

APPENDIX 9: ENVIRONMENTAL RESOURCES ANALYSIS

Environmental Planning Division, 2008

Vision

The Germantown Employment Area Sector Plan consists of well designed and strategically located open spaces connected by tree-shaded walks, streets and greenways. Green design is integrated into the built environment, making Germantown a desirable and sustainable community in which to live, work, and shop. Stormwater impacts are mitigated through vegetated riparian buffers, green roofs, bioretention areas, and urban tree canopy. Developed areas are framed and supported by an environmental infrastructure comprising an interconnected system of public and private lands that contain significant areas of forest, wetlands, water supply reservoirs, wildlife habitat, prime agricultural lands, and other sensitive areas with minimal intrusions from land development, light and noise pollution.

Background

The Germantown Employment Area Sector Plan is located in upper central Montgomery County, Maryland, and falls within two watersheds: the Great Seneca Creek watershed and the Little Seneca Creek watershed (see Figure 1,

Watersheds). This section includes a description and evaluation of the environmental features included in these two watersheds and includes recommendations for their protection and restoration. For more detailed information on the existing conditions and environmental policy affecting the environmental features discussed, readers are encouraged to review the *Seneca Creek Environmental Resources Inventory* (April 2007).

Forest Resources and Urban Tree Canopy

As with any urbanized community, the environmental and economic value of natural resources such as forests is often overlooked. Forests improve air and water quality, provide wildlife habitat, moderate summer temperatures and buffer winter winds, afford recreational opportunities, and improve community aesthetics. From an economic point of view, urban tree canopy can decrease heating and cooling costs, decrease costs related to clearing, grading and maintaining lawns of large developments, reduce

costs associated with stormwater management, and increase property values.¹⁶

In the Sector Plan area, forests cover about 340 acres, or approximately 14 percent of the total study area.

Urban Tree Canopy

Individual trees or landscaped areas consisting of large trees can play a vital role in urban areas by reducing urban heat island effect, mitigating stormwater runoff, and improving air quality. And while a forested buffer 100 feet in width along a stream is of greater value than individual trees interspersed along the same stream, the importance that individual trees play should not be ignored.

Approximately 172 acres of urban tree canopy exists within the study area that does not meet the definition of forests. If the forest and tree areas are combined, the total amount of forest and urban tree canopy within the planning area is 512

¹⁶ Cappiella, K., Schueler, T., and T. Wright. 2005. *Urban Watershed Forestry Manual Part 1: Methods for Increasing Forest Cover in a Watershed*. USDA Forest Service, Newtown Square, PA. Also available online at: www.cwp.org/forestry/index.htm.

acres; about 20 percent of the Sector Plan area is covered by trees.

In a 2003 study of Montgomery County, Goetz and others determined that watershed tree cover greater than 45 percent was correlated with good and excellent stream health, as measured by biological indicators. American Forests, a national nonprofit that specializes in urban forestry, suggests that a goal of 40 percent canopy cover in urban areas is achievable.

Staff analyzed the potential to achieve 30-40 percent tree canopy coverage in the Sector Plan area. Thirty percent tree canopy coverage equates to 790 acres of tree canopy. Assumptions used in this analysis are: (1) stream buffers will be forested; (2) existing forest conservation easements will remain forested; (3) road sections (other than freeways such as Father Hurley Boulevard and Great Seneca Highway) can have street trees planted along currently unplanted segments; and (4) substantial areas of existing forest and neighborhood trees will be preserved. The analysis shows that canopy coverage of at least 31.3 percent is achievable. Achieving this goal does depend on retaining substantial areas of remaining existing forest, including most of the forest on the Lerner and Montgomery College properties.

Recommendations:

- Protect existing forest resources on developable properties to prevent fragmentation of upland forests particularly on the Montgomery College Germantown Campus and in the northern part of the study area.
- Increase overall forest and urban tree canopy to between 30 and 40 percent over the next 30 years for the Sector Plan area.
 - Identify opportunities for forest restoration along streams and wetlands and target mitigation efforts to these areas during the development review process, with an emphasis on connectivity to other forested buffers.
 - Enhance the natural environment in Germantown by creating green open spaces as part of landscaping and forest requirements and encourage tree plantings in such areas. Require tree protection plans, including soil enhancement and other techniques, to maximize planting success.
 - Target unforested road sections for street tree plantings.
- Restore forested stream and wetland buffers on public properties and target public land acquisition programs to preserve, enhance or restore riparian buffers and special habitat areas.

Wetland Resources

Wetlands occur where the ground is regularly saturated by surface water or groundwater, resulting in vegetation that is adapted for life in saturated soil conditions. Some common types of wetlands include springs, seeps, marshes, swamps, bogs, and wet meadows. Often, they are located in close proximity to streams. The location of wetlands, coupled with their unique physical, chemical, and biological processes, allows them to provide important water quality and flood control functions, as well as valuable wildlife habitat.

