ENVIRONMENTAL RESOURCES

INTRODUCTION

Environmental concerns within Aspen Hill include loss of mature woodlands, degradation of stream systems and aquatic habitat, erosion and flooding problems, air pollution and roadway noise.

This Plan does not contain quantifiable standards for environmental protection. Although such goals may be desirable, Montgomery County has not yet achieved a widely held consensus on what quantifiable standards have positive environmental impacts and are within the capacity of the development industry to adhere to economically. This is an ongoing challenge which the County must continue to work on for incorporation into the development process.

This Master Plan recommends options to address existing problems as well as guidelines that may prevent new problems from future development or redevelopment. This Plan is consistent with the Maryland Planning Act of 1992 and conforms to the seven visions of the Act. This chapter deals particularly with the visions for stewardship of the Chesapeake Bay (Vision 4), conservation of resources (Vision 5) and the protection of sensitive areas (Vision 2). This chapter includes a section dealing with sensitive areas protection. The stewardship vision is met through all the recommendations of this section, while the conservation and reduction of resources consumption vision is met through the recommendations on solid waste.

The Plan protects environmentally sensitive areas by a combination of zoning and site design recommendations. The Plan recognizes and supports retention of much of the public and private open space resources of Aspen Hill, ranging from extensive parkland to large land users, such as private communities and country clubs and golf courses. Individual parcels recommended for development should include buffer areas and avoid environmentally sensitive areas as prescribed in the County's environmental guidelines.

ENVIRONMENTAL RESOURCE OBJECTIVES

- Protect the natural resources and environmental qualities that are important to the quality of life for Aspen Hill.
- Facilitate conservation of resources, including a reduction of resource consumption.
- Protect environmentally sensitive areas consistent with the Maryland Planning Act of 1992.

ENVIRONMENTAL RESOURCE RECOMMENDATIONS

Water Resources

- Implement programs to achieve State water quality standards for the Rock Creek and Northwest Branch basins.
- Reduce existing and avoid potential future property damage from flooding, erosion and sedimentation through appropriate stormwater management.
- Support the programs for comprehensive water quality monitoring and for constructing stormwater management retrofits.
- Promote voluntary monitoring programs and individual actions to improve water quality.

Sensitive Areas Protection

- Respect appropriate stream buffer setbacks from watercourses, 100-year floodplains, wetlands and steep slopes as specified in M-NCPPC environmental guidelines and the Maryland Planning Act.

- Stabilize existing areas of accelerated streambank erosion (using biological engineering techniques, if applicable).

- Encourage flood-proofing and flood insurance for existing buildings in or near the 100-year floodplain.

- Enhance the fisheries and wildlife habitat of the local park system.

- Maintain and add to existing forest cover in accordance with the County's Forest Conservation Law.

- Investigate the inclusion of the entire planning area within the Suburban Taxing District to facilitate street tree maintenance and planting.

Water and Sewer Systems

- Provide and maintain water and sewer service consistent with the Comprehensive Water and Sewer Plan.

Air Quality

- Reduce dependency on automobile travel by providing increased transit opportunities and by locating sidewalks and trails to facilitate walking and biking to employment and shopping areas from the residential areas.

- Promote carpooling/vanpooling.

- Evaluate development and transportation facilities plans with consideration for their impact on State and County air quality implementation plans.

- Locate public spaces and ambient air intakes away from heavily traveled intersections.

- Encourage tree plantings and vegetative cover to shade parking areas and rooftops from summer heat and to lower ambient air temperatures.

Solid Waste Management

- Promote residential participation in waste reduction and recycling programs.

- Ensure all office and retail use, including restaurants, meet County-mandated waste volume reduction and recycling requirements.

Noise Impacts

- Consider noise-compatible site designs as the first priority for noise abatement for new residential development of any land adjacent to a major roadway.

WATER RESOURCES

The Aspen Hill Planning Area lies within the Rock Creek and Northwest Branch drainage basins. Northwest Branch and its tributaries are located on the eastern side of the planning area and are designated State water class Use IV for recreational (stocked for catch-and return) trout populations. These waters have standards for temperature and chlorine that are more stringent than Use I and less stringent than Use III standards (protected for the propagation of natural trout populations). Rock Creek and its tributaries are located on the western side. The area of Rock Creek located between MD 28 and MD 115 (Muncaster Mill Road) is also designated Use IV. South of MD 28, Rock Creek waters are designated Use I, the least stringent standard, to protect the basic uses of recreation, water supply, fish and wildlife.

