

allow wildlife safe passage through their natural domain; facilitate seed and pollen transport helping plant life thrive across the state; and keep streams and wetlands healthy by protecting adjacent vegetation. Preserving linkages between the remaining large habitat areas will ensure the long-term survival and continued diversity of Montgomery County's natural resources and environment.

The two large green hubs that influence the Damascus area are mostly within Little Bennett Regional Park and Patuxent River State Park. Protecting the edges of these large areas that lie outside park boundaries and protection of the green highways that link them will be a part of the master planning process. The links shown in Damascus focus on connections between the headwaters of Bennett Creek and the Patuxent River as well as between there and the headwaters of Great Seneca Creek. Other connections between the Great Seneca and Little Seneca are also indicated.

The master planning process will examine the detailed information available at the local level and determine more precisely the appropriate location of such ecological links and potential means of protection.

### **Maryland GreenPrint Program**

Saving our diverse and ecologically precious natural resources is the basis for the state's GreenPrint program signed into law in 2001. GreenPrint is the method used to protect the lands identified by the abovementioned *Atlas* as necessary to preserve an extensive, intertwined network of land vital to the long-term survival of our native plants and wildlife, and certain industries that rely on a clean, healthy environment and abundant natural resources.

Maryland's GreenPrint program is designed to help protect the ecological vitality found in each region of the state, including forests, parks, greenways, and wetlands, preserving and enhancing it for future generations. The purpose of the program is threefold:

- Identify, using the most up-to-date computer mapping techniques, the most important unprotected natural lands in the state;
- Link, or connect, these lands through a system of corridors or connectors; and

- Save those lands through targeted acquisitions and easements.
- The GreenPrint Program builds upon existing conservation programs by:
- Providing urgently needed additional funding;
- Conserving and connecting large contiguous land areas with multiple important natural resource features;
- Providing a focal point to coordinate existing conservation programs with one another and increase their overall effectiveness; and guiding and coordinating land conservation and preservation efforts, just as Priority Funding Areas guide Smart Growth development.

To date in Montgomery County 7,266 out of 11,913 acres recommended as green infrastructure have been protected via parkland.

## **Laws and Regulations Pertaining to Abiota Water**

### **Stream Water Quality Management**

The need to protect water resources is reflected in federal, state, and local laws as well as in regulations and guidelines. The county's numerous small streams and creeks flow into the Chesapeake Bay as well as the main water supply resources (i.e., Potomac and Patuxent Rivers). The state of Maryland and Montgomery County are national leaders in developing sound watershed management plans and policies.

The condition of water resources, including streams and wetlands, has been of primary environmental concern for the state of Maryland for at least the past twenty years (see Table 8). The quality of the Chesapeake Bay and its many tributaries have dramatically benefited from environmental programs that reduce both point and some non-point sources of pollution. Improvement in sewage plant discharges, removal of obstacles to fish passage,

construction of stormwater management and stream enhancement projects have all contributed to improving water quality. However, at the same time, continuing increases in human population and development still create stresses on aquatic systems despite benefits that have been attained through the various water quality protection programs. Efforts in Montgomery County are coordinated with federal, state and regional programs to reduce the impact of new development and repair the impact of existing land uses and past development activity.

### Tributary Strategies

The Chesapeake Bay Agreement of 1983 is a commitment by the State of Maryland, the Commonwealths of Virginia and Pennsylvania, the District of Columbia, and the United States Environmental Protection Agency to restore and protect the Chesapeake Bay. In 1987 the same parties agreed to a 40 percent reduction of phosphorus and nitrogen loadings to the Bay. In 1992 the Bay partners agreed to develop "tributary strategies"- watershed based plans to reduce nitrogen and phosphorous entering the Bay. Maryland's tributary strategies are an addition to the historic Chesapeake Bay Agreement, to address the problems of excess nutrients and their impacts on the living resources.

### Chronology of Environmental Policy and Regulatory Actions

Table 8

#### Chronology of Environmental Policy and Regulatory Actions

- 1891 - *Forest Reserve Act* gives the President authority to establish forest reservations from public domain lands.
- 1899 - *Rivers and Harbors Appropriation Act* prohibits construction of any bridge, dam, dike, or causeway over or in navigable waterways of the U.S. without Congressional approval.
- 1937 - *Federal Aid in Wildlife Restoration Act*, popularly known as the *Pittman-Robertson Act* provides funding for the selection, restoration, rehabilitation and improvement of wildlife habitat, wildlife management research, and the distribution of information produced by the projects.
- 1948 - The *Federal Water Pollution Control Act* regulates dumping and disposal into navigable waters.
- 1964 - *Wilderness Act* created the National Wilderness Preservation System and shifted authority for wilderness designations from the land management agencies, such as the Forest Service, to Congress
- 1965 - The *Water Quality Act* created ambient water quality standards for interstate waters.
- 1970 - The *Maryland Sediment Control Act* requires sediment control at construction sites and has been used to require stormwater management.
- 1972 - The *Federal Clean Water Act* with amendments in 1977 and 1981, provides guidelines for preservation of fishable and swimmable waters of the U.S.
- 1973 - The *Maryland Environmental Policy Act* declares that State policy give the highest public priority to the protection, preservation, and enhancement of the State's diverse environment.
- 1983 - The *Chesapeake Bay Agreement* is a commitment by the states of Pennsylvania, Maryland, and Virginia, the District of Columbia, and the Environmental Protection Agency to restore and protect the Bay through correcting existing pollution problems and avoiding new ones.
- 1983 - Section 208 of the State Water Quality Management, in compliance with that section of the federal Clean Water Act.
- 1983 - Montgomery County issues stormwater management regulations for water quality and quantity control.
- 1983 - Montgomery County Planning Board approves stream buffer guidelines (updated in 1993) to protect stream valleys from physical development using environmental buffers and conservation easements.
- 1987 - The *Chesapeake Bay Agreement of 1987* established a goal of reducing by 40 percent the nutrient input to the Chesapeake Bay.
- 1989 - The *Maryland Non-Tidal Wetlands Act* regulates land-disturbing activities in wetlands outside the tidal waters of the Chesapeake Bay.
- 1992 - The *State Planning Act*, among one of the seven visions given, states that stewardship of the Chesapeake Bay is to be considered a universal ethic. The planning act also requires implementation of the sensitive areas element, including 100-year floodplains, streams and their buffers, habitats of threatened and endangered species, and steep slopes.

