system to those contaminants. The Maryland Program considers additional factors in their assessments, including the size and type of water system, the characteristics of the potential contaminants, and the capacity of the natural environment to attenuate any risk. The Program uses a computerized geographic information system to analyze data for each water supply area. The vulnerability

analysis considers the locations of intakes and wells, the defined area of contribution for the water supply, land use, the locations of potential contaminant sources, and water quality data.

The Maryland Source Water Protection Plan provides guidelines for completion of source water assessments, the State's strategy for coordination, timetable for completion of assessments, and guidelines for public participation. The mission of the Plan is to implement a program that evaluates existing and potential contamination of Maryland's water supply, and disseminate this information to help establish locally based protection strategies to ensure continued use and improved safety of water supply sources.

The goals of the Plan are to:

- 1) Complete the assessments in accordance with Maryland's EPA-approved program
- 2) Develop appropriate monitoring requirements for systems based on the results of the assessments
- 3) Stimulate the development of source water protection programs for public water supplies

The objectives of the Plan are to:

- 1) Delineate source water assessment areas for all public water systems in accordance methods outlined in the Plan
- 2) Identify actual and potential contaminant sources, both point source and nonpoint source, and land uses and zoning within the assessment areas
- 3) Assess the vulnerability to contamination of each water system
- 4) Communicate the results of the evaluations to water suppliers, health and environmental agencies, local land use planners, and the public
- 5) Continue to inform, update and receive input from both citizen and technical advisory committee members during the assessment process

Chesapeake Bay /Atlantic Coastal Bays Critical Area Law and Critical Area Commission

The Chesapeake Bay Critical Area Protection Act was enacted by the 1984 Maryland General Assembly to address the impacts of development on the integrity of the water quality and habitat of the Chesapeake Bay. The Law (Natural Resources Article Title 8-1801-1816) created the Chesapeake Bay Critical Area Commission and charged them with creating a land and resource management program designed to minimize adverse impacts to water quality from development and to conserve fish, wildlife and plant habitats while accommodating future growth and development. The subsequent regulations (known as the Critical Area Criteria) were enacted by the General Assembly in 1986. The Criteria (COMAR Title 27) regulate activities within 1,000 feet of tidal waters of the Chesapeake Bay with the intent of improving the water quality and habitat in the Bay. Provisions include limits on density, impervious surfaces and allowable clearing.

The Criteria addressed protection of tidal wetlands primarily through establishment of a strict 100-foot no-disturbance Buffer (spelled with a capital B) from the landward edge of tidal wetlands. The Buffer is expanded to include adjacent sensitive areas such as steep slopes or hydric and highly erodible soils. The Criteria also include specific provisions for water-dependent facilities (such as marinas and ports) that by their very nature require some disturbance to tidal wetlands or tidal waters.

The original Criteria also required protection of non-tidal wetlands and at the time, the provision for protecting non-tidal wetlands in the Critical Area was the most stringent of any federal or state program being implemented in Maryland prior to passage of the State Nontidal Wetlands Act in 1989. The Criteria required that local jurisdictions protect the hydrologic regime and water quality of non-tidal wetlands by minimizing alterations to the drainage area, surface/subsurface flow of water, and overall water quality. A minimum 100-foot Buffer is required from all tributary streams in the Critical Area as well.

The Critical Area Law required that local jurisdictions meet state standards by developing their own local programs by June 1988. Upon approval of the local program, the local jurisdiction was responsible for enforcing the regulations. Nontidal wetlands in the Critical Area were initially not regulated under the state Nontidal Wetlands Act. In 1993, the Maryland Nontidal Wetlands Act was amended to regulate nontidal wetlands in the Critical Area. After 1993, most local jurisdictions amended their local Critical Area Programs to exclude regulation of nontidal wetlands. However, some counties chose to continue regulating activities in non-tidal wetlands in the Critical Area.

Local jurisdictions that choose to regulate nontidal wetlands in the Critical Area protect the wetlands by requiring a minimum no-disturbance buffer. Some Counties regulate the State standard 25-foot buffer while others regulate a wider non-tidal wetland buffer up to 75 feet in width. In these jurisdictions, if disturbance to non-tidal wetlands or the buffer is proposed, a local variance is required in addition to any State wetland permits. In all Critical Area jurisdictions, incidental nontidal wetland protection occurs through low-density zoning, 100-foot stream and tidal wetland Buffer, and overlap with other habitat protection areas.

In 2002, the law was amended to include the Atlantic Coastal Bays watershed.

Clean Water Act-TMDLs

All states are required under the federal Clean Water Act to consider the development of TMDLs (Total Maximum Daily Loads). A TMDL is an estimate of the maximum amount of an impairing substance or stressor (pollutant) that a waterbody will assimilate without violating water quality standards. Every four years, states must submit a prioritized list of water bodies that do not meet water quality standards or will not meet standards after all technology-based pollution controls are in place. No TMDLs will be developed for wetlands. However, wetland management and restoration may have a role in achieving TMDL goals.

Public Drainage Act

Construction and maintenance of ditches that are part of an approved public drainage association (PDA) system are regulated under the Public Drainage Association Act. For any new PDA construction or reconstruction, mitigation is required at a ratio of 1:4, that is one acre of mitigation for every 4 acres of wetland impact. The ratio is 1:1 when the wetland is saturated or covered by surface water for extended periods during the growing season (seasonally flooded). The most recent new PDA project was in 1990, and implemented in 1994, with no new losses.

Food Security Act

In 1985, the Federal Food Security adopted “Swampbuster” provisions for USDA program participants that began new agricultural activities in wetlands for commodity production. Under the provisions, the USDA would not provide technical or financial assistance for the conversion of wetlands to farmland, and program participants would lose benefits for doing so. A landowner could be reinstated into USDA assistance programs if the wetland was restored or mitigated in a manner acceptable to USDA.