A number of studies, reports and maps have been prepared for watersheds wholly or partially in the Aspen Hill Planning Area. While the floodplain maps are relatively current, specific recommendations for stormwater management, stream buffer widths, erosion control, sediment control and stream bank protection have been superseded (generally by more stringent standards) or incorporated in the existing development process. Data included in these documents for the Aspen Hill Planning Area should be considered in guiding future development. The list of documents and dates published may be found in Appendix D. Recommendations in these documents should be implemented where feasible to achieve the state water quality standards for the Rock Creek and Northwest Branch basins. M-NCPPC should prepare an Anacostia Watershed Functional Master Plan (which would include the Northwest Branch streams in Aspen Hill) when staff resources and funding are available to comprehensively address water resources issues affected by development and redevelopment.

Water Quality Monitoring

Water quality of streams is measured in terms of several criteria. Those commonly used include water temperature, dissolved oxygen, pH, biochemical oxygen demand (BOD), nutrient levels (nitrogen and phosphorus), turbidity (water clarity), fecal coliform levels and total dissolved solids. The water quality of streams is not currently monitored within the planning area. Montgomery County Department of Environmental Protection (MCDEP) had a stream water quality monitoring program in place for much of the 1970's; however, this program was discontinued in 1980. Water quality

monitoring can be a valuable tool to help ascertain whether State water quality standards are being met. Monitoring can also be used to target specific portions of a watershed or specific pollutants when devising a water quality management strategy. All the stream systems within the planning area display some evidence of degraded water quality. Some of the more common indicators include high levels of algae caused by elevated levels of nutrients in the water and high levels of turbidity created by sediment loads from construction activities and streambank erosion.

If funding becomes available, a water quality monitoring program should be established for streams, stormwater management ponds and Lake Frank. This monitoring can be carried out by both the public and private sectors. MCDEP should reinstate the water quality monitoring program that was discontinued in 1980 if appropriate funding is provided.

Stormwater Management and Sediment Control

Since 1984, with the enactment of State legislation designed to improve water quality in the Chesapeake Bay, State and local stormwater management regulations have included a requirement for water quality control best management practices. Appendix D provides a history of stormwater management practice in the planning area. On-site water quantity and quality controls are generally required for new development or redevelopment. Some small developments qualify for a waiver under the County's current stormwater management regulations, which require payment of a fee or off-site quality or quantity improvements in lieu of on-site stormwater management.

New construction within the planning area should provide on-site sediment controls for any land disturbing activity exceeding 5,000 square feet, as required by County regulation. Unless a development drains to an existing regional or joint use stormwater management facility, the issuance of stormwater management waivers should be limited. To control streambank erosion, all stormwater quantity control facilities should provide two-year storm runoff control, as required by State and local regulation.

For developments in the Northwest Branch watershed and the Rock Creek watershed between MD 28 and MD 115, which are Use IV waters, detention should be considered before retention to minimize thermal impacts in these Class IV watersheds. For the rest of the Rock Creek watershed in Aspen Hill, stormwater management concepts should be considered according to the hierarchy outlined in State and local regulations. Extended detention should be used as a means of enhancing pollutant removal and further controlling streambank erosion, where appropriate and feasible. In addition, a series of best management practices should be planned rather than the traditional single stormwater management control facility to enhance pollutant removal capability.

As recommended in the 1980 Functional Master Plan for Rock Creek, certain activities would improve existing water quality in Lake Frank. Periodic dredging should be done as needed to remove sediment, thereby reducing dissolved oxygen demand, lengthening the life of the lake and reclaiming valuable top soils. The Department of Parks and MCDOT should minimize use of deicing salts on parking lots and roads that drain to the lake and preferably substitute other deicing techniques.