### Chronology of Environmental Policy and Regulatory Actions (Continued)

- 1992 – *County Forest Conservation Law* (revised in 2001) provides for tree preservation and planting in new development; forest is protected with conservation easements.
- 1992 – *The Chesapeake Bay Agreement* requires a 40 percent reduction from the 1985 level in controllable nutrient loads of nitrogen and phosphorous to the Bay by the year 2000. The State initiates the tributary strategies program to customize nutrient reduction plans for different subwatersheds. Montgomery County has two tributary plans (Middle Potomac and Patuxent) that will focus on a combination of urban and agricultural non-point source best management practices (BMPs) to reduce pollution from runoff.
- 1993 – *General Plan Refinement* contains fourteen environmental goals; three specify protection and improvement of water quality; conservation of County waterways, wetlands, and sensitive parts of stream valleys; and comprehensive stormwater management to minimize sedimentation.
- 1994 – *Special Protection Area (SPA) law* require certain developments to prepare a water quality plan and monitor the site before and after development, to determine if the objectives of the water quality plan are met.
- 1995 – Montgomery County enacts regulations for special protection areas to implement the SPA law, including performance standards that are intended to maintain baseflow, wetland and aquatic habitat functions, and groundwater recharge.
- 1996 - *Patuxent Reservoirs Watershed Protection Agreement* signed by Howard, Montgomery, and Prince George's Counties, the Howard and Montgomery Soil Conservation Districts, the Maryland-National Capital Park and Planning Commission and the Washington Suburban Sanitary Commission, for interagency cooperation to protect the aquatic, terrestrial, and groundwater resources of the Patuxent River, its reservoirs, and tributary streams.
- 1997 – Planning Board *Environmental Guidelines* revised to include a chapter on special protection areas.
- 1998 – *Countywide Stream Protection Strategy* assesses water quality conditions Countywide on a consistent biological basis, develops management categories, and prepares a list of priority watersheds that will be periodically updated.
- 1998 – *Middle Potomac Tributary Strategies Annual Report* defines an intergovernmental approach to improving conditions in the Maryland portion of the middle Potomac watershed (includes parts of Montgomery, Prince George's and Frederick Counties).
- 2000 – *Chesapeake 2000 Agreement* reconfirms the nutrient reduction goals of the 1992 agreement and establishes goal to protect and restore living resource habitats, protect and restore water quality, manage the impacts of development and promote public awareness.
- 2000 – *Montgomery County Forest Preservation Strategy Report* prepared by a task force appointed by the County Executive outlines a strategy to increase the quantity of forest canopy, improve the quality of forest and trees, and protect and restore forest ecosystems throughout the county.
- 2001 – *Legacy Open Space Functional Master Plan* designates certain county sites for protection through acquisition or easement as part of a public/private effort to protect significant open spaces in Montgomery County.
- 2001 – *Montgomery County Groundwater Protection Strategy* prepared by the Groundwater Protection Strategy Work Group, outlines a strategy to protect public health and the integrity of groundwater and surface watersheds.

The tributaries covered in this inventory are located in both the Little Bennett Creek, Bennett Creek, Great Seneca Creek, and Patuxent basins. The Middle Potomac Tributary Strategy Team and the Patuxent River Commission include representatives of state and local agencies, the farming community, business, environmental organizations, federal facilities and citizens. The teams bring together citizens and local governments on a watershed basis, and provide a forum for regional cooperation and communication.

The Middle Potomac team has established urban watershed, agricultural, and wastewater/point source

workgroups to address the following matters relative to nutrient reduction:

- Nutrient trading
- Maryland's Smart Growth initiative
- Maryland's Clean Water Action Plan
- Total Maximum Daily Loads (TMDLs)
- Local watershed management
- Pasture/manure management
- Riparian forest buffer programs
- Education and outreach programs

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## Damascus and Vicinity Environmental Resources

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- Septic systems
- Stormwater management design and BMPs
- The Chesapeake Bay watershed model

The Middle Potomac Tributary Strategy Team's recent accomplishments have been mostly in the areas of public education, outreach programs, informational and practical workshops, and demonstration projects

The Patuxent River Commission created by state legislation in 1980 serves as the Patuxent Tributary team. During 1998, the Patuxent River Commission selected the Patuxent Reservoirs subwatershed to focus environmental outreach and stewardship awareness activities. These included a Reservoirs Watershed Awareness Day in 1999 and six other outreach activities from 1999-2001 to increase awareness about pollutant sources to the reservoirs and tributary streams and ways that individual residents and resource users can decrease water quality impacts. The Commission continues to be active in Reservoir watershed activities, including riparian tree plantings, participating in Reservoir Earth Month activities, and coordination with the Colonial Pipeline Company. The Commission addresses a variety of policy issues that affect the entire watershed such as:

