Regulatory and Policy Framework for Environmental Planning in the Upper Rock Creek Watershed

Master planning attempts to balance appropriate land uses and zoning intensities with environmental protection goals adopted by federal, State and local government. Environmental assessments are conducted during the master planning process to assure that land use and density decisions are made with knowledge of sensitive environmental resources and potential impacts. While many environmental regulations and guidelines are applied at the time of subdivision or site plan, the master plan recommends appropriate zoning and development to allow the development process to proceed more smoothly. The process avoids conflicts between the natural environment and development where possible, or addresses potential impacts when other goals are judged more important.

The information in this chapter summarizes the environmental framework established by federal, State and local laws, regulations and policy by subject area (see Table 9 for a chronology of environmental policy and regulation). This framework is reflected in the 1993 General Plan Refinement for Montgomery County in the chapter on Environment. (Figure 19 shows the legislative guidance within the General Plan Refinement goals.) The information on existing environmental conditions in Chapter 1 and in the data and mapping conducted as part of the environmental study supports the master plan by providing the baseline information as it relates to the legislation and policies affecting the upper Rock Creek watershed.

Stream Water Quality Management

The need for protecting 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 main water supply resources (i.e., Potomac and Patuxent Rivers) and the Chesapeake Bay. 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 9). The quality of the Chesapeake Bay and its many tributaries has dramatically benefitted from environmental programs that reduce both point and some non-point sources of pollution. Clean-up of sewage plant discharges, removal of obstacles to fish passage, construction of stormwater management and stream enhancement projects have all contributed to improving water quality. 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 States of Maryland, Virginia, and Pennsylvania, and the District of Columbia, and the 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.

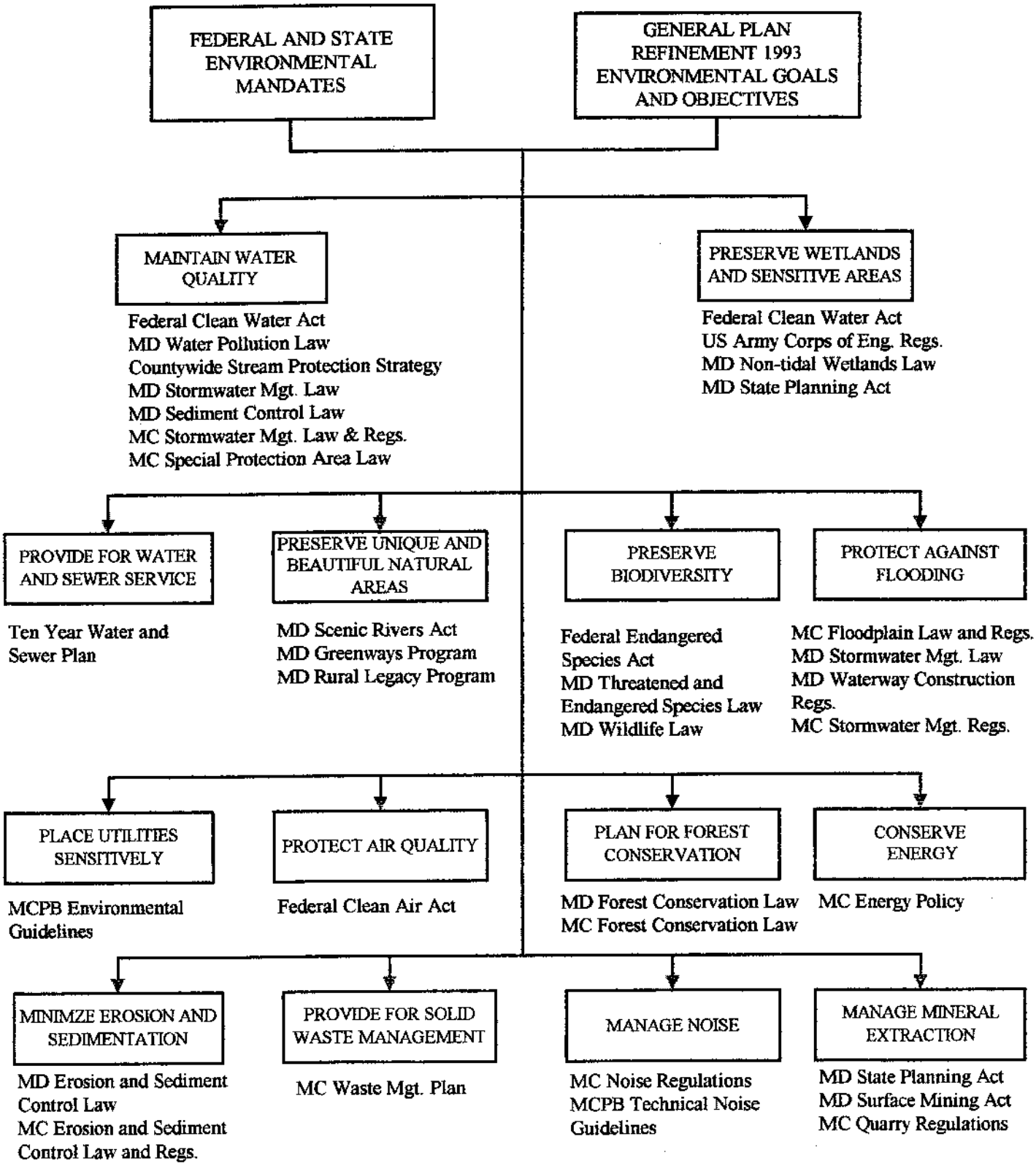
Rock Creek is located in the middle Potomac basin. The Middle Potomac Tributary Strategy Team includes representatives of State and local agencies, the farming community, business, environmental organizations, federal facilities and citizens. The team brings together citizens and local governments on a watershed basis, and provides a forum for regional cooperation and communication.