Swampbuster violations are handled through the local NRCS field offices. There have been 2 “Swampbuster” actions since 1985 in Maryland. Wetlands have been restored or are under negotiation for restoration in both cases.

Forest Conservation Act

The Forest Conservation Act provides guidelines for the amount of forestland retained or planted after the completion of development projects. This is a state law with local government implementation. While not specific to wetlands, forested wetlands can be preserved under this Act. These guidelines vary for each development site and are based on land-use categories. These categories include agricultural and resource, medium-density residential, institutional development, high-density residential, mixed use, planned-units development, and commercial and industrial use areas. Generally, rural areas with larger forests have higher thresholds for impact, to minimize the number of acres cleared. For example, an area zoned for medium-density residential use would require about 25% of the forests on the site to be retained. Areas zoned for commercial and industrial use would require about 15% retention. This allows development to occur in areas where it is appropriate while protecting forests.

The Forest Conservation Act applies to all activities requiring a permit for subdivision, grading, or sediment control that is larger than 40,000 square feet, or slightly less than one acre. Information on the condition of the existing forest and a plan for conserving the most valuable portions of the forest are required.

Economic Growth, Resource Protection, and Planning Act

This State law, sometimes called the Maryland Planning Act, was passed in 1992. The Act requires local governments to include a sensitive areas element in local comprehensive plans. Sensitive areas defined are 100-year floodplains, streams and buffers, habitat for threatened and endangered species, and steep slopes. Comprehensive plans must describe how the sensitive areas are protected in each county.

Non-Regulatory and Voluntary Programs

Various non-regulatory and voluntary programs provide comprehensive management strategies, technical resources, and funding for wetland conservation projects throughout Maryland. Brief descriptions of a several key programs are provided below. Other important programs will be described in Section IV in the context of specific goals and objectives of the Plan. Refer to a complete listing of non-regulatory and voluntary programs at the end of this section.

Planning

Chesapeake Bay Agreement

The most recent version of the Chesapeake Bay Agreement was signed and put into action in 2000. Signatories of the Bay Agreement are representatives for the Chesapeake Bay Commission, the states of Maryland, Virginia, and Pennsylvania, the District of Columbia, and the US Federal Government. The primary goal of the new agreement is to improve water quality sufficiently to sustain the living resources of the Chesapeake Bay and its tidal tributaries, and to maintain that water quality into the future. The agreement has five sections containing commitments to protect and restore living resources, vital habitats, and water quality through sound land use by promoting stewardship and engaging communities throughout the 64,000 square mile watershed. Specific commitments relating to forest buffer restoration, conservation and expansion, and SAV restoration are included in the Agreement. Wetlands related commitments include:

- Achieve a no-net loss of existing wetlands acreage and function in the signatories' regulatory programs (included previously);
- By 2010, achieve a net resource gain by restoring 25,000 acres of tidal and nontidal wetlands (achieve and maintain an average restoration rate of 2,500 acres per year basinwide by 2005 and beyond);
- Provide information and assistance to local governments and community groups for the development and implementation of wetlands preservation plans as a component of a locally based integrated watershed management plan;
- Establish a goal of implementing the wetlands plan component in 25 percent of the land area of each state's Bay watershed by 2010; the plans would preserve key wetlands while addressing surrounding land use so as to preserve wetland functions;
- Evaluate the potential impact of climate change on the Chesapeake Bay watershed, particularly with respect to its wetlands, and consider potential management options;
- By 2010, work with local governments, community groups, and watershed organizations to develop and implement locally supported watershed plans in 2/3 of the Bay watershed. The plans would address the protection, conservation, and restoration of stream corridors.

The agreement is designed to build on past restoration actions and will continue all Bay Program commitments outlined in previous agreements or Executive Council directives. The first agreement, which created the Bay Program, was signed in 1983. A second was signed in 1987, and amended in 1992. Most commitments in the new agreement are scheduled for completion within ten years.

Watershed planning and planning coordination with local governments is expected to increase to meet the Chesapeake 2000 Bay Agreement commitment of completion of watershed plans in 2/3 of the Chesapeake Bay watershed by 2010. In Maryland, representatives from State agencies including Environment, Natural Resources, and Planning will be developing guidelines and tools for resource-based planning, as well as conducting outreach to local governments to meet the Chesapeake Bay Agreement commitments, and to continue their programs currently in place.

Another commitment requires signatory jurisdictions to develop guidelines to ensure the aquatic health of stream corridors. Guidelines also will consider optimal surface and groundwater flows. Detailed guidelines were under development in 2002 and propose recommendations and goals for land use, biological communities habitat, physical stream habitat, water quality, wetlands, water quantity and water supply, forest management, stormwater runoff, and management of lakes and ponds.

Department of Planning

The Department of Planning reviews planning efforts by local jurisdictions, to ensure that these plans comply with State standards. There is potential for integration of a review of wetlands conservation planning through this same effort.

Department of the Environment

MDE also offers watershed or special area planning assistance to local governments interested in incorporating wetland issues into local land management plans. The Department has worked with Montgomery, Calvert, Baltimore, Somerset, and Queen Anne's Counties to prepare wetland assessments and/or plans to help guide permit decisions. The Corps of Engineers has been a partner in some of these efforts, primarily in the development of Special Area Management Plans (SAMP). Depending on the scope, watershed plans with a prominent wetland component may be costly and require a considerable time commitment.

Watershed planning and planning coordination with local governments is expected to increase to meet the commitments of the 2000 Chesapeake Bay Agreement. The commitment calls for completion of watershed plans in 2/3 of the Chesapeake Bay watershed by 2010. In Maryland, representatives from State agencies such as Environment, Natural Resources, and Planning will be developing guidelines and tools for resource-based planning, as well conducting outreach to local governments to meet the Chesapeake Bay Agreement commitments.