- Smart Growth
- The Clean Water Action Plan
- Storm Water Management
- TMDL's
- Agricultural Management
- Pipeline safety
- Patuxent Policy Plan Implementation
- Rural Legacy
- Public outreach and education

The Patuxent Reservoirs Watershed Protection Group (PRWPG) is an interagency group comprised of representatives from Howard, Montgomery, and Prince George's Counties, the Washington Suburban Sanitary Commission, the Howard and Montgomery Soil Conservation Districts, and the Maryland-National Capital Park and Planning Commission. The PRWPG Agreement signed in 1996 committed the signatories to cooperate to protect the biological, physical, and chemical integrity of the aquatic and terrestrial watershed resources. The

Comprehensive Management Planning Study for the Patuxent Reservoir Watershed (TetraTech, 1997) identified six priority resources for protection including, reservoirs, terrestrial habitat, stream system quality, aquatic biota, rural character and landscape, and public awareness and stewardship. The year 2002 work program includes continuation of reservoir and tributary water quality monitoring, stream corridor assessments, identification of sediment hot spots, enhancement of a GIS based watershed modeling tool, and development of a reservoir modeling tool. The Maryland Department of the Environment (MDE), the state agency responsible for the implementation of the Safe Drinking Water Act, has awarded of the Sanitary Commission a grant for the establishment of a Reservoir Eutrophication model. The WSSC contracted with a consulting firm for the development of such a model. MDE intends to use the results of the reservoir model as part of its source water assessment program (SWAP). The results may be used in the establishment of TMDL's as well.

The Planning Commission has recognized the importance of water supply protection and has targeted areas in the Patuxent River watershed for additional protection under the Legacy Open Space Functional Master Plan.

### Total Maximum Daily Loads (TMDLs)

The Total Maximum Daily Load (TMDL) approach to water quality management is mandated in the federal Clean Water Act. The TMDL approach establishes a maximum limit for a pollutant or other quantifiable parameters that cause water quality impairment in a specific subwatershed. The state of Maryland is in the process of developing a TMDL program. In the Chesapeake Bay, the purpose and process of the established tributary strategies for nutrient reduction in the Potomac and Patuxent rivers work in tandem with the regulatory TMDL approach. Consequently, the Chesapeake Bay tributary strategies will provide guidance in the establishment of TMDLs in Maryland.

Under Section 303(d) of the Clean Water Act, each state is required to develop lists of impaired waters. These are waters that do not meet water quality standards, even though the minimum level of pollution control technology has been installed at the pollution point source. In 1998, the state identified the Rocky Gorge Reservoir as impaired by nutrients and the Triadelphia Reservoir as

impaired waters by both nutrients and sedimentation. These two water bodies were assigned a medium priority level for TMDL development for these two pollutants. Both these reservoirs, while not located within the Damascus study area, are downstream on the Patuxent River and thus receive drainage from part of the Damascus area.

Although no loading limits have been set for the Damascus watersheds, Maryland Department of the Environment plans to require TMDLs for nutrients and suspended sediments in the Bay-wide TMDL. The master planning process will consider the state's initial findings when they are available. Prior to the establishment of the TMDLs, the state intends to supplement existing water quality data.

The U.S. Clean Water Act of 1977 mandates TMDL's. Tributary strategies are a voluntary state program which hopes to meet water quality goals before the mandated TMDL's come into effect in 2010.

### Clean Water Action Plan

The 1998 federal Clean Water Action Plan (CWAP) is a program designed to use, coordinate and supplement existing federal, state and local pollution control programs to help address nonpoint source pollution of surface and ground waters due to storm runoff from farms, lawns, streets, parking lots, and industrial facilities and from air deposition and polluted ground waters.

The CWAP proposes a new collaborative effort by state, federal, and local governments, the private sector and the public to restore those watersheds not meeting clean water and other natural resource goals and to sustain healthy conditions in watersheds that currently meet these goals. The CWAP addresses all aspects of watershed condition: water quality, including public health issues; aquatic living resources; physical habitat and the landscape. The Montgomery County CSPS data has been incorporated into the CWAP. The Department of Natural Resources (DNR) administers the CWAP program within Maryland and has incorporated the results from the Montgomery County CSPS in ranking watersheds for restoration.

The key steps in this national effort are:

**Unified Watershed Assessment**—The Unified Watershed Assessment (UWA) uses the best available information to assess the condition of the state's watersheds, identify watersheds in need of restoration,

identify watersheds that need preventive action to sustain water quality and aquatic resources, and identify pristine or sensitive watersheds that need extra protection. Based on condition, watersheds are classified into the following categories:

Category 1: Watersheds not meeting clean water and other natural resource goals and needing restoration

Category 2: Watersheds currently meeting goals that need preventive actions to sustain water quality and aquatic resources

Category 3: Pristine or sensitive watersheds that need an extra level of protection

Category 4: Insufficient data

**Watershed Restoration Priorities**—Based on the UWA, the state establishes watershed restoration priorities. This involves selecting those watersheds not meeting clean water and other natural resource goals that are most in need of restoration actions during the next two years.

**Watershed Restoration Action Strategies**—will identify the most important causes of water pollution and resource degradation, detail the actions needed to address these problems, and set milestones by which to measure progress. Funds available to federal agencies through the federal FY 1999 Clean Water and Watershed Restoration Budget Initiative will be used to help the states implement these strategies.