The team has established urban watershed, agricultural, and wastewater/point source workgroups to address the following issues relative to nutrient reduction:

- Nutrient trading
- Maryland's Smart Growth initiative

Environmental Policy Sources To Guide Master Planning

Figure 19



Chronology of Environmental Policy and Regulatory Actions

Table 9

• The Federal Water Pollution Control Act of 1948 regulates dumping and disposal into navigable waters.

• The Water Quality Act of 1965 created ambient water quality standards for interstate waters.

• The Maryland Sediment Control Act of 1970 requires sediment control at construction sites and has been used to require stormwater management.

• The 1972 Federal Clean Water Act and 1977 and 1981 amendments, provide guidelines for preservation of fishable and swimmable waters of the U.S.

• The Maryland Environmental Policy Act of 1973 declares that State policy give the highest public priority to the protection, preservation, and enhancement of the State's diverse environment.

• The Chesapeake Bay Agreement of 1983 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 Plan by the State, 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 disturbance activities in wetlands outside the tidal waters of the Chesapeake Bay.

• The State Planning Act of 1992, in which 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.

• 1992 — The Chesapeake Bay Agreement requires a 40 percent reduction from the 1985 level in controllable nutrient loads of nitrogen and phosphorus 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.

• 1992 — County Forest Conservation Law provides for tree preservation and planting in new developments; forest is protected with conservation easements.

• 1993 — General Plan Refinement contains fourteen environmental goals; three are 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 requires 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.

• 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 subwatersheds 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). This report is updated annually.

- 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
- 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. No recommendations specific to the Rock Creek watershed have been made.

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 parameter which is causing 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 coincide with the TMDL approach. Consequently, the Chesapeake Bay tributary strategies will provide a basis for the establishment of TMDLs in Maryland.

Although no loading limits have been set for the upper Rock Creek watershed, 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. As of the date of this report, the schedule for application of TMDLs to the middle Potomac basin, including the upper Rock Creek watershed, has not been finalized.

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 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 has issued the *Final 1998 Report on Unified Watershed Assessment, Watershed Prioritization and Plans for Restoration Action Strategies* report on December 31, 1998. (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 upper Rock Creek watershed 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 the proposed land uses would threaten the quality of preservation. 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 upper Rock Creek watershed have been designated a special protection area.