Corps of Engineers

Sect. 22

The U.S. Army Corps of Engineers offers planning assistance to states and local governments through the federal Water Resources Development Act. Under this program, the Corps assists in the preparation of studies of State or local water resources problems and needs. The Corps may also assist in preparing comprehensive plans for the development, conservation, and utilization of water and related land resources. Most studies in Maryland have been related to flood

management. Studies of wetland resources and water supply also qualify for this program. A 50-50 match is required. In-kind services may be used to provide up to one-half of the match.

Clean Water Act Section 404 Advanced Identification

States, local governments, and private groups can play a major role in Section 404 Advanced Identification by requesting that the process be conducted, by providing information and commenting on wetlands identified as generally suitable or unsuitable for discharge permits. Advanced Identification provides some predictability to wetlands regulation. It can also be helpful in resolving conservation and development conflicts in areas of rapid growth, and in controlling cumulative impacts on wetlands. Section 230.80 of the Section 404(b)(1) guidelines of the Clean Water Act provides for a planning process whereby the U.S. EPA and the Corps identify wetlands that are generally suitable or unsuitable for discharge permits in advance of any specific permit applications. Unless tied to another regulatory authority, these designations are only a guideline, and not binding.

Department of Natural Resources

The Department of Natural Resources is coordinating the development of watershed restoration action strategies (WRAS) under Maryland's federally-approved Clean Water Action Plan. Both local government and public support are essential components of WRAS development.

A WRAS is essentially a strategic workplan to restore and protect a watershed. The process of developing a strategy begins with a watershed characterization of natural and water resources, including wetlands. The characterization identifies existing and projected resource conditions, acreage or stream miles of various natural and water resource features. Environmental problems and needs are identified through both the characterization, and an on-the-ground assessment of stream and wetland conditions called a Stream Corridor Assessment, which locates problem sites and restoration opportunities. After the characterization is complete and approved by the local government, a visioning process is conducted and the WRAS is prepared and implemented by the local government with assistance from other agencies. WRAS projects are under development in Kent, Howard, Allegany, Somerset, and Worcester Counties. MDE coordinates the wetland portion of the WRAS. Completed WRAS's may receive federal funds for implementation, in addition to other sources. Approximately five additional watersheds will be selected to begin the WRAS process in 2001. The watersheds are: Breton Bay; Bush River/Bynum Run; Liberty Reservoir; Upper Choptank River; and the Upper Patuxent.

Smart Growth

Maryland's Neighborhood Conservation and Smart Growth Initiative was launched in 1997. The Initiative responds to concerns about Maryland's projected 1.1 million increase in population by the year 2020. An estimated 500,000 acres of farmland and forest is expected to be converted if past growth practices continue (Nishida, 2000).

The cornerstone of the legislation is the priority funding area (PFA) requirement, which targets areas where infrastructure already exists or is planned. The priority funding areas were initially complemented by four programs aimed at revitalizing existing communities and preserving rural areas. For example, the Rural Legacy Program provides funds to local governments on a competitive basis to acquire farmland, forests, and open space threatened by development. Since 1997, many additional efforts have been undertaken by State agencies to further Smart Growth

policies including enacting smart codes legislation, increasing funding for school renovations and major shifts in public policy to increase public transit.

Planning development in the priority funding areas (PFA's) that encourages development, limits developer disincentives and preserves resource land is a complex problem because it involves many players including State, Federal, and local agencies with various levels of regulatory control.

In order to concentrate development and preserve resource lands, Smart Growth aims to provide growth management, complementary environmental protection and natural resource conservation. Maintaining and restoring wetlands has local and regional economic and recreational benefits that can assist in attracting new residents and businesses/industries. Maintenance of wetlands in urban areas provides a mechanism to reduce the pollutant loads and runoff from existing urban areas, improving local and regional water quality. As part of Managing Maryland's Growth: Models and Guidelines Series, the State has produced Sensitive Areas, Volume II which includes sections on tidal wetlands and Nontidal wetlands and waterways. This publication serves as a guide to expand the Sensitive Areas Element of the Comprehensive Plan and then prepare land use regulations that minimize the adverse impacts of development on Sensitive Areas.

While wetland programs including the regulatory programs and restoration efforts complement Smart Growth policies by conserving and restoring natural areas, there are opportunities to further Smart Growth policies through the wetland regulatory programs. Activities impacting wetlands in priority funding areas (those areas that are targeted for growth) are regulated as they have been since 1991, and regulated no differently from other wetlands.

Greenways and GreenPrint Program

In 2001, the Maryland General Assembly passed a bill creating GreenPrint, a new land conservation program aimed at preserving high-value ecological lands (the Green Infrastructure Land Network). The Maryland Department of Natural Resources developed a computer model (the Green Infrastructure Assessment, or GIA) designed to identify green infrastructure lands of statewide significance. Wetlands have been an important component of the GIA. Over two million acres of land were identified. The GIA is used to select and prioritize GreenPrint projects. In 2001, the General Assembly authorized \$26,250,000 for DNR acquisitions and \$8,750,000 for easements on agricultural lands that include segments of the Green Infrastructure Land Network. This \$35,000,000 has protected over 10,700 acres of land in State fiscal year 2002."

After more than 10 years of successful planning and project initiation, Maryland now has a protected greenways network consisting of over 1,500 miles. While planning and outreach are still needed, the primary emphasis of the greenways program in the future will be implementation. Acknowledging the evolution and maturing of the greenways program, in early 2002 the Governor sunset the Maryland Greenways Commission and directed DNR and MDOT to continue to work jointly on implementation projects that expand the statewide network of greenways, trails, and green infrastructure. In accordance with a joint memorandum of

understanding, the agencies will develop a detailed work plan that involves implementation at the state, regional, and local levels.

In 2000, DNR published the *Atlas of Greenways, Water Trails, and Green Infrastructure* which provides individual county maps, as well as statewide and regional maps. The Atlas is available on-line at <http://www.dnr.state.md.us/greenways>.