Retrofit of Existing Developed Areas

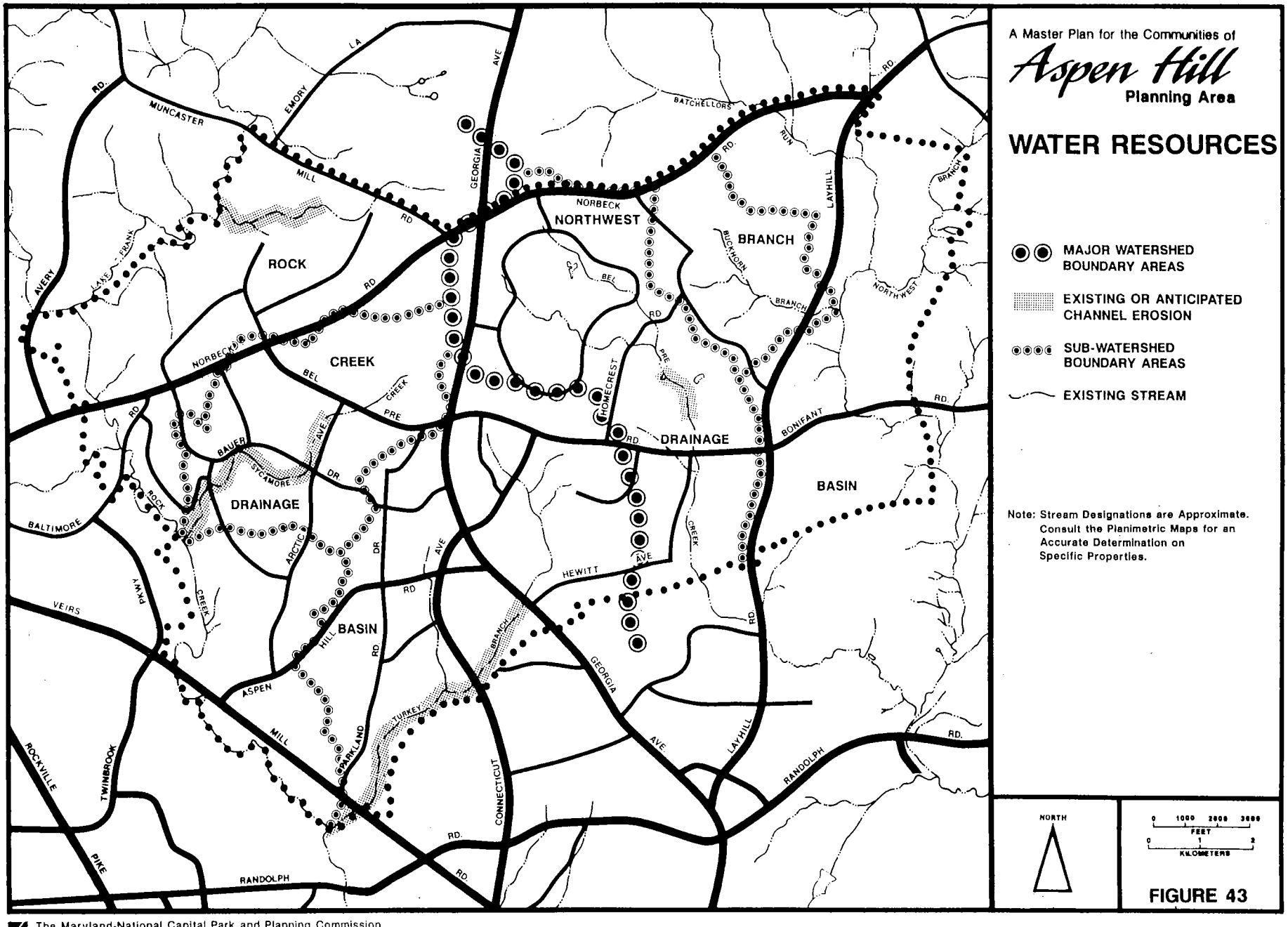
Because the Aspen Hill Planning Area has been extensively developed, all the stream systems draining the area have been affected to varying degrees by human activities. The negative effects include streambank erosion, reduced base flows, stream valley disturbance and tree clearing for installation of water and sewer lines and storm drains, sedimentation from construction activities, unsightly litter, poor water quality and reduced diversity in aquatic species in the favor of pollutant-tolerant flora and fauna. Figure 43 illustrates the location of some of the streams and existing and anticipated erosion. Previous M-NCPPC studies of Rock Creek have found that there has been a decline in total numbers as well as species diversity for all types of flora and fauna. The decline is likely due to the impacts of urbanization, which results in the loss of habitat and localized water pollution problems.

The Metropolitan Washington Council of Governments (COG) compiled an inventory of potential retrofit sites for the Anacostia River basin in 1988, which includes Northwest Branch. MCDEP, the Department of Parks and private developers should undertake to implement these projects for those sites located within the Aspen Hill portion of the Northwest Branch watershed. COG is completing an inventory at this time for Rock Creek. Stormwater management retrofit opportunities will be pursued in Northwest Branch and Rock Creek, as well as necessary streambank stabilization projects.