As part of the *Seneca Creek Environmental Resources Inventory* conducted in 2007, Commission staff performed a wetland inventory and functional assessment within the boundaries of the Germantown Employment Area Sector Plan. Most of the wetlands in the study area are concentrated in the headwaters (i.e., the uppermost part of a stream or the area just above the beginning of a stream) and floodplains of Middle Great Seneca and in many of the feeder tributaries along the eastern portion of the Little Seneca watershed. In total, it was found that wetlands account for approximately 88 acres, or just below four percent of the total acreage of the study area. Surveyed wetlands include the

Germantown Bog, which is a Wetland of Special State Concern.

Commission staff conducted a functional assessment of each wetland's ability to perform five different wetland functions: attenuation of flood flows; reduction in sediment and nutrient loads; groundwater discharge; provision of aquatic habitat; and provision of terrestrial habitat. Each wetland was then rated as "high, medium, or low" in terms of their ability to perform the five wetland functions. The highest quality wetlands within the study area are within or adjacent to large tracts of protected mature forested parkland. Although impacts from growth and other factors are contributing to biological and chemical changes, the overall functional ranking was determined to be high within these protected park corridors.

Also located throughout the study area are many stormwater management ponds that were constructed for the purposes of controlling stormwater runoff, as well as 'converted areas' that were natural or historic wetlands that are now tilled, grazed, or planted. These areas may be

good candidates for wetland restoration or mitigation projects, and have been documented in the *Seneca Creek Environmental Resources Inventory*.

Recommendations:

- Protect wetlands and their associated buffers – including springs and seeps – through the application of conservation easements during the development review process.
- Restore and/or enhance such wetlands by fencing, creating natural buffers, or other techniques whenever possible.
- Direct wetland mitigation within the Sector Plan area using the criteria identified in the *Seneca Creek Environmental Resources Inventory*.

Water Quality and Stormwater Management

The Germantown Employment Area Sector Plan falls within the Great Seneca Creek and the Little Seneca Creek watersheds. Water quality

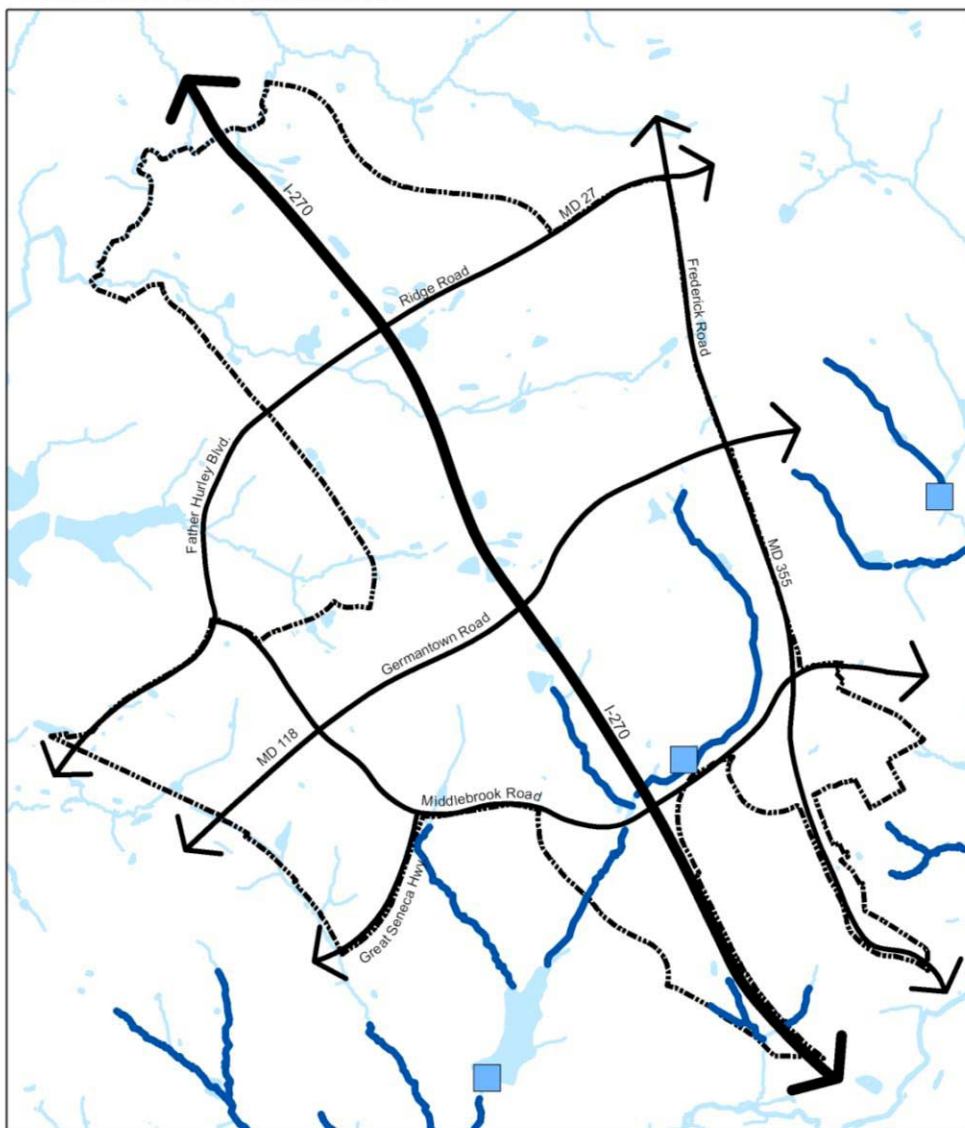
conditions have been monitored as part of the Montgomery County Countywide Stream Protections Strategy (CSPS). Baseline monitoring done in the 1990s indicated largely good to fair water quality in subwatersheds within the Sector Plan area. Subsequent CSPS monitoring conducted in 2006 indicates declining water quality, with good subwatersheds now ranking as fair, and many fair subwatersheds slipping to poor water quality.