National Estuary Program

Authorized by the Water Quality Act of 1987, the National Estuary Program (NEP) targets nationally significant estuaries for research, planning, and management. For each estuary in the program, the U.S. Environmental Protection Agency (EPA) provides technical assistance and facilitates a planning process that results in a strategy for cleanup, called a Comprehensive Conservation and Management Plan. Plan participants must commit to specific financial, institutional, and political actions. High-priority "demonstration" projects can be undertaken before completion of the plan. The Maryland Coastal Bays are part of the National Estuary Program (see below).

Maryland Coastal Bays Program

The Maryland Coastal Bays Program is one of 28 National Estuary Programs designated by the U.S. Environmental Protection Agency. The Maryland Coastal Bays Program (part of the National Estuary Program) has developed a comprehensive conservation and management plan; it is intended to guide interested citizens and public agencies involved in natural resource protection and planning. The plan outlines steps to protect and enhance wetlands to benefit water quality, aquatic resources, waterfowl and other wildlife and includes provisions for improvements in air and water quality, fish and wildlife habitat, protection of sensitive and native species, and conservation based recreation, navigation, community education, and economic development. The Maryland Coastal Bays Program has a mini-grant program that enables local businesses, schools, or individuals to apply for funds to assist in the development of projects, which help protect water quality or wildlife in the coastal bays.

There are four broad goals that the Maryland Coastal Bays Program. These include:

- 1) Improve the overall water quality by reducing the causes of eutrophication, and maintain the water quality in relatively unimpacted areas such as Chincoteague Bay
- 2) Protect existing habitat, restore degraded habitat and create new habitat to improve the reproduction and maintenance of healthy living resource populations
- 3) Assess the impact of pathogens and toxic chemicals on living resources and control and/or mitigate those impacts
- 4) Promote ecologically sound, sustainable development in order to protect the desired uses and economic vitality of the coastal bays region

National Estuarine Research Reserve System

The Coastal Zone Management Act of 1972, as amended, established a reserve system of protected areas that represent different biogeographic regions of the United States. There are 25 designated estuarine research reserves across the nation. Reserve staff members work with local communities and regional groups to address natural resource management issues, such as nonpoint source pollution, habitat restoration, and invasive species. The Chesapeake Bay is part

of the reserve system, with three designated areas: Jug Bay in Anne Arundel and Prince George's Counties, Otter Point Creek in Harford County, and Monie Bay in Somerset County. The three sites total 4,820 acres.

Maryland Land Preservation and Recreation Plan and Statewide Comprehensive Outdoor Recreation Plan

The law creating Program Open Space (POS) (Acts of 1969, Chapter 403), requires the State and each of the State's 24 major jurisdictions to prepare Land Preservation and Recreation Plans (LPRPs) every five years. The law mandates that the Maryland Department of Planning prepare the State LRP in cooperation with the Maryland Department of Natural Resources. Enactment of the POS law followed the establishment in 1965 of a federal program known as the Land and Water Conservation Fund (LWCF).

This program also requires preparation of a State plan, the State Comprehensive Outdoor Recreation Plan (SCORP), to qualify for federal grants for the same general purposes as POS funds. The National Park Service administers the LWCF. Since the purposes and requirements of the State and federal programs are similar, and since the State has used the funds from both programs in a coordinated manner, the State has traditionally combined planning for both programs into a single LRP/SCORP. If needed, an addendum is prepared to address any additional federal requirements for the SCORP. Both programs (POS and LWCF) provide funding for acquisition of open space lands and for development of recreation projects. Projects are reviewed for consistency with approved state and local plans. Both programs permit limited funding for the preparation of state and local plans and for surveys, data collection, analysis, and other planning purposes. While the programs do not primarily protect or manage wetlands, some wetlands are often found on parcels acquired as open space or recreation lands.

Tributary Strategies

Maryland's Tributary Teams, representing each of Chesapeake Bay's ten major tributaries, were organized to help implement pollution prevention measures needed to address local water quality problems. These teams are developing plans that will provide clean water and healthy rivers for future generations. A major focus of their efforts is controlling nutrient pollution from farm fields and horse pastures, wastewater treatment plants, construction and road building activities, and hundreds of thousands of suburban properties. In support of the Chesapeake Bay Agreement, the mission of Maryland's Tributary Teams is to: support and promote actions and policies to ensure healthy watersheds with abundant and diverse living resources; educate and heighten awareness of each individual's impact on water quality; promote implementation of projects to restore and protect living resources and water quality; facilitate communication and coordination among governments, landowners, businesses, and all other citizens toward this common goal. Wetland management topics, such as wetland restoration for water quality and habitat improvement, are discussed by workgroups that monitor progress toward water quality goals.

Scenic and Wild Rivers

The Scenic and Wild Rivers Act was passed in 1969. The Scenic and Wild Rivers System includes nine rivers that have been designated after a several step process. The steps in this process are:

- 1) Conduct an inventory of the river's resources
- 2) Local governments propose or endorse the designation
- 3) The Scenic and Wild Rivers Board, comprised of the Secretaries of Natural Resources, Agriculture, Environment, and Planning endorses the proposal
- 4) The Maryland General Assembly officially designates the river. The Department of Natural Resources has prepared plans with recommendations that address the preservation, management and appreciation of the rivers. Each river also has its own Scenic and Wild River Advisory Board.

The following rivers have been designated as scenic: Monocacy, Potomac, Anacostia, Patuxent, Severn, Deer Creek, Wicomico River and Zekiah Swamp, and Pocomoke River. A portion of the Youghiogheny River has been designated as a wild river.

State Agencies and local governments are expected to take appropriate action to protect and enhance the quality of the river. Activities in the main stem and floodplain of designated rivers generally do not qualify for general permits under the waterway construction statute.