Individual and Community Action

Individuals can do a great deal to improve the water quality of their local streams. Judicious use of fertilizers and pesticides, reporting hazardous spills and illegal dumping activities into storm drain systems and planting trees along streambanks can all significantly improve existing water quality.

Community initiatives are extremely important to the prevention of sudden flooding and erosion problems. Trash, fallen leaves and tree limbs frequently block storm drain inlets in the streets and can dam streams of any size. These stormwater conveyance paths need to be kept open during rainstorms to prevent overflow flooding on streets and private property. Residents can help prevent problems by collecting and removing leaves and other large amounts of yard waste, by not dumping trash, household items or Christmas trees in or near streams and by removing any blockages from storm drain inlets or streams prior to large storm events.



The Maryland-National Capital Park and Planning Commission

SENSITIVE AREAS PROTECTION

The Maryland Planning Act of 1992 states that sensitive areas are to be protected (Vision 2). Environmentally sensitive areas that are defined in the Act include streams and their buffers, 100-year floodplains, steep slopes and habitats of threatened and endangered species. The Act also allows the inclusion of other areas in need of special protection to be determined in the local plan. In Aspen Hill, these include mature woodlands, wetlands and areas with severe soil limitations, such as erodibility and excessive wetness. Sensitive areas within County parkland and protected stream buffers are shown in Figure 44. There are currently no habitats of threatened or endangered species or species in need of conservation in the planning area; however, existing habitat for more common wildlife species will be protected through protection of environmentally sensitive areas described in this section. The goals and objectives required by the Act are stated at the beginning of this chapter, with more detail on the objectives and policies included in this section. The principles and standards are explained below.