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, and poor) based on biological 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 Plan

The Montgomery County Department of Environmental Protection (DEP) has been developing a watershed restoration action plan for Rock Creek. This effort began in the mid-1990s with a stream survey of erosion and aquatic habitat conditions in the Rock Creek watershed. The survey was conducted using the Rapid Stream Assessment Techniques (RSAT) developed for DEP by the Metropolitan Washington Council of Governments (MWCOG). The RSAT report identified potential stormwater management sites that could benefit from structural retrofits (MWCOG, 1996) . The results of the assessment are summarized in Figure 13, and under Stream Water Quality, Historical Data, in Chapter 1 of this report.

The 1996 RSAT survey is now being followed by a feasibility study which will provide an analysis of potential stormwater retrofit project sites, and a preliminary design of approximately ten sites to address severe erosion and stream degradation problems. The study will also examine sedimentation and eutrophication at Lakes Needwood and Frank, and will evaluate the feasibility of implementing stream valley restoration and enhancement where no stormwater retrofits are proposed.

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 developments are required to submit plans complying with these regulations during the development review (subdivision) process.

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 100-year floodplain is prohibited. A 25-foot building restriction line setback from the 100-year floodplain is required for new structures. New roadway stream crossings that encroach on the 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.

Floodplain and Stormwater Management Responsibilities

Table 10

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

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

Since the early 1990s, County Department of Permitting Services (formerly part of DEP) was designated lead agency for administering the County floodplain regulations and coordinating the National Flood Insurance Program (see Table 10). DPS is the County agency designated to receive and act on proposals for encroachments on the 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 100-year floodplain by County and State regulations administered by the County Department of Permitting Services.

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 adopted by the Montgomery County Council and reviewed by the Maryland Department of the Environment. The Plan is implemented by the County Executive. The current Plan adopted 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 an objective of no growth in its waste stream and is pursuing pilot programs to determine ways to reduce solid waste generation. The County has an aggressive waste recycling plan that is striving to reach a mandated recycling goal of 50 percent of its municipal waste stream by the year 2000. The County's Resource Recovery Facility located in Dickerson, generates electricity by burning waste that cannot be recycled. The most favorable option involves landfilling of solid waste at a location out of State. The County has reserved Site 2 in Dickerson as a back-up site should out of State options fail.

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:

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 (1992) 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.

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 in inappropriate 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 upper Rock Creek watershed are included in these Smart Growth areas (see Figure 20). The master planning process will be coordinated with Smart Growth initiatives to ensure that land use and zoning are compatible with State policies.

Sensitive Areas Protection and Biodiversity

The Planning Act of 1992 establishes criteria that must be included in local government comprehensive plans such as Montgomery County's General Plan. Among the criteria to be incorporated are the seven visions for the State and the preparation of a "sensitive areas" element.

Implementation of the sensitive areas element is intended to protect streams and their buffers, 100-year floodplain, steep slopes, and the habitats of threatened or endangered species, as well as any particular resource the locality deems appropriate.