A 2003 CSPS report produced by Montgomery County's Department of Environmental Protection identified increasing impervious surfaces, inadequate stormwater management facilities, and piped headwater streams as the greatest impairments to stream conditions in urbanized areas such as the Sector Plan area. Roads, parking areas, buildings, and surrounding lawns are all examples of impervious surfaces because they inhibit rainwater's ability to soak into the ground. As a result, additional impervious surface increases stormwater runoff and decreases groundwater replenishment.

Increased stormwater runoff not only makes streams more susceptible to flooding during storm events, but it also increases the flow of pollutants

such as nitrogen, phosphorous, sediments, heavy metals, and toxins into our stream systems. Higher and faster water volumes during storm

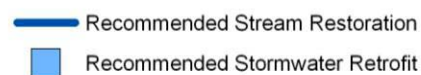
events also increase stream bank erosion and can destabilize streams. Development and redevelopment efforts within the study area present opportunities to incorporate stormwater management with today's more stringent standards; it also provides opportunities for stream restoration work in the Great Seneca Creek and Little Seneca Creek watersheds. In addition, development and redevelopment efforts provide the opportunity for the incorporation of environmentally sensitive design techniques that reduce impervious surface and provide for on-site treatment of stormwater runoff.



Recommendations:

- Use environmental site design and low-impact development techniques such as green roofs, rain gardens, innovative stormwater outfalls, green streets, cisterns, rain barrels, grass swales, and stream restoration to the fullest extent possible during the development review process.

Figure 2: Great Seneca and Muddy Branch Watershed Study



- Landscape existing stormwater management facilities with native materials to enhance water quality, cool water, and improve aesthetics. The Department of Environmental Protection must review and approve landscaping of facilities they maintain. Dam safety, functionality, and maintenance should all be considered.
- State and local stormwater management approaches and regulations are constantly being upgraded. New regulations may supersede recommendations made in this and other master plans.
- Minimize the number of parking spaces and provide for alternative parking methods that reduce the area of impervious surfaces.
- Reduce the area of impervious surfaces during redevelopment projects.
 - Where development proposals contain extensive areas of impervious surfaces (e.g., parking lots, pavement, buildings), reduce the amount of imperviousness by using higher buildings, clustering uses and putting parking underground or in structures. Where paving is necessary, use innovative methods or technologies, such as porous pavement and concrete, to allow some water from these areas to infiltrate. These methods should take into account the soil conditions and the need for maintenance to assure that they continue to function properly.
- Wherever possible, conserve existing forest and urban tree canopy to lessen the deterioration of watershed health from the impacts of urbanization.
- Target street tree plantings where the addition of tree canopy may help slow down peak runoff flows, and mitigate temperature effects of runoff traversing hot impervious surfaces before entering natural stream environments.
- Implement stormwater retrofit and stream restoration projects to help manage or remediate impacts of uncontrolled impervious areas.
- Encourage the application of innovative stormwater control measures in reducing new development and redevelopment impacts on streams. Seek ways to further reduce losses of natural vegetation and topsoil and reduce impervious or compacted land surfaces that result from current land development standards for subdivisions, roads and sidewalks, utilities, parking lots, and individual buildings.
- Implement recommendations from the county's Great Seneca Creek and Muddy Branch watershed study (see Figure 2, Great Seneca and Muddy Branch Watershed Study) to restore the headwater stream reaches of Gunners Branch on the east side and south of the Montgomery College property, and to retrofit the stormwater management pond near the Hughes property.
- Upon completion, implement recommendations of the Water Quality Functional Master Plan for Montgomery County. Due to the fact that the Water Quality plan implements measures required by state legislation, recommendations of the Water Quality plan may supercede recommendations of this and other Master Plans.