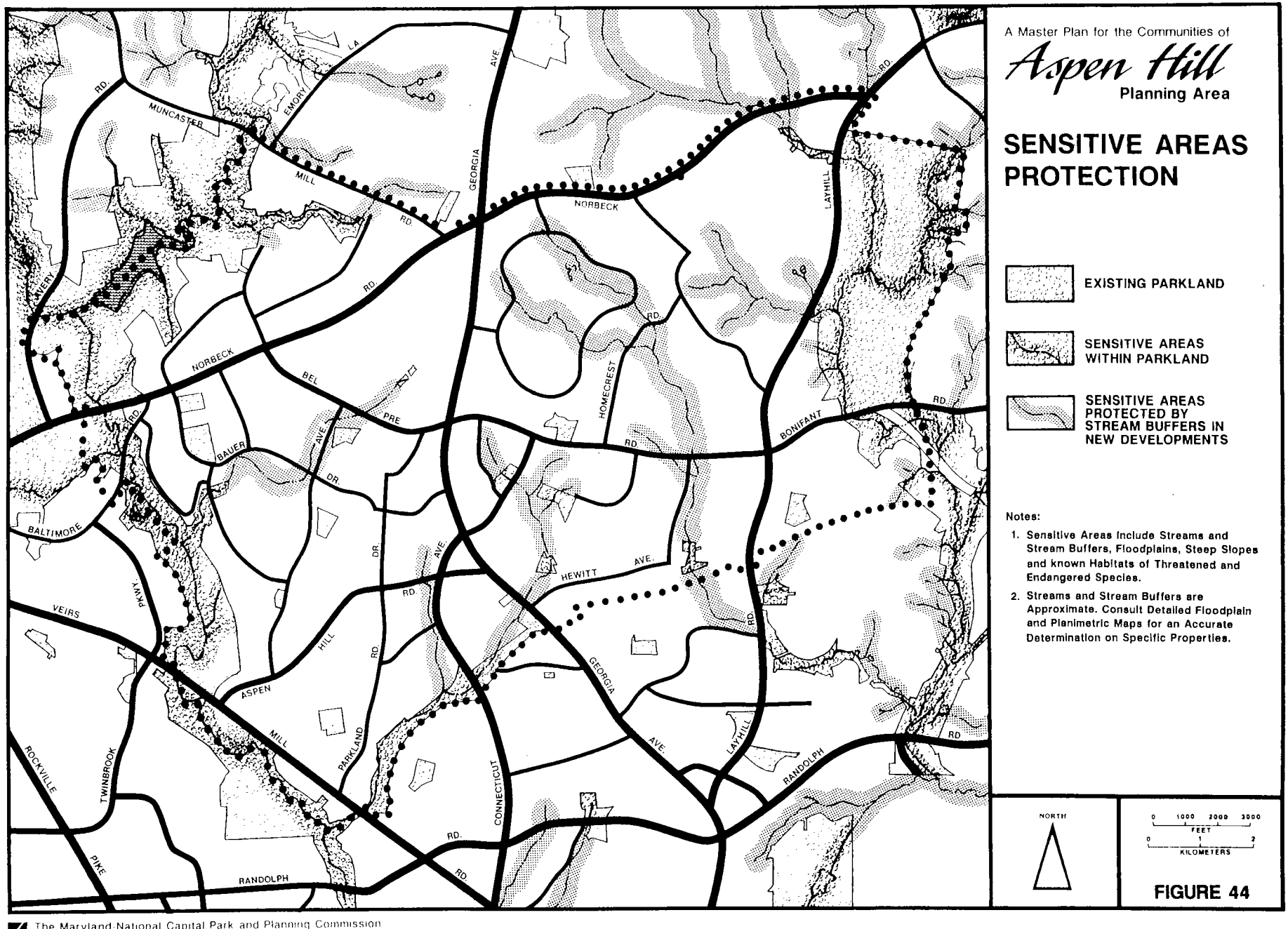
Principles and Standards

The policy recommendations of this Plan can be implemented through a combination of programs and regulations which are geared toward the principles of (1) achieving State water quality standards for the Rock Creek and Northwest Branch basins, (2) reducing existing and potential property damage from flooding, erosion and sedimentation, (3) stabilizing existing areas of accelerated streambank erosion and (4) enhancing fisheries and the wildlife habitat of open space.

In January 1993, the Planning Board approved use of the updated *Environmental Guidelines for Environmental Management of Development in Montgomery County.* These guidelines establish standards for calculating setback distances of proposed structures from streams, associated steep slopes, floodplains, wetlands and other environmentally valuable resources. They are applied to all zoning, special exception, subdivision requests and development plans submitted. There will be continued implementation of these guidelines in the development process.

Streams and Their Buffers (including Floodplains)

Within the planning area, the main stems of Rock Creek and Northwest Branch, as well as the lower reaches of Turkey Branch, have been acquired as parkland. The preservation of natural stream valleys in parkland can help reduce some of the impacts associated with urbanization. The open space of parkland and setbacks in residential areas can provide a buffer to filter sediment and pollutants carried to the stream in stormwater runoff and reduce the likelihood of flood damage to adjacent structures. Forest cover in the riparian zone also acts to regulate stream water temperatures, contribute leaf litter to the aquatic food chain and stabilize streambanks. The parkland also acts as a wildlife corridor and promotes bio-diversity.



The Maryland-National Capital Park and Planning Commission

In Aspen Hill, many sensitive areas are within parkland and stream valley buffer areas. Provision for protection should continue to be provided on any new developments. Environmentally sensitive areas that exist outside parkland should be left undisturbed during development consistent with the County's environmental guidelines and protected by easements. Verification of the locations of these areas is assured by the submission requirements for subdivision review and development plans in the environmental guidelines.

Many of the stream segments in the Aspen Hill area have moderately to severely eroded streambanks due to the combination of erodible alluvial soils and increased runoff quantities caused by impervious urban areas. Appendix D contains a list of the streams in the planning area and a summary of their condition. MCDEP and the Department of Parks oversee various streambank stabilization projects; the Montgomery County Department of Transportation (MCDOT) provides maintenance for storm drain outfalls. These agencies should undertake a comprehensive study to identify and prioritize those areas that require stabilization measures, developing enhancement projects (using biological engineering techniques, if possible) in conjunction with the stormwater retrofit efforts described above.

While floodplains are protected from encroachment in the environmental guidelines, and the land use recommendations take into account the need to limit densities to reduce potential future flooding, some existing development has the potential for flood damage. Flood-proofing information and flood insurance are available to all properties in the floodplain. MCDEP should encourage all property owners with structures in the 100-year floodplain to flood-proof buildings and to purchase flood insurance to guard against flood losses. In addition, MCDOT should evaluate flooding complaints along major roads and analyze the feasibility of making bridge and culvert improvements to reduce flood impacts.