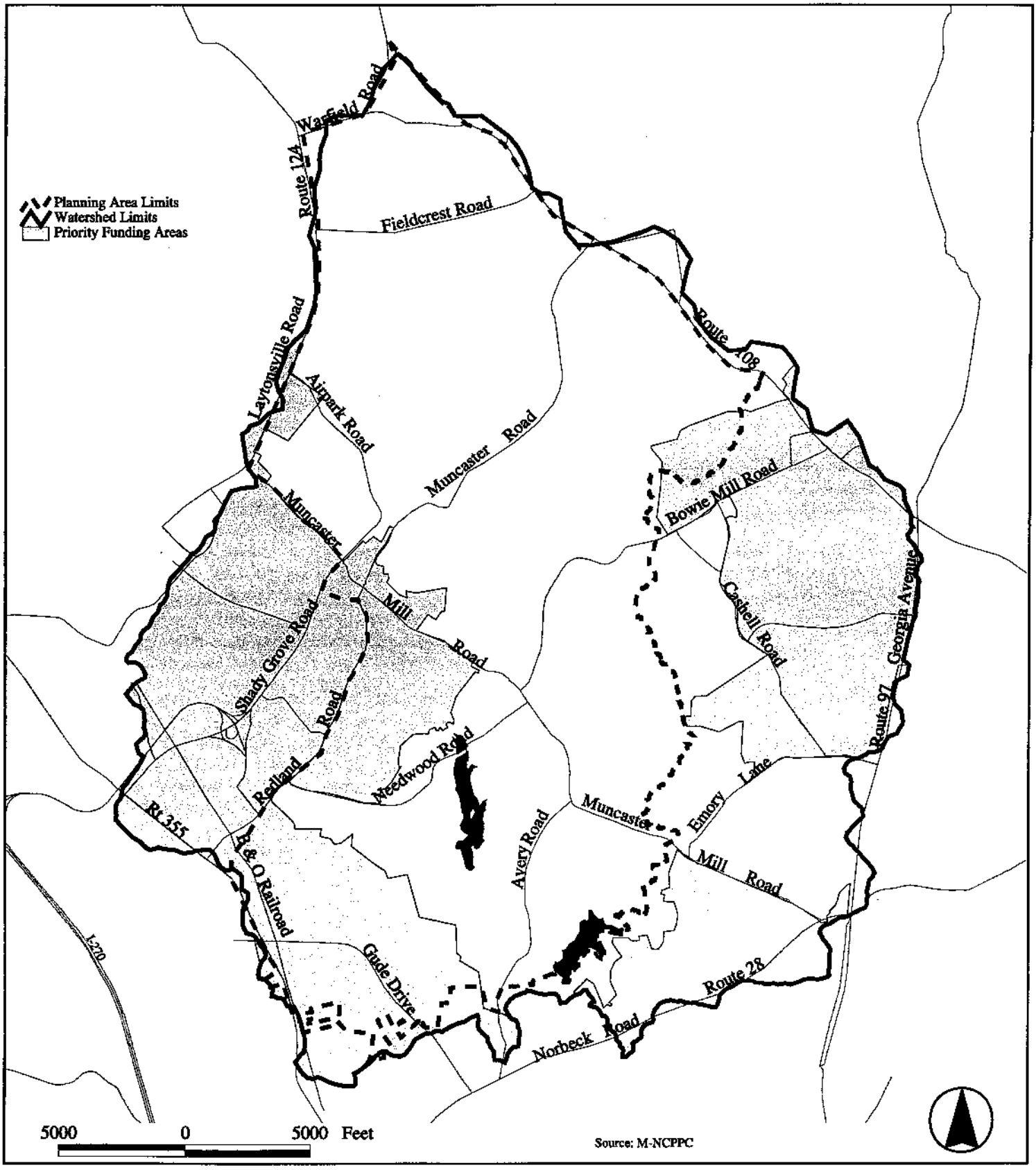
Of the environmental goals, objectives, and strategies developed for the General Plan in response to the seven visions, objectives 2, 4, and 6 particularly relate to the protection of environmentally sensitive areas:

> **Objective 2**: Preserve natural areas and features that are ecologically unusual, environmentally sensitive, or possess outstanding natural beauty.
>
> **Objective 4**: Conserve County waterways, wetlands, and sensitive parts of stream valleys to minimize flooding, pollution, sedimentation, and damage to the ecology and to preserve natural beauty and open space.
>
> **Objective 6**: Preserve and enhance a diversity of plant and animal species in self-sustaining concentrations.

Local area master plans such as the Upper Rock Creek and Olney master plans "are adopted as amendments to the General Plan" and "are expected to conform to the General

Smart Growth - Priority Funding Areas

Figure 20



Plan" (*General Plan Refinement, Goals and Objectives for Montgomery County,* 1993). To reflect the priorities established in the planning act and the General Plan, master plans consider the presence and amount of sensitive areas in their land use proposals. One approach to protecting sensitive areas is direct acquisition and conservation as parkland.

Another approach to managing sensitive areas is to incorporate their protection within proposed development plans for residential, commercial, and industrial development. During the development review process the Environmental Guidelines for development are applied to each development proposal. These guidelines recommend specific protection measures for sensitive areas such as establishing undisturbed stream buffers, protecting wetlands and establishing wetland buffers, maintaining areas of steep slopes and highly erodible soils, conserving trees within development sites and implementing County stormwater management and sediment/erosion control standards.