Consistent with the Clean Water Action Plan, the state of Maryland issued the Final 1998 Report on Unified Watershed Assessment, Watershed Prioritization and Plans for Restoration Action Strategies (State of Maryland, 1998). The report addresses the three key steps above. It provides a Unified Watershed Assessment, sets Watershed Restoration Priorities, and describes the process under development to identify and implement Watershed Restoration Action Strategies. Findings relevant to the Damascus Study Area watersheds are presented in Chapter 1 of this report.

### Watershed Protection and Restoration

Montgomery County has aggressively pursued efforts to protect streams, rivers, wetlands and other directly related sensitive features. Montgomery County Code subsection 19-61 provides for the protection of a

geographic area where existing water resources or other environmental features directly related to those water resources are of high quality and are unusually sensitive and where special measures (over and above standard environmental laws, regulations and guidelines) must be applied to land development and certain land uses in order to protect the high quality conditions of these natural features. These areas, known as special protection areas (SPAs), are designated through area master plans, watershed plans, the Comprehensive Water Supply and Sewerage System Plan, or by resolution of the County Council. The County Executive and the Planning Board have implemented Executive regulations and *Environmental Guidelines*, respectively, to implement the special protection area law. As of the date of this report, no areas within the Damascus Study Area have been designated special protection areas.

Development projects on property in special protection areas undergo additional water quality review as part of the development process. A water quality plan is prepared to determine how specific water quality protection goals can be met through stormwater management and protection of environmental buffers around streams and wetlands. Water quality is monitored before and after the development to assess the extent to which the goals are met.

The *Countywide Stream Protection Strategy* (CSPS) was developed by the Montgomery County Department of Environmental Protection and M-NCPPC to provide an overall assessment of county stream conditions. The CSPS ranks countywide stream conditions (excellent, good, fair, or poor) based on biological and habitat assessments. Prior to 1980, stream quality was analyzed based solely on chemical and physical parameters. Until the CSPS effort was undertaken, biological data on county streams was limited.

The CSPS assigns a management category that recognizes the sensitivity of the stream condition and the projected imperviousness levels, and determines the potential for maintaining that level. The CSPS identifies broad management goals for the preservation, protection, and restoration of streams, along with management tools that can be applied to effectively meet those goals. The CSPS helps agencies identify, target, and budget specific watershed-based resource protection initiatives, and serves as a useful technical tool. The CSPS also identifies priority subwatersheds where instability in the

stream condition indicates that action is needed to address immediate problems.

The CSPS is a dynamic effort by the county to provide updated water quality information, management information and priorities. The document is planned to be updated once every five years, incorporating new data on stream conditions.

This report includes CSPS information available at the time of publication on stream conditions, management categories, and priorities. For the most current information, check the CSPS latest update.

### **Watershed Restoration Action Plans**

The DEP has completed the Hawlings River Watershed Restoration Study (2003) which includes a small portion of the southeastern part of the Damascus Study Area. The Study identified two stream segments which begin in the study area as priorities for stream restoration. The major problem that needs to be addressed is bank erosion, exacerbated in many sections by inadequate buffers and livestock access to the stream itself. These two projects ranked lowest for implementation among those evaluated for projects but present ample opportunities for buffer creation and enhancement. The Soil Conservation District will pursue these restoration efforts on agricultural lands.

### **Antidegradation of Surface Waters**

The Clean Water Act set forth antidegradation requirements for surface waters. Maryland has an antidegradation policy (COMAR 26.08.02.04) but has not previously provided specific implementation procedures. Maryland's antidegradation policy requires that water quality continue to support designated uses.

EPA regulations provide for three tiers of protection:

- Tier 1: Must not degrade below minimum water quality requirements ("fishable/swimmable")
- Tier 2: Protects water better than the minimum water quality from degrading to the minimum
- Tier 3: Protects the highest quality waters (i.e., Outstanding National Resource Waters (ONRW)).

Tier 1 is implemented by NPDES permits in conjunction with water quality standards and TMDLs. Tier 2 implementation procedures are currently under development. Two components for Tier 2 implementation include determining when water quality is "better" than the minimum required, and what to do when there is an application for a new or increased discharge to that water body. Possible Tier 2 regulatory approaches include consideration of an antidegradation review process of new or proposed amendments to Water and Sewer Plans ("county plans") and discharge permits, to assure consistency with antidegradation requirements of federal regulations before approval of county plan amendments or issuance of a discharge permit. Tier 3 is handled on a case-by-case basis. There are no current ONRW waters in Montgomery County.

In the Damascus Study Area there are currently two stream segments under consideration for Tier 2 listing, both within the Upper Patuxent River watershed: Scotts Branch and Upper Mainstem B.

### **Patuxent Primary Management Area (PMA)**

The purpose of the Patuxent watershed PMA is to identify and manage land from which nonpoint source pollution is most likely to be transported to the river, to the two water supply reservoirs, and ultimately to the Chesapeake Bay. It identifies a stream buffer and a transition area to reduce the potential for impacts to the streams and reservoirs.

Montgomery County's PMA for the Patuxent is consistent with the state's Patuxent River Policy Plan. The transition area is established as ¼ mile (1320 feet) for the Patuxent mainstem and 1/8 mile (660 feet) for all tributaries. In addition, Montgomery County also recommends a ¼ mile transition area for the mainstem of the Hawlings River.