Soils Limitations and Steep Slopes

The Aspen Hill Planning Area lies in the physiographic region known as the Piedmont Province. The Piedmont is characterized by gently rolling and hilly topography. Soils in the stream valleys are generally thin and subject to seasonal flooding. The vast majority of hydric (wetland) soils occur in the near stream areas. Stream valley soils have severe structural engineering limitations due to a number of factors, which include severe wetness, seasonal flooding, wetlands and high erodibility. Development in these areas is essentially restricted by federal, State and County regulations designed to protect these fragile riparian ecosystems.

Generally, the upland soils in the area (soils outside stream valleys) are suited for development if located on flat topography. The greatest hindrance to development in the upland areas is the slope of the land and the increase in soil erodibility associated with these slopes. Extraordinary sediment and erosion control measures should be utilized when construction occurs on slopes of 15 percent and greater. Disturbance of slopes 25 percent and greater should be strongly discouraged.

Wetlands

Wetland areas, and a minimum 25-foot buffer around them, should be protected as part of this Plan. Wetlands provide essential habitat for many plant and animal communities. They also aid in flood control and in reducing water pollution. It is the goal of the State's program to attain no net overall loss in non-tidal wetlands acreage and function and to strive for a net resource gain in wetlands acreage over present conditions. This should hold true for the Aspen Hill area as well. Appendix D discusses the location of wetlands in Aspen Hill.

Wetlands disturbance should be avoided wherever possible. Current environmental guidelines provide for protection of wetlands and a 25-100 foot buffer as part of development plan review. However, a permit can be issued under the provisions of Sections 404 and 401 of the federal Clean Water Act. A Section 404 permit to alter or fill a wetland is issued by the State Department of Natural Resources and by the U.S. Army Corps of Engineers. Section 401 water quality certification is issued by the Maryland Department of the Environment to ensure that projects will not cause violations of the State's water quality standards. If wetland disturbance is permitted by State and federal agencies, provisions for replacement of wetland acreage should be incorporated into approval conditions for all development proposals.

Woodland and Tree Protection and Reforestation

Recently adopted County legislation requires that forest conservation be a part of future development projects in Aspen Hill. Forest conservation measures must include retaining specimen trees, avoiding tree clearing, minimizing the amount of trees lost and replacing trees that are unavoidably cleared. A major goal of the forest conservation program is to ensure that tree save and tree planting (reforestation) occur on the developing properties. However, when a required amount of tree save and/or reforestation cannot be carried out on-site, there are provisions for conducting off-site planting and, as a last resort, paying a fee to a County tree fund for reforestation projects. Priority for off-site planting by developers and County reforestation projects must be given to available open spaces within the watershed where the disturbance takes place.

Existing public property that might be used for reforestation and acquisition with County tree funds of other open spaces should be identified through the development review process. Reforestation efforts can be directed in the planning area along residential streets and homeowners' association open space (such as stream valleys) in existing subdivisions.

Every effort should be made to identify specimen trees before development and at the early stages of planning for public facilities, such as roads and schools, so they may be preserved, if at all reasonable to do so.

Because the planning area is highly developed, large areas of forested land are limited mainly to stream valleys and a few remaining areas that have not been developed. Trees within stream valleys are either protected within parkland or stream valley buffers. However, protection within buffers after building is complete is impossible to ensure. Therefore, new development projects should be required to place wooded stream buffer areas in a conservation easement.

Linear corridors of woodland exist within the Rock Creek and Northwest Branch stream valley parks along the planning area boundaries. Disturbance of these corridors should be avoided wherever possible. As new development occurs, consideration should be given to areas of significant trees that can be added to these parks or reforestation projects that can be located there, if appropriate.

Buffers of mature trees should be used as part of new residential development to aid in creating visual separation and perception of noise mitigation from major roads. As new road projects are built, plans should include adequate street tree planting. Consideration should be given to creating street tree planting plans for existing roadways such as Georgia Avenue, Veirs Mill Road, Layhill Road and smaller residential streets as part of the implementation of the "green corridors" policy endorsed by this Plan.

Deciduous trees should be planted in parking lots to provide shade to paved areas, reducing the urban heat island effect and reducing the thermal impact of runoff from such areas.

Additional efforts are needed to protect and enhance the urban forest in Aspen Hill. Within the Suburban Taxing District, the MCDOT can provide maintenance to street trees along County roads, including pruning, spraying, removal and replacement. Outside the Suburban Taxing District, MCDOT will provide low level service for storm damage cleanup, hazardous tree removal and safety pruning around traffic controls. The majority of the planning area is currently in the Suburban Taxing District. The northern boundaries are Norbeck Road and Bel Pre Road. For the portion outside the District, provisions for adequate tree cover are needed to mitigate the adverse physical, ecological and aesthetic impacts of development. The option of incorporating this area into the Suburban District for tree maintenance should be explored with MCDOT and the community.