In addition to protection provided by the guidelines, wetlands in Montgomery County are regulated by federal and State statutes. Federal regulation of wetlands was established through section 404 of the Clean Water Act and subsequent court cases defining wetlands as "waters of the U.S." In Maryland, federal and State environmental agencies share responsibility for issuing or denying permits to dredge, fill or otherwise disturb wetlands. The proposed disturbance also must meet the more stringent requirements of the Maryland Non-tidal Wetlands Act. This act established a minimum 25 foot buffer between the edge of the area disturbed by construction and the wetland boundary. The Maryland Department of the Environment also administers State wetlands and water quality certification permits.

Federal and State environmental agencies also assist Montgomery County with wetland functional assessment studies, review of environmental and land use information contained within master plans, and regulatory review of proposed development. A *Wetland Functional Assessment Study* was recently completed by M-NCPPC in cooperation with the State government to prepare a field-based assessment of the Upper Rock Creek wetlands. The study evaluated wetlands for five functions: groundwater discharge, flood attenuation, sediment/nutrient retention, aquatic habitat, and wildlife habitat.

Preservation of habitats of endangered species is also required by State and federal law. For several years the M-NCPPC has contracted with the Maryland Department of Natural Resources, Wildlife and Heritage Division, to conduct surveys for rare, threatened, and endangered species and high-quality native habitats on selected parklands in Montgomery County. The result of these surveys has been the identification of several sites which contain rare, threatened, or endangered species. Surveys by M-NCPPC have identified additional areas containing rare, threatened or endangered species on park property.

Determinations regarding which species are rare, threatened, or endangered may be made either by the U.S. Fish and Wildlife Service (federal RTE species) or the Maryland Department of Natural Resources Heritage and Biodiversity Conservation Program (State RTE species). The State list includes "watchlist" species which, although not officially listed as endangered or threatened, have been identified as species in need of conservation due to declining or restricted populations.

Concern over the decline and disappearance of rare, threatened, and endangered species of plants and animals is part of a broader concern for the preservation of biological diversity.

Biological diversity encompasses the variety of living species, variations within species, and the variable composition of biological communities. Biological diversity can be examined at different levels of organization, including genetic, species, ecosystem, and landscape scales (Scott *et al.*, 1993).

Good biological diversity contributes to ecosystem stability, provides the genetic raw material to adapt to changing environmental conditions, preserves natural resources for potentially valuable future uses, and enhances the quality of life for many County residents. In addition, planning for the preservation of biological diversity now may help preclude the need to undertake expensive and controversial endangered species restoration plans in the future.

In recent years, preservation of biological diversity has become a goal of government and conservation organizations. Approaches to preservation of biodiversity include the identification and acquisition of unique or representative natural communities by public agencies or private foundations; identification and protection of unique or representative natural communities on existing public lands, and land use planning which recognizes the value of biological diversity.

Forest Conservation

Forest conservation helps retain the natural beauty of the community and protects dependent ecosystems. Trees cleanse the air and water runoff and provide shade to ameliorate summer temperatures and provide cover and food for a variety of wildlife. Since 1992, Montgomery County has been requiring forest conservation as part of applications for land disturbance and development. The County forest conservation law is required by and modeled after the Maryland Forest Conservation Act of 1991. Forest conservation recognizes the benefits of forest and trees in

our increasingly urbanized environment and requires preservation and reforestation as part of the development process.

A general framework for the planting of street trees, establishment of new forests, and protection of existing forests during the area master planning process comes from the General Plan Refinement Goals and Objectives, approved and adopted in 1993. Specifically, Strategy F under Objective 4 is to "plant and retain trees and other vegetation near streams" and Strategy E under Objective 6 is to "minimize forest fragmentation to protect habitat continuity." Objective 8, which is to "increase and conserve the County's forests and trees," applies to forest and tree conservation. Strategies under Objective 8 are:

- Identify and designate forest preservation and tree planting areas.
- Ensure forest land conservation, tree planting, and related maintenance in all new development.
- Provide for increased tree cover and maintenance in urban and suburban areas and along transportation rights-of-way.
- Encourage private and public landowners to protect existing trees and to plant additional environmentally appropriate and native trees on their properties.