A property will be subject to PMA requirements only when it is submitted to M-NCPPC for review, i.e. subdivision and/or site plan review, mandatory referrals, and special exceptions. Land that remains in agricultural use, as part of a plan for subdivision or any other type of review, will be subject to the recommended PMA stream buffer and transition area requirements. The PMA guidelines are otherwise voluntarily implemented and strongly encouraged on remaining parcels throughout the watershed.

### **Floodplain Management**

Floodplain management includes a full range of tools, programs, and policies. County agencies have been working together to deal with some of the major problems associated with changes in watershed hydrology and stream impacts as a result of urbanization. To address severe flooding problems, the M-NCPPC in concert with the county Department of Permitting Services (DPS) restrict development and construction activity in the 100-year floodplain throughout the county. New development within the ultimate 100-year floodplain is prohibited. A 25-foot building restriction line setback from the ultimate 100-year floodplain is required for new structures. New roadway stream crossings that encroach on the ultimate 100-year floodplain are subject to strict design requirements. Additionally, the M-NCPPC has a nationally recognized stream valley park system that provides flood and stream quality protection and recreational use. Increased water flows and velocities during heavy storm events result from continued development in the watersheds. These increases are at least partially controlled through the county's stormwater management law and regulations.

Since the early 1990s, the county's Department of Permitting Services was designated lead agency for administering the county floodplain regulations and coordinating the National Flood Insurance Program (see Table 11). DPS is the county agency designated to receive and act on proposals for encroachments on the ultimate 100-year floodplain. DPS requires site specific floodplain studies, where necessary, to determine the flood impact of a particular development and to establish floodplain boundaries where no data exists. DPS also updates and maintains regulatory floodplain data for Montgomery County.

The M-NCPPC and the Washington Suburban Sanitary Commission are the custodians of large multi-purpose dams in Montgomery County. The county's Department of Public Works and Transportation (DPWT) is responsible for managing state and county roads and responding to flooding issues at road crossings.

On-site sewerage systems are prohibited in the ultimate 100-year floodplain by county and state regulations administered by DPS.

## **Groundwater**

Montgomery County Department of Environmental Protection has recently initiated a countywide groundwater protection strategy to guide public and private sectors in watershed planning. The desire is for a comprehensive groundwater protection strategy (GWPS) that will complement the existing Countywide Stream Protection Strategy (CSPS), and thus will serve to complete protection of the hydrologic cycle. DEP has divided the GWPS development into three phases. Phase I consists of collecting, computerizing, and mapping existing county groundwater data including well locations, groundwater elevations, identification of uses, location and identification of aquifers, and existing groundwater quality data. Phase II will cover strategy development including legislative models, public input, determining and defining measurements, and integration within the existing environmental protection regulatory framework. Phase III will encompass plan implementation including drafting regulations, enforcement, and public outreach and education.

In anticipation of the completion of Phase I, and to help lay a foundation for Phase II, a Groundwater Protection Strategy Workgroup, comprised of various government and private members was formed by DEP. The workgroup first met in April 2001, and undertook a 6-month project to produce a groundwater protection strategy report that outlines major issues and specific program recommendations. This report is intended to help establish a strategy for Montgomery County that will protect public health and ground and surface watershed integrity from the impacts of groundwater contamination.

The final report of the Workgroup was published in November 2001. The report set forth recommendations including the establishment of a ground water monitoring program to establish baseline ground water conditions in the county. Establishment of baseline ground water conditions will aid in identifying and prioritizing critical recharge areas. Other recommendations focused on measures for providing public outreach and education, and the need for guidelines and regulations for protecting critical recharge areas (MCDEP, 2001). Since the Workgroup report was published, significant additional progress has been made in Phases I and II. A Baseline Monitoring Program Plan has been developed; implementation will begin in spring 2003. In addition, based on the data collected, a groundwater map has been

developed for the entire county. Some public education fact sheets have also been developed as an initial part of Phase III (MCDEP, 2003).

## **Stormwater Management**

The county Department of Permitting Services administers the county's stormwater management regulations, as well as the sediment and erosion control regulations, to protect stream quality and downstream areas from the impacts of land development. New development is required to submit plans complying with these regulations during the development review (subdivision) process.

The state of Maryland has recently adopted new stormwater management regulations requiring changes to Montgomery County regulations. These changes were accomplished in 2002 and have greater requirements for low density development and retention of flows from more frequent, smaller storms. Table 9 outlines agency responsibility in the management of stormwater.

## **Water Supply and Sewerage**

The *Montgomery County Comprehensive Water Supply and Sewerage Systems Plan 1999-2008* governs the provision of water and sewer service throughout the county. The goal of the plan is to ensure adequate, cost-effective, and environmentally sound water supply and wastewater treatment for existing and planned residential, business, and institutional development throughout the county. The plan directs the systematic extension of community water and sewerage systems in concert with other public facilities along the corridors as defined in the General Plan, to accommodate growth only in areas indicated by adopted and approved master or sector plans. In addition, the *Water and Sewerage Systems Plan* considers other adopted or proposed policies of various agencies affecting land use, including guidelines for the administration of the Adequate Public Facilities Ordinance.

For all properties in the county, the plan designates one of six water and sewer staging categories that are primarily based on master plan development staging strategies and/or capital program infrastructure staging. The authority to adopt and amend the "Water and Sewerage Systems Plan" resides with the County Council. The County Executive administers the plan through MCDEP in cooperation with MCDPS, M-NCPPC and WSSC. WSSC provides community water and/or sewer



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service at the direction of the county's *Water and Sewer Plan* and in accord with that agency's own regulations and guidelines.