Restoration, Enhancement, and Preservation

Wetland Restoration Initiative

In 1997, Maryland established a voluntary goal of restoring 60,000 acres of wetlands. The figure was based on estimated losses of wetlands since the 1940's, a time when many wetlands were lost due to channelization and suburban growth. A steering committee was appointed by the Governor in 1998 to provide recommendations on how to achieve the goal. Committee members include representatives from State, federal, and local government, agriculture, mining, consulting, citizenry, and environmental groups. The Committee evaluated various restoration programs and conducted outreach to major stakeholders in developing recommendations to increase participation in voluntary restoration efforts. The Committee also released the first consolidated figures for wetland restoration accomplished through various programs.

By 2010, Maryland has agreed to restore 15,000 acres as its share of the 25,000 acre Bay-wide restoration commitment in the Chesapeake 2000 agreement. As of 2002, Maryland has made excellent progress toward the goal with approximately 12,000 acres of additional wetlands created, restored, or enhanced Statewide. Wetland Habitat Goals, a new addition to Maryland's Tributary Strategies Program, takes the 15,000 acre goal and distributes the acreage to tributary basins based on the relative amount of wetland restoration potential. Wetland restoration potential was determined through GIS by combining hydric soil and land use maps. Hydric soils not developed, forested or currently defined as a wetland were considered potential restoration opportunity. This approach will improve the targeting of resources, funds and restoration efforts. Tributary Team support of basin-specific goals will promote the identification of restoration opportunities and encourage partnership development to meet restoration objectives. The following table presents the proposed goal allocation to each Tributary Basin.

<u>Basin</u>	<u>Goal Allocation (Acreage)</u>
Choptank	2818
Lower Eastern Shore	6155
Lower Potomac	1490
Lower Western Shore	113
Middle Potomac	363
Patapsco/Back	279
Patuxent	532
Upper Eastern Shore	2186
Upper Potomac	470
Upper Western Shore	594

Maryland has also completed its Clean Water Action Plan and unified watershed assessment. Priority watersheds for restoration have been identified. The next step is to develop restoration strategies for the watersheds. The initial restoration plans are being developed for the Isle of Wight watershed (Worcester County); Manokin watershed (Somerset County); Georges Creek

watershed (Allegany County); Middle Chester watershed (Kent County); and Little Patuxent watershed (Howard County). Restoration of wetlands is expected to be included in the strategies.

MDE has a grant to identify priority wetland restoration and preservation areas. As a result of the project, sites which have the best potential for performing desired wetland functions will be identified. It is anticipated that watershed stakeholder partnerships such as local teams for Watershed Restoration Action Strategies or Tributary Teams will help in identification of key wetlands to be preserved and desired wetland functions to be established or increased in future created, restored or enhanced wetlands.

State and federal Programs which have funded the majority of restoration projects include: Conservation Reserve Program, Conservation Reserve Enhancement Program, Partners for Fish and Wildlife, Wetlands Reserve Program, Phragmites Eradication Program, Water Quality Infrastructure Program, and Stewardship Incentive Program. Programs are administered by soil conservation districts, U.S. Fish and Wildlife Service, and the Departments of Natural Resources and Environment, often in partnership. Federal highway funds under the Transportation Enhancement Program (TEA-21), administered by the Department of Natural Resources and State Highway Administration, is expected to be important over the next few years. The Chesapeake Bay Foundation and Ducks Unlimited are the major private organizations with active restoration programs and also often form restoration partnerships with government agencies to support restoration efforts. Since 1998, voluntary restoration has averaged over 1000 acres per year.

The Departments of Environment, Natural Resources, Agriculture, Natural Resources Conservation Service, Ducks Unlimited, and the Chesapeake Bay Foundation are partners in a Landowner Referral Service. The Service matches landowners interested in undertaking conservation practices, including wetland restoration, with partners who are able to provide financial and/or technical assistance. DNR has produced a guide for funding assistance describing various programs. The Service is currently administered by MDE.

In 2000, The Governor issued an executive order directing State agencies to incorporate wetland restoration into existing programs and evaluate opportunities to restore wetlands on State lands. Federal agencies have a goal of restoring 100 acres of wetland per year on federal lands.

Chesapeake Bay Program

The 2000 Chesapeake Bay Agreement included goals for voluntary wetland restoration, based in part on Maryland's goal. An interim goal of 25,000 acres of wetland restoration for the Chesapeake Bay watershed by 2010 has been set. Maryland's share is 15,000 acres. The Comprehensive Coastal Bays Management Plan has a goal of 10,000 acres for the Coastal Bays watershed. Maryland is on schedule to meet its goals, with over 5000 acres of wetlands restored through 2000.

The 2000 Chesapeake Bay Agreement also contains a provision for developing and implementing watershed management plans with a wetland preservation component in 25% of the Chesapeake Bay watershed by 2010. The plans would preserve key wetlands while addressing surrounding land use so as to preserve wetland functions. Land use practices may also

indirectly help preserve wetlands. Local requirements and plans for clustering, open space, stormwater management, infrastructure, and zoning may also restrict activities that degrade wetlands.

The Chesapeake Bay Program offers several grants. Habitat restoration grants are awarded for projects that restore important habitat such as streams, wetlands, and riparian buffers. The Chesapeake Bay Small Watershed Grants Program offers funding for watershed planning and locally based protection and restoration projects. The National Fish and Wildlife Foundation (see below under Private Efforts) administers the Small Watershed Grant Program in cooperation with various federal sponsors.

Corps of Engineers

Beneficial Use

The Corps also funds projects which make use of dredge spoil material. Projects under development include wetland restoration in Ocean Pines and Poplar Island in Chesapeake Bay.