Preservation of urban forest and trees often is intended to meet the needs of people as much as the environment. Frequently woods in developed areas are isolated, invaded by exotic vegetation, and in poor health. Some individual trees are worthy of preservation, but they can be difficult to save given site and layout constraints. The forest conservation law encourages retention of existing trees wherever possible, as well as appropriate maintenance to keep them viable. Street trees, which enhance neighborhoods and buffer road noise, are an important part of the urban landscape.

Wetland Laws and Regulations

The primary goal of current wetland regulations and policies is to achieve "no net loss of wetland acreage and function, and [to] strive for a net resource gain"[4]. Regulatory programs flow from Section 404 of the federal Clean Water Act of 1972. The federal legislation authorizes the U.S. Army Corps of Engineers to issue permits for the discharge of dredged or fill materials into waters of the United States, including wetlands.

The State of Maryland modeled its Nontidal Wetlands Protection Act (COMAR Title 26, Subtitle 23) after the federal legislation. Differences include State provisions for regulation of activities which alter wetland hydrology or vegetation and activities which impact the 100-year floodplain, 25-foot wetlands buffer, and 100-foot expanded buffer.

Much of the impetus for protection of wetlands in Maryland comes from regional efforts to protect and restore the Chesapeake Bay, especially including the 1987 Chesapeake Bay Agreement and subsequent directives from the Chesapeake Bay Executive Council(CBEC). In 1997 the CBEC issued directive 97-2, which established regional wetland protection and restoration goals. Maryland's Governor has committed the State to seek voluntary restoration of 60,000 acres of wetlands in excess of regulatory requirements as part of the regional wetland restoration effort.

At the local level, Article 28 of the Annotated Code of Maryland states that "the [Maryland-National Capital Park and Planning] Commission shall initiate and adopt a general plan for the development of that portion of the Maryland-Washington Regional District located in each County and, from time to time, shall initiate and adopt amendments thereto... the general plan, or amendments thereto, [shall be] based on studies and consideration of such elements, factors, and conditions as the following: (viii) Physical resources and conditions including, but not limited to, topography, soils, geology and mineral deposits, hydrology and waterways, **wetlands** and shorelines, water and air quality, climate, noise, open spaces, scenic areas, vegetation, forests, agricultural lands, fisheries, wildlife and wildlife habitats, and other areas of environmental or ecological importance or sensitivity." Local master plans are to be based on "the same factors, elements, and conditions as contained in the general plan and amendments thereto."

Based on this legislation, and with guidance provided by the Maryland Economic Growth, Resource Protection, and Planning Act of 1992 (requiring a sensitive areas element in each local jurisdiction's general plan), Montgomery County has prepared a General Plan for the Development of Montgomery County, Maryland. Included in the Environmental section of the General Plan is the following policy guidance:

General Plan Objective 4

"Conserve County waterways, wetlands, and sensitive parts of stream valleys to minimize flooding, pollution, sedimentation, and damage to the ecology and to preserve natural beauty and open space."

[4]Comprehensive Nontidal Wetland Watershed Management Plan: A Guide for Local Governments. Maryland Department of the Environment, March 1998.

Strategies:

A. Identify and protect wetlands and other sensitive parts of watersheds.

B. Continue parkland acquisition in key stream valleys.

C. Limit the potential damage to life and property from flooding.

D. Prohibit development too close to streams, in the 100- year ultimate floodplain, and in flooding danger reach areas of dams, unless no feasible alternative is available.

E. Maintain the natural character of drainage areas in the immediate vicinity of streams, rivers, and lakes.

F. Plant and retain trees and other vegetation near streams.

G. Minimize impacts from construction and operation of public and private facilities located in stream valleys, buffers, and floodplains; first priority should be given to preserving natural areas (avoidance), second priority to mitigation, and third priority to replacement with functional equivalents.