Where community water and sewer service is not provided, water supply and wastewater disposal is accomplished by individual, on-site systems: usually well and septic systems. The Department of Permitting Services administers the regulation and permitting of these systems through the county's *On-Site Systems Regulations*.

### **Solid Waste**

Maryland state law authorizes the County Council to regulate and control management of solid waste under sections 9-501 through 9-521 of the Environmental Article of the Annotated Code of Maryland. The Maryland Department of the Environment requires each county, town and municipal corporation to develop a comprehensive plan to address solid waste needs for a ten year period and that it be reviewed at least every three years. The Montgomery County "Comprehensive Solid

Waste Plan" sets forth the policies, goals and plans for the comprehensive management of solid waste generated by the county's residential, industrial, commercial, institutional and agricultural uses. The Plan is prepared by the Solid Waste Division of the Department of Public Works and Transportation. All amendments and revisions to the Plan must be reviewed by the Montgomery County Planning Board as part of the public hearing process, adopted by the Montgomery County Council and reviewed by the Maryland Department of the Environment. The County Executive implements the Comprehensive Solid Waste Plan. The current plan, approved in 1998, describes the framework on which the county's current and future solid waste programs are built through the year 2007.

The Plan sets forth a hierarchy of waste management principles including: waste reduction, recycling/reuse, co-generation and waste disposal. The county has imposed a fixed per capita solid waste generation limit for its waste stream and is pursuing pilot

### **Floodplain and Stormwater Management Responsibilities**

**Table 9**

| RESPONSIBILITY   | AGENCY             |
|--|--------------------|
| Evaluation of impact of land use changes as part of master plan effort   | M-NCPPC            |
| Delineation of floodplain  | DPS, M-NCPPC       |
| Park development planning, stream valley acquisition (including floodplain)  | M-NCPPC            |
| Protection of floodplain in proposed subdivision site plans, zoning map amendments, urban redevelopment  | M-NCPPC, DPS, DPWT |
| Maintenance of large multi-purpose dams  | M-NCPPC, WSSC      |
| Maintenance of small stormwater management structures  | M-NCPPC, DEP, HOA  |
| Review of encroachment applications and detailed floodplain analyses and floodplain regulations  | DPS                |
| Flood insurance program  | FEMA, MDE, DPS     |
| Health Regulations   | DPS, MDE           |
| Review of sediment control and stormwater management plans   | DPS                |
| Overall program for approval, operation, and maintenance of stormwater management facilities. (Treatment and control of stormwater runoff from developed areas into stream valleys, including floodplain.) | DPS, DEP           |

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## **Damascus and Vicinity Environmental Resources**

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M -NCPPC - Maryland-National Capital Park and Planning Commission

DEP - Department of Environmental Protection

DPS - Department of Permitting Services

DPWT - Department of Public Works & Transportation

WSSC - Washington Suburban Sanitary Commission

MDE - Maryland Department of the Environment

FEMA - Federal Emergency Management Agency

HOA - Homeowners Association

programs to determine ways to reduce solid waste generation. The county has an aggressive waste recycling plan that is striving to reach mandated recycling goals of 50 percent of its municipal waste stream by the end of year 2004. As of February 2003, the County is recycling 37.2 percent (based on tonnage) of its waste stream. The County's Resource Recovery Facility located in Dickerson, generates electricity by burning waste that cannot be recycled. The most favorable residue option involves landfilling of ash and non-combustibles at a location out of state.

### **State Smart Growth Initiatives**

The Maryland Economic Development, Resource Protection, and Planning Act of 1992 ("Planning Act of 1992") requires comprehensive plans prepared by local governments to include the following seven "visions" designed to encourage economic growth, limit sprawl development, and protect natural resources (see Figure 18):

1. Development is concentrated in suitable areas.
2. Sensitive areas are protected.
3. In rural areas, growth is directed to existing population centers and resource areas are protected.
4. Stewardship of the Chesapeake Bay and the land is a universal ethic.
5. Conservation of resources, including a reduction in resource consumption, is practiced.
6. To assure the achievement of 1 through 5 above, economic growth is encouraged and regulatory mechanisms are streamlined.
7. Funding mechanisms are addressed to achieve these visions.

In Montgomery County, the General Plan Refinement (1993) has been accepted by the state as meeting this requirement.

To strengthen and detail these policies to support development targeted to areas of the state with existing infrastructure, the Maryland legislature enacted a series of laws to encourage smart growth and neighborhood conservation. This legislative package includes incentives for workers to relocate near their places of work, a job creation tax credit for small businesses in smart growth areas, incentives to clean up and redevelop contaminated brownfield sites, and funding for acquisition of land to protect the state's rural legacy. More recently, the state provided funding through the "GreenPrint program" to protect the green infrastructure through acquisition of new parkland.

The most important new policy established under the smart growth umbrella is the requirement that state money for infrastructure be directed to existing towns and cities and other designated smart growth areas. The state is attempting to reverse the subsidy of sprawl by targeting highway, water, sewer, and other building and infrastructure funds to existing developed areas that already have or may have the transportation, housing, and infrastructure capacity to support increased use. This program does not limit where counties can allow development, but it does prevent the use of state dollars to support development outside Smart Growth areas.