Conservation Reserve Enhancement Program (CREP)

The CREP in Maryland is an enhancement of the Federal Conservation Reserve Program that has been tailored for Maryland. . The CREP offers payments above normal rental rates for establishing riparian buffers, retiring highly erodible lands, and restoring wetlands and shallow water habitats. The goal is to enroll 100,000 acres of environmentally sensitive land statewide (70,000 acres of riparian forest buffers and herbaceous buffers, 20,000 acres of highly erodible land within 1,000 feet of a stream, 5,000 acres of wetlands, and 5,000 acres of shallow water habitat). CREP practices receive a one-time incentive payment of \$100/acre from the State of Maryland. Additional incentives are also available for some practices. Rental payments will be made yearly for the life of the contract; usually 10-15 years. . Landowners also have the option to sell permanent easements to the State of Maryland for land enrolled in CREP. Easement payments are based upon local land values. Current benefits include the one-time sign-up bonus, yearly land rental payments, maintenance payments, and 75-100% cost share. Enrollment is non-competitive and open. The program is administered by the Farm Services Agency with several other federal and State partners.

Conservation Reserve Program

The Conservation Reserve Program (CRP) was established by the 1985 Farm Bill, and expanded in later amendments of that bill. The CRP provides cost sharing and land rental payments to farmers for a variety of conservation practices, including establishing permanent cover on highly erodible lands, planting filter strips and riparian forest buffers adjacent to streams and other waterbodies, and restoring wetlands and shallow water areas for wildlife. Landowners enter into contracts for 10 to 15 years, during which they receive annual rental payments. The program is administered by the Farm Services Agency.

Wetlands Reserve Program (WRP)

WRP is a voluntary, competitive program offering agricultural landowners the opportunity to restore and enhance wetlands on their property. The program is offered competitively nationwide and offers payment, based on the agricultural value of the land, for restoration of wetlands that have previously been drained and converted to agricultural uses or timber production. WRP

offers three options to protect, restore, and enhance wetlands and associated uplands: permanent easements, 30-year easements, or 10-year restoration cost-share agreements. WRP is unique among agricultural cost share programs in that land to be restored does not have to have been recently used for crop production. The program is administered by the Natural Resources Conservation Service and funds are limited.

Maryland Agricultural Water Quality Cost-Share Program

The Maryland Agricultural Water Quality Cost-Share (MACS) Program pays up to 87.5 percent of the cost to install eligible BMP's to protect water quality. In recent years several new BMP's have been added to the list of eligible practices. These include stream protection practices, conservation cover, and nutrient management services. Some of the 29 eligible BMPS designed to reduce soil, nutrients and animal wastes entering state waterways include: filter strips, stream fencing, Critical Area plantings riparian buffers, and sediment basins. The program is administered by the Maryland Department of Agriculture.

Maryland Agricultural Land Preservation Foundation

The Maryland Agricultural Land Foundation was created by the General Assembly in 1977. The Foundation cooperates with local jurisdictions to establish agricultural preservation districts. Landowners within an approved district may sell and easement to the State to preserve the land in perpetuity for agricultural use. The program also may fund acquisition of woodland, which may include wetland areas.

Rural Legacy Program

The Rural Legacy Program encourages local governments and private land trusts to competitively apply for funds to complement existing land conservation efforts or to develop new ones. Easements or fee estate purchases are sought from willing landowners in order to protect areas vulnerable to sprawl development that can weaken an area's natural resources, jeopardizing the economic value of farming, forestry, recreation and tourism. The Rural Legacy Advisory Committee, appointed by the Governor and confirmed by the Senate, reviews applications and makes recommendations to the Rural Legacy Board. The Rural Legacy Board makes final recommendations to the Governor and the Board of Public Works. The Board designates the Rural Legacy Areas and approves the grants for Rural Legacy funding.

Program Open Space

Program Open Space (POS) is the primary funding source for State recreational and resource lands, funded in part by real estate transfer taxes. This effort has resulted in the acquisition of more than 150,000 acres of open space for state parks and natural resource areas and more than 25,000 acres of local park land. Other funds from the transfer tax help support Rural Legacy, and agricultural preservation. POS funds are evenly divided between State and local recreation acquisition and park development. In addition to acquisition, POS money may also buy easements and buffers for projects under the Conservation Reserve Enhancement Program.

DNR Fish, Wildlife, and Heritage Program staff provide Program Open Space with a listing of priority sites. The ranking is based on rarity of a species or community, threats, current and

potential long-term health of the population or community; and whether or not acquisition is an appropriate management strategy. Many sites acquired through POS have been wetlands.

Maryland's GreenPrint Program

This program funds protection of Maryland's most ecologically valuable remaining lands, identified as the Green Infrastructure Land Network. For fiscal year 2002, \$35 million was made available for the purchase of easements or fee simple acquisition.

See previous section (Planning) for more details on the Greenways and GreenPrint Program.

Maryland Environmental Trust

The Maryland Environmental Trust (MET) is a statewide local land trust governed by a citizen Board of Trustees. Their goal is the preservation of open land, such as farmland, forestland, and significant natural resources. The primary tool for doing this is the conservation easement, a voluntary agreement between a landowner and MET. Since its creation by the General Assembly in 1967, MET has helped landowners protect over 65,000 acres of open land through more than 500 conservation easements (<http://www.dnr.state.md.us/met/aboutmet.html>). MET also endeavors to promote the protection of open land through the Local Land Trust Assistance Program. In addition, MET gives grants to environmental education projects through the Keep Maryland Beautiful Program.

Coastal and Estuarine Land Conservation Program

This program, administered by the Department of Commerce, was authorized in 2002. The purpose is to protect "important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses." (Public Law 107-77, Dept. of Commerce, Justice, and State appropriations Act of 2002). States with approved coastal zone management plans or National Estuarine Research Reserves are eligible to participate and seek funding for program development and administration and acquisition of properties for conservation. A match is required. A State must first receive approval of a Coastal and Estuarine Land Conservation Plan that identifies the scope of the plan, and identifies priority areas for protection and process for ranking proposals.