WATER AND SEWER SYSTEMS

Community water and sewer services are provided by the Washington Suburban Sanitary Commission (WSSC). Water and sewer planning are done through the Comprehensive Water Supply and Sewerage Systems Plan. This Plan sets forth the policies and procedures that govern water and sewer service for the County. In Aspen Hill, virtually all properties are eligible for both community water and sewer service. A few properties east of Layhill Road and north of Bonifant Road do not have the proper category for water service; however, service is available should those properties apply for it. Also, a

few properties remain in sewer categories that are not eligible for service (S-4, S-5 and S-6), including portions of Allanwood and Gayfields subdivisions, several properties in the vicinity of Norbeck Road and Twin Valley Lane, the Argyle Country Club, North Branch of Rock Creek Park and the Northwest Branch Golf Course. Should these properties apply for service, it can be provided.

The Aspen Hill Planning Area lies within the Montgomery Main and High Zones and receives most of its water from the Potomac River Filtration Plant. Aspen Hill does not contain potable water storage facilities. The nearest Main Zone storage is the Wheaton Reservoir near the intersection of University Boulevard and Veirs Mill Road. The nearest High Zone storage is the Glenmont Tank near Georgia Avenue and Layhill Road.

WSSC has recently completed two facility plans to address the adequacy of the existing water distribution system to serve the Montgomery Main and High Zones, as well as their dependent water pressure zones, beyond the year 2000. The recommendations from the High Zone facility plan include 1) a new 48-inch transmission main between the site of the Wheaton Pumping Station (near the Wheaton Reservoir) and the vicinity of Georgia Avenue and Norbeck Road (CIP # W-150.05) and 2) the replacement of the Glenmont Tank. The Aspen Hill Planning Area will be included in future studies of water and sewer service. Every effort will be made to minimize negative community impacts.

The planning area lies within two sewer service basins: Rock Creek and Northwest Branch. Sewage originating in the planning area flows by gravity through sewer lines in the two basins to the Blue Plains Wastewater Treatment Plant in southeastern Washington, D.C. At the treatment plant, the sewage is treated and discharged into the Potomac River.

In addition to sewage flow in the planning area, the Rock Creek basin receives sewage from parts of other planning areas. Transmission capacity has recently been increased by the construction of a 6.0-million-gallon sewage storage facility at Rock Creek below Randolph Road. The storage facility is planned to be augmented in later years, when necessary, by a pumping station that will divert peak sewage flows from the Rock Creek trunk sewer to the Cabin John basin. The storage facility is used only during certain peak storm events. Evaluation of transmission capacity is ongoing. Based on the *Rock Creek Transmission Relief Facility Plan*, the Rock Creek trunk sewer will require about 10,000 feet of relief sewer between the storage facility and Veirs Mill Road by the year 2000. Based on the WSSC Strategic Sewerage Study, March 1993, and the Rock Creek Transmission Relief Facility Plan, Final Addendum, 1983, the Rock Creek Pumpover Facilities Plan (CIP #S-49.12) will be prepared to determine the sizing and sites for a wastewater pumping station, the alignments for the force main and the impacts on downstream sewers. The Aspen Hill Planning Area will be included in this study of water service. Every effort will be made to minimize negative community and environmental impacts.

WSSC has no current plans to identify, relocate or replace old sewer lines in stream beds or stream valleys in the Aspen Hill Planning Area. However, WSSC has suggested a CIP sewer extension project in the Northwest Branch basin. The Branch "E" Relief Sewer project would involve an 18-inch main following an unnamed tributary of Northwest Branch. The

tributary flows from the Batchellors Forest area in Olney, across Norbeck Road and parallel to Chapel Hill Road into Northwest Branch Park. This project is needed to support eventual development occurring primarily outside the Aspen Hill Planning Area.

If this relief sewer is built, coordination between WSSC and the Department of Parks will be necessary to protect Northwest Branch water quality. This can be achieved by minimizing the number of stream crossings, keeping a wide vegetated buffer between the sewer and the stream and preserving trees wherever possible.

As the sewerage system ages, it is apparent that major improvements during the plan's life will increasingly be required. It is essential that long-range interagency planning occur to assure coordination of major infrastructure improvements to minimize overall public and private costs.