Within Montgomery County, all areas within the Capital Beltway (I-495) are designated as Smart Growth priority funding areas. In 1998, the county designated additional priority funding areas that meet state requirements for sewer service, planned density, and access to existing infrastructure. Parts of the Damascus Study Area are included in these Smart Growth areas (see Figure 18). The master planning process will be coordinated with Smart Growth initiatives to ensure that land use and zoning are compatible with state policies.

### **Air Quality Policies and Regulations**

Air quality improvement is a regional effort. The Metropolitan Washington Air Quality Committee is responsible for approval of the air pollution control

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## Damascus and Vicinity Environmental Resources

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measures to be implemented by the region and for preparing the region's air quality plans.

Although there are various forms of air pollution, the major health concern in this region is ozone. Ozone is formed in the lower atmosphere when nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) react in the presence of sunlight and heat. Factors affecting ozone formation include pollutant concentrations in the air, wind velocity, temperature, and sunlight. Ozone typically forms on hot, sunny, windless days. Adverse impacts of ozone include vegetation damage and health effects such as coughing and chest pains, irritation of the eyes and throat, breathing difficulties, and greater susceptibility to infection.

Control measures target two sources of NO<sub>x</sub> and VOC: mobile and stationary sources. Mobile sources are generally internal combustion engines in on-road vehicles.

Stationary sources cover a wide range of structures such as smoke stacks and gaseous industrial exhaust. Other contributors are motorized lawn and garden equipment, varnishes and solvents.

In 1997, the Environmental Protection Agency strengthened ozone and particulate matter standards in light of new scientific evidence that federal standards was insufficient to protect public health. As a result, the one-hour ozone standard was replaced with a stricter eight-hour standard, and the particulate matter standards were also revised.

The new standards pose additional challenges for reducing air pollution. To help meet those challenges, the federal government has taken several important actions:

First, it is requiring twenty-two states in the eastern third of the United States to substantially cut their emissions of NO<sub>x</sub> in order to reduce the amount of pollutants that drift from state to state. Each state can decide how emissions will be reduced, but most are expected to focus on utilities and big industrial plants that generate electricity by burning coal.

Second, it has established a National Low-Emission Vehicle Program to further reduce the amount of pollutants emitted from the ever-increasing number of cars. Motor vehicle manufacturers have voluntarily agreed to build vehicles with more stringent tailpipe emission standards, and each state will have the opportunity to adopt the new standards and implement the program.

Third, it is setting new emission reduction standards for diesel trucks, buses, and off-road heavy equipment. The new standards will significantly reduce emissions of NO<sub>x</sub> and particulate matter from these sources.

The Washington region has made considerable progress in reducing the emissions of VOCs and NO<sub>x</sub> through previous actions of federal, state and local governments. The biggest impacts are due to the high-tech motor vehicle inspection and maintenance programs, vapor recovery nozzles at service stations, reformulated gasoline, reformulated surface coatings, and new federal emission standards for both small and large engines.

In addition to such actions, the Washington region's air quality plans set an upper limit on the overall tons of pollutants that motor vehicles can emit in the region. The region's Transportation Improvement Program and Constrained Long-Range Plan must conform to this limit.

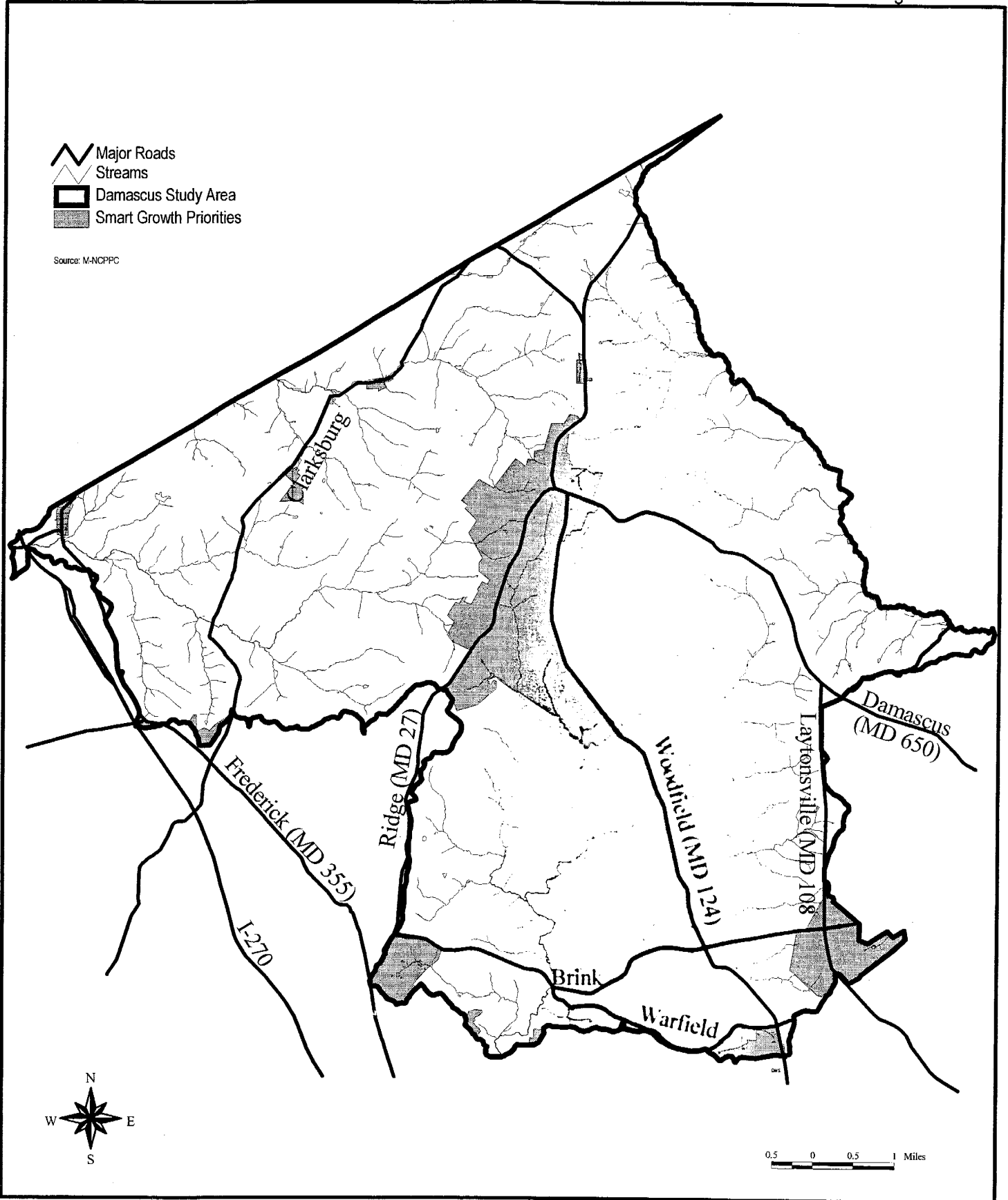
Because ground-level ozone is currently the only major air pollution problem in the Washington region, and because the source of the problem is area-wide in scope, the most cost-effective approach is to continue with the multi-state strategy.