H. Develop programs to rehabilitate damaged streams and then to maintain them.

I. Mandate "no net loss" of wetlands.

This objective and these strategies are to be considered during master planning and implemented through application of the M-NCPPC's *Environmental Guidelines* during the development review process.

The Draft Montgomery County Strategic Plan for Water Quality Protection, Volume I (Goals, Objectives, and Implementation Tasks) states that the M-NCPPC, in cooperation with MCDEP, "will work to improve the existing State inventory of wetlands in Montgomery County. The M-NCPPC, in cooperation with DNR[5] will develop functional assessment studies for wetlands in various planning areas and watersheds as resources permit. The M-NCPPC has integrated wetland protection provisions into its work program for master plan preparation, regulatory review, and environmental studies. This information will be included in the environmental analysis of new development projects."

One objective of the draft Montgomery County Strategic Plan for Water Quality Protection is "To protect and enhance existing wetlands, restore degraded wetlands, and mitigate unavoidable wetlands losses through successful mitigation projects." The implementation task associated with this objective states that "The County will work closely with the State permit agencies and developers to facilitate local protection, management and restoration of wetlands resources. This will include a cooperative approach to identify and protect the County's wetlands through master planning efforts, permitting and subdivision review, and through the development of special area management plans. Advance planning for wetland protection can help regulatory agencies and developers by identifying priority wetlands for protection and avoidance, discussing opportunities for acceptable mitigation and restoration when necessary, and minimizing costs of extended development reviews or requirements for site redesign. The M-NCPPC will update and amend the *Environmental Guidelines* ... to include a provision for expanded buffers around wetlands in SPAs (Special Protection Areas).

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 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 (NOx) 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 NOx 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 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

[5]These responsibilities have since been transferred to MDE.

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 NOx 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 NOx and particulate matter from these sources.

The Washington region has made considerable progress in reducing the emissions of VOCs and NOx through previous actions of federal, State and local governments. The biggest impacts are due to the high-tech motor vehicle inspection & 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.
- 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.

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 *Noise Ordinance* is administered by the Montgomery County Department of Environmental Protection, Office of Environmental Policy and Compliance. 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.

Water Supply and Sewerage

The *Montgomery County Comprehensive Water Supply and Sewerage Systems Plan* governs the provision of water and sewer service throughout the County. The goal of the plan is to systematically extend 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 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/or 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 M-NCPPC and WSSC.

Water Service

The 1985 Upper Rock Creek master plan was the first plan to recognize the "water to large lot policy" of the Water and Sewer Plan. This policy was designed to allow consideration of community water service to large lot zoning, RE-1, RE-2 and RC on a case by case basis. The 1985 Plan recommended that properties zoned RE-1 and RE-2 (as well as those in denser zoning categories) could be considered for service under this policy. As such, most of the properties in the basin have taken advantage of community water service. The ability of the WSSC to continue to serve this area for the foreseeable future is deemed adequate.

Sewer Service

Sewer guidance in the 1985 Upper Rock Creek Master Plan recommended that sewer service be extended to most properties south of Muncaster Mill Road and restricted from properties north of Muncaster Mill Rd within the planning area. The plan specifically identified a few select properties north of Muncaster Mill Road that were to receive sewer service in order to achieve certain land use goals of the plan. However, to maintain the green wedge concept of the General Plan, only properties that were able to gravity feed to existing sewer lines in Muncaster Mill Road were allowed to connect. Other properties were to rely on individual, on-site (septic) systems. In 1998 the County Council approved a sewer category change request for the Redlands subdivision. This property straddles both sides of Airpark Road immediately north of the M-NCPPC Pope Farm Nursery and is an area otherwise served by individual septic systems. Sewer service for the Redland subdivision will require a pump station and force main which has been included in the FY2000 WSSC Capital Improvements Program (CIP).

The 1980 Olney Master Plan, which includes the eastern portion of the upper Rock Creek watershed, identified two properties, the Barnsley Tract and the Keys Property (in the western part of the watershed) as suitable for transferable development right (TDR) receiving areas. To accommodate the density allowed for these properties and to avoid constructing sewer mains in the upper stream valley, a pumping station was constructed to pump flows from these properties into existing lines located nearby.