Chesapeake Bay Trust

The Chesapeake Bay Trust was created by as a nonprofit organization by the Maryland General Assembly in 1985. The Trust receives funding from a portion of the proceeds from sale of Chesapeake Bay license plates and a tax check off on Maryland income tax returns. The Trust also seeks contributions from the business community. Grants are awarded for projects that focus on preserving and improving water quality and wildlife habitat, and involve students and communities in conservation projects. Environmental education projects and watershed planning projects may also be funded.

U.S. Fish and Wildlife Service

Partners for Fish and Wildlife

This program concentrates on restoring cleared, drained or otherwise degraded fresh or saltwater wetlands, restoring streamside areas, and the habitats of fish, neotropical migratory songbirds,

and threatened species. Most projects involve wetland restoration. Private lands of any size are eligible.

Landowner Incentive Program

The Landowner Incentive Program provides competitive grants for States, territorial fish and wildlife agencies, and tribes to enter into collaborative efforts with private landowners interested in conserving natural habitat while continuing traditional land use practices. The Program provides technical or financial assistance for protection, restoration, and management of habitat to benefit species at risk, including federally listed endangered or threatened species as well as proposed or candidate species on private land.

Private Stewardship Grants Program

This Program provides grants and assistance on a competitive basis to individuals and groups engaged in voluntary conservation efforts on private lands that benefit at risk species on private lands.

Private Efforts

Private entities such as The Nature Conservancy, Eastern Shore Land Conservancy, and Conservation Fund all contribute to land preservation efforts. Efforts include acquisition of land, easements, holding easements, or facilitating acquisition. Private entities are often aided by DNR Natural Heritage staff and tools such as the Green Infrastructure to target preservation efforts.

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation is a private organization established by Congress in 1984 to conserve fish, wildlife, and plants, and their habitats. Funds are received from Congress and private sources. Goals include conservation of species of special concern, protection and restoration of streams, wetlands, forests, grasslands, and oceans, and promotion of conservation education.

Table App. II-2. Listing of voluntary programs affecting wetlands and waterways. The complete database of these programs including descriptions, can be referenced from the MDE Wetlands and Waterways website at <http://www.mde.state.md.us/wetlands/1programs.htm>

<u>Scope</u>	<u>Name of Program/Law</u>	<u>Government Level</u>
<i>Technical and/or financial assistance, various land uses</i>	Chesapeake Bay Agreement	Federal
	Chesapeake Bay Commission	Federal
	Chesapeake Bay Program	Federal
	Chesapeake Executive Council	Federal
	Coastal Wetlands Planning, Protection, and Restoration Act	Federal
	EPA State Wetlands Programs Development Grants	Federal
	Federal Aid in Sport Fish Restoration Act	Federal
	Forest Stewardship Program	Federal
	Forestry Incentives Program	Federal
	Ramsar Convention Treaty	Federal
	Land and Water Conservation Fund	Federal
	Maryland Coastal Bays Program	Federal
	Migratory Bird Conservation Act	Federal
	Migratory Bird Conservation Commission	Federal
	Migratory Bird Conservation Fund	Federal
	National Estuary Program	Federal
	Near Coastal Waters Program	Federal
	North American Waterfowl Management Plan	Federal
	North American Wetlands Conservation Act	Federal
	Partners for Fish and Wildlife Stewardship Incentive Program	Federal
	Landowner Incentive Program	Federal
	Private Stewardship Grants Program	Federal
	Surplus Federal Property Transfer	Federal
	Watershed Protection and Flood Prevention Act	Federal
	Wildlife Habitat Incentives Program	Federal
	Chesapeake Bay Trust	State
	Maryland Agricultural Tax Incentives	State
	Maryland's Local Tax Credit Program	State
	Non-Structural Shore Erosion Control Program Open Space	State
	Rural Legacy Program	State
	Small Creeks and Estuaries Reserve Program	State
	Stream ReLeaf/ Buffer Initiative	State
	Wetland Restoration Initiative	State
	Woodland Incentive Program	State

(Table App. II-2 continued)

<u>Scope</u>	<u>Name of Program/Law</u>	<u>Government Level</u>
<i>Technical and financial assistance, agricultural only</i>	Conservation Reserve Enhancement Program	Federal
	Conservation Reserve Program	Federal
	Emergency Watershed Protection Program	Federal
	Environmental Quality Incentives Program	Federal
	Swampbuster	Federal
	Wetlands Reserve Program	Federal
	Farm Credit Program	State
	Flood Risk Reduction	State
	Maryland Agricultural Water Quality Cost-Share Program	State
<i>Technical assistance only</i>	BayScapes	Federal/Private
	Youth Corps in the Chesapeake Bay	Federal
	Backyard Wildlife Habitat Program	Private
<i>Technical and financial assistance, private</i>	Chesapeake Bay Initiative	Private
	Chesapeake Wildlife Heritage	Private
	MARSH Program (Ducks Unlimited)	Private
	Private Lands Program (Ducks Unlimited)	Private
	National Fish and Wildlife Foundation	Private
	Wildlife Habitat Improvement Program	Private
<i>Planning Strategies</i>	Clean Water Act Sec. 404 Advanced Identification	Federal
	Emergency Wetlands Resources Act	Federal
	Partners in Flight	Federal
	Statewide Comprehensive Outdoor Recreation Plans	Federal
	Greenways Commission	State
	Special Area Management Plans	Federal
	Tributary Strategies	State
	Wild and Scenic River Designation	State
	Green Infrastructure Assessment	State
	Watershed Restoration Action Strategies	State
	<i>Preservation</i>	Program Open Space
GreenPrint		State
Maryland Agricultural Land Preservation Fund		State
MD Environmental Trust		State

The Conservation Fund	Private
Coastal and Estuarine Land Conservation Program	Private
Land Trusts	Private
The Nature Conservancy of MD	Private

Education and Outreach

Presentations to various audiences are done throughout the year. Recently, special assistance has been provided for the Maryland Envirothon competition, a nationwide and Canadian competition for high school students on environmental issues. The competition is coordinated through local soil conservation districts with assistance from other State and federal agencies. Wetland issues will be incorporated into the core topics of forestry, soils, aquatics, and wildlife in future years. Education and outreach is expected to be given additional emphasis as a commitment under the 2000 Chesapeake Bay Agreement.