It is, nevertheless, important for Montgomery County to do its part in supplementing that strategy by focusing on local initiatives that can reduce vehicle emissions. Such initiatives could include:

- converting government vehicles from gasoline or diesel to compressed natural gas or hydrogen.
- establishing "Commuter Express Stores" at major employment centers to provide personalized assistance to commuters who are interested in using carpools, vanpools and public transit.
- strengthening the "Fare-Share" program that provides employees transit fare discounts if their employers offer a matching discount.
- continuing the "Code Red/Ride Free" program for Ride-On buses during air pollution alerts.
- expanding public awareness activities associated with the "ENDZONE Partners" program during air pollution alerts. This program informs the general public about what they can do to reduce polluting activities during air pollution alerts.

# Smart Growth

Figure 18



To achieve air quality attainment goals, development needs to be concentrated in areas served by public infrastructure and transit as stated in the General Plan. Other policies include promotion of live near work programs, telecommuting, transit trip mitigation measures, cluster and mixed-use development, bicycle paths and lanes, park-and-ride lots, and carpool lanes.

The main approach used in master planning is to reinforce and implement the General Plan by emphasizing access to transit, bikeways, and sidewalks. Currently, Montgomery County DEP with M-NCPPC and others, are preparing an Air Quality Strategy that will contain additional actions which will help to reduce local air pollution problems.

### Noise Regulation

In Montgomery County, local government agencies have the authority to control the effects of two generalized sources of noise: stationary sources which affect nearby properties; and mobile (i.e., transportation-related) sources emanating from public linear rights-of-way. The Montgomery County Noise Ordinance regulates stationary noise sources from private property such as heating and air conditioning units, construction activity, and neighborhood noise disturbances. The Montgomery County Department of Environmental Protection, Office of Environmental Policy and Compliance administers the Noise Ordinance. The Noise Ordinance sets maximum permissible decibel limits based on land use and time of day. Violations of this ordinance are punishable by law.

Since 1983, the M-NCPPC (Montgomery County Park and Planning Department) *Staff Guidelines For The Consideration Of Transportation Noise Impacts In Land Use Planning And Development* have been used to develop staff recommendations to the Planning Board on reducing mobile source impacts on sensitive receptors. This document was developed to assure consistency in master plan and regulatory review recommendations on noise compatibility, and to promote greater understanding of noise compatible site design. Unlike the regulations in the County Noise Ordinance, the staff noise guidelines

are intended to be considered proactively as an integral part of the land use planning and regulatory review process, and are tailored to be consistent yet flexible to allow a balanced achievement of all significant land use and site design objectives.

The staff noise guidelines include reasonable noise level goals for the entire county, ranging from a maximum acceptable noise ceiling of 65 dBA, to a goal of 55 dBA to protect the rural environment in estate and agricultural areas. Along freeways and within the urban core [principally high density areas within and just outside the Capital Beltway (I-495)], a noise guideline of 65 dBA was determined to be achievable and appropriate given the high ambient noise levels, and traffic volumes. In the suburban "ring" around the urban core, a 60 dBA level was determined to be an achievable goal given lower ambient levels and greater opportunity for cost-effective noise mitigation. In the rural areas of the county where development densities and ambient noise levels are much lower, the 55 dBA level guideline is applied.

To achieve these goals, the guidelines identify several measures to reduce traffic noise problems for affected properties, which include:

- Noise compatible land use (typically done at master plan or rezoning)
- Noise compatible site design, distancing sensitive uses/receptors from the source
- Blocking the path from source to receiver
- Acoustical treatment of buildings

These measures are typically applied at one of two opportunities. The first is the master plan process. The master plan identifies where noise impacts may occur and examines potential options for noise compatible land uses, or alternatively, suggests zoning categories that allow sensitive land uses (residential) to be clustered, set back or otherwise buffered from high noise levels. The second opportunity is during the regulatory review process when noise mitigation techniques can be applied to individual properties.