AIR QUALITY

On November 15, 1990, the Clean Air Act Amendments of 1990 became law. The legislation embodies fundamental changes in the original law and significantly alters the approach for attaining air quality standards in areas that currently do not satisfy the standards (non-attainment areas). The original Clean Air Act, as well as the latest amendments, are intended to reduce the severe adverse impact air pollution has on the health of our citizens as well as on property and resources, such as crops, forests, streams and the Chesapeake Bay. The Washington, D.C. area, which includes all Montgomery County, and consequently Aspen Hill, is in the "serious" non-attainment category for ozone.

Although there are many provisions in the Amendments, the major focus for the Washington area will be on the reduction of mobile source usage, such as automobile commuting. Reduction of single-occupancy automobile transportation is the most important component for achievement of air quality standards. Transportation activities must no longer cause or increase violations of any air quality standards. The Clean Air Act, as amended, requires state and local governments to develop extensive plans to reduce emissions. When those plans have been finalized and strategies adopted, all development (including new or expanded transportation facilities) in the planning area should be evaluated for compatibility with and implementation of the adopted strategies.

For this planning area, land use and transportation patterns that discourage single-occupancy vehicle travel and encourage the use of alternative transportation are an important component for achievement of air quality standards. These patterns are reflected in the land use chapter of this Plan. In addition, alternative forms of transportation and transportation management are supported by the transportation chapter of this Plan. Promoting carpooling and vanpooling is also essential to improving air quality. These measures will also contribute to the reduction of energy resource consumption required by the Maryland Planning Act.

When new development or redevelopment seeks to maximize the densities permitted in the zones via the optional method, the evaluation of environmental impacts should include a study of the impacts on the achievement of air quality standards. In addition, the design of each development using this method should include a consideration of localized air quality problems, such as heavily traveled intersections, on the placement of public spaces and building ambient air intakes proposed in a site plan or subdivision. Tree plantings and vegetative cover should be included to shade paving and rooftops to reduce the impact of these areas on ambient temperatures.

SOLID WASTE MANAGEMENT

Aspen Hill is primarily composed of residential single-family and multi-family development. This form of development generates a considerable amount of trash that is either recoverable or compostable, including newspaper, metal, glass, plastics, yard and food waste. The residential and retail establishments in Aspen Hill generate good quality recoverable cardboard, office/computer paper and other resources in smaller amounts.

Montgomery County's waste management system is founded on the four-part preferential system of "reduce, recycle/reuse, incinerate and landfill." The Ten Year Solid Waste Plan sets forth the goals and objectives of the County in regard to solid waste, including a 4 percent source reduction goal for residential and commercial waste to be met by holding the waste stream at current levels at least until the year 2000. The Maryland Planning Act of 1992 states that "conservation of resources, including a reduction in resource consumption is to be practiced." This vision will be pursued in Montgomery County largely through the implementation of the source reduction goal, including an education program for residents and an aggressive program to work with commercial and industrial sectors to reduce packaging and waste product volume. By County ordinance, a recycling plan is required of all multi-family properties with greater than 100 units and businesses and industries with greater than 100 employees or, if less than 100 employees, upon request from MCDEP.

NOISE IMPACTS

The major source of noise in the Aspen Hill Planning Area is roadway traffic. Roadway noise levels vary with traffic volume and speed, types of vehicles on the roadway and the type of roadway. For developed areas of Aspen Hill where residential uses line the roadways, few noise mitigation options exist. With neighborhood cooperation, a fence or wall-type noise barrier could be constructed along the roadway right-of-way on private property. However, acoustical treatment of the existing structure is the most feasible option for the affected residences. This option reduces noise levels on the interior of the buildings by increasing the noise reducing characteristics of the exterior facade, particularly windows and doors. New residential development or the redevelopment of land adjacent to a major roadway should consider noise-compatible site design as the first priority for noise abatement. These measures include placement of parking lots, open spaces, garages, recreation areas and other non-habitable uses of the property in the noise affected area between the noise source and the

residential unit. Site design, which orients the front of a row of single-family attached dwellings towards and parallel to the roadway, provides a barrier to noise at the deck or patio level behind the unit.

Physical barriers such as landscaped berms and noise walls can also be effective, but often have aesthetic impacts and are less preferred for noise abatement for this reason. These priorities and abatement measures are discussed in detail in the *Staff Guidelines for the Consideration of Transportation Noise Impacts in Land Use Planning and Development* (June 1983).