Research and Tools

Technical tools

MDE has developed numerous technical tools to aid in wetland management. These include a wetland assessment model, watershed planning guide, wetland web page, mitigation guidebook, revised construction practices for activities in streams, new aerial photography for identification of submerged aquatic vegetation, and a watershed planning database (see below). Funding for these tools has been provided by the Environmental Protection Agency. Contractors for some of these projects have included the University of Maryland, University of Delaware, Pennsylvania State University, and the Department of Natural Resources. Funds from the Federal Emergency Management Agency have supported Maryland in updating and digitizing floodplain maps.

The Departments of Environment and Natural Resources have developed a database of environmental and water resources information called “Surf Your Watershed”, which is available online from both agencies’ web pages. The database presents extensive information on a watershed basis, including watershed indicators and profiles, which were used in developing the integrated assessment for Maryland’s Clean Water Action Plan. Indicators include migratory fish spawning areas, nontidal benthic and instream habitat indicators, and water quality indices. Nontidal Wetlands of special State concern are also listed. Wetland permit activity by watershed is also included. In addition to this information, the database is also linked to bibliographic databases managed by MDE and DNR for water and natural resources reports and studies. An important goal in developing this database was to catalogue existing information on water and natural resources so that it would be available as a low-cost information source for local governments interested in watershed planning with a strong environmental component. While all local jurisdictions prepare land use plans, the addition of strong environmental components and detailed background information represents additional cost and effort to most local governments. By making identification of existing information economical, MDE and DNR hoped to encourage more consideration of environmental issues in the local land planning process.

The Department of the Environment also developed and maintains an extensive web page for wetlands and waterways. The page contains links to all of the State’s wetland and waterway regulations, a summary of other regulations, technical and educational information and fact sheets, photographs, a kid’s page, a database of government and private funding sources for restoration and technical assistance. There is also detailed information on the Wetland Conservation Plan and Wetland Restoration Initiative. The joint permit application is also available online and public notices for proposed activities are also listed.

The Department of Natural Resources may collect water quality and living resource data based on local interests.

Training

Wetland training and identification

The Wetlands and Waterways Program and its precursors have offered wetland identification training since the mid- 1980s'. Initially training was offered to both government personnel and consultants, but space constraints have limited participation to government personnel in recent years. Training has expanded from basic wetland identification based on the three parameter approach to include specialized and advanced courses in plant identification, grasses sedges and rushes, wetland hydrology, soils, restoration and creation, stream restoration and classification, and photo interpretation. Courses are organized and conducted by an inter-agency team of federal and State agencies. Occasionally, there are spaces available in this training program for private consultants, but formal training for consultants and the public is usually conducted through college and university programs or other private companies.

Stream Assessment

The Stream Corridor Assessment survey has been developed by the Maryland Department of Natural Resources as a watershed management tool to both identify environmental problems and prioritize restoration opportunities on a watershed basis. Potential environmental problems commonly identified during the survey include: channel alterations stream sections, excessive bank erosion, exposed pipes, inadequate stream buffers, fish migration blockages, trash dumping sites, near stream construction, pipe outfalls and unusual conditions. In addition, the survey records information on the location of potential wetland creation sites and collects data on the general condition of in-stream and riparian habitats. Over the past several years working with the Maryland Conservation Corp, watershed associations and local governments more than 1760 km (1094 miles) of Maryland streams have been surveyed. Overall, the survey has proven to be a cost effective starting point for many watershed restoration efforts and the results of the survey have been used to target over a million dollars of restoration work so far.

Stream Protection and Restoration

The Department of Natural Resources offers a 3-day workshop on stream management to government and some non-profit entities. The workshop includes sessions on the biological and physical characteristics of streams, as well as a presentation on stream restoration methods. Other topics include watershed assessment and planning.

Certification of Wetland Delineators

The U.S. Army Corps of Engineers was directed by the 1990 Water Resources Development Act to establish a wetland delineator certification program. The 1989 Maryland Nontidal Wetlands Act also includes a provision for certification of delineators. Benefits of a certification program are:

- 1) To provide applicants with greater knowledge about the qualifications of consultants performing wetland delineations
- 2) To reduce time spent by regulatory agencies in verifying wetland delineations
- 3) Improve the quality of wetland delineations

The Corps of Engineers and the State of Maryland administered a demonstration program in 1993. The program was one of three demonstration programs statewide. The test consisted of two parts: A written examination and a field practicum. Only persons who passed the written exam were allowed to take the field portion of the exam. The exam was administered by State and federal staff who successfully completed a sample test program. A total of 363 persons took the written test, and 122 people received a passing score of 80%. A total of 78 people took the field practicum and 67 people passed and received provisional certification. A small number of provisionally certified consultants (29) actually worked in Maryland.

The report issued on the Baltimore District Wetland Delineator Certification Program include workshops on other special topics such as definitions, updated soil indicators, and completing application forms. In 1993, the State did not intend to use work of certified consultants as a means for determining which applications would be processed without a delineation check. At that time, all sites were visited in the field by the State regardless of which agency had the lead for delineation verifications. However, current staff levels and increased workload has resulted in failure to visit every site. The quality of the consultant work, extent of impact, workload, and project type influence whether or not a permit reviewer visits a site. A decision is made on the accuracy of the delineation within 45 days, regardless of whether or not the delineation is verified in the field.

While there are persons working in Maryland who received provisional certification, they are not considered to be officially certified delineators in Maryland. There are no standard procedures in place that give expedited review to applications with delineations performed by provisionally certified delineators.