Greening the Built Environment

In 2006, the Montgomery County Council approved legislation requiring county-built or funded nonresidential buildings to achieve a LEED (Leadership in Energy and Environmental Design) silver rating, and private nonresidential or multifamily buildings to achieve a LEED certified rating. In order to achieve a LEED rating, buildings must incorporate certain criteria that positively impact the energy and environmental

characteristics of a building, including sustainability of a site, water efficiency, energy efficiency, materials and resources. This law applies to any newly constructed or extensively modified nonresidential or multifamily residential building with at least 10,000 square feet of gross floor area.

In addition to green building design, building a greener urban community requires better understanding and integration of the natural and built environments by ensuring that parks, trails, forests, green spaces, and other important environmental features are included in growth management strategies for the Germantown study area.

Recommendations:

Redevelop Germantown using green community principles.

- Encourage the addition of new and expansion of existing green spaces, including trees to shade paved surfaces and stormwater management practices such as green roofs, rain gardens, bioswales and cisterns that encourage groundwater recharge.
- Encourage green building practices, including the use of recyclable materials, solar power and other forms of energy efficiency.

- Minimize the development of open space by taking advantage of existing brownfields, developing previously disturbed lands, and retrofitting existing buildings.
- Minimize habitat disturbances and improve the habitat for indigenous species through restoring stream systems and riparian stream buffers, and controlling erosion through improved landscape practices.
- Reduce the transportation energy intensity of buildings through transit-oriented development that also improves walkability and bicycle accessibility, traffic calming, and connectivity.
- When completed, implement recommendations of the Green Infrastructure Functional Master Plan.
- When completed, implement recommendations of the Energy and Environment Functional Master Plan.

Air Quality

The Washington Metropolitan region, including the Germantown study area, has been identified as a non-attainment area for ground-level ozone and fine particulate matter (PM_{2.5}). Ground-level ozone has been a persistent problem in the region for many decades. It is an invisible gas formed on hot summer days when volatile organic compounds (VOC) and nitrogen oxides (NO_x) react chemically

in the presence of sunlight and heat. Exposure to excessive levels of ground-level ozone and fine particulate matter can pose health risks to vulnerable populations such as children, the elderly, people with chronic upper respiratory ailments such as asthma and bronchitis, and those with existing heart and lung conditions. The primary sources of these pollutants are (coal-fired) power plants and other industries, motor vehicles, small gasoline-powered engines, and small businesses using solvents, cleaning solutions, paints, and insecticides. Motor vehicles alone account for 30 percent to 40 percent of the pollutants that cause ground-level ozone in the metropolitan region.

Recommendations:

- Design development and redevelopment projects to minimize the need for motor vehicle trips and to prevent conditions that may create local air pollution nuisances.
- Provide an improved, continuous network of sidewalks and bikeways throughout the Germantown study planning area, and in particular between the MARC Station and Town Center. This should be designed to avoid disturbance of natural resources.
- Provide transit incentives to minimize single-occupant vehicle travel.

- Enhance bus services by including new routes, increasing bus frequency, improving pedestrian access to transit stops, and more bus shelters.
- Provide park-and-ride lots along major roads for carpools, vanpools, and transit users.

Noise

Noise is generally defined as any form of unwanted sound. Excessive noise is an environmental health problem that can interfere with sleep, disrupt speech, cause psychological stress, and degrade the quality of life. The amount of noise transmitted can vary considerably due to elevation, the existence of barriers, and project design. Mobile sources of noise in the study area include traffic-generated noise along major roadways such as I-270, MD 118, MD 117, Frederick Road, and the CSX railway. The proposed Corridor Cities Transitway will also contribute noise to surrounding areas.

Local government agencies are responsible for controlling noise in Montgomery County. The Montgomery County Department of Environmental Protection (DEP) enforces the Noise Ordinance, which regulates stationary sources such as heating and air conditioning units, construction activities, noise producing land uses, and neighborhood annoyances, while the Planning

Board uses master plans and regulatory review to implement noise reduction strategies and protect residential properties from mobile sources. Strategies to reduce adverse noise impacts from new development and redevelopment include compatible land uses, buffers, and external and internal mitigation techniques.

Recommendations:

- Support noise-compatible site design for projects located adjacent to existing and proposed noise generators and roadways of arterial classification or greater.
- Place new residential uses farther away from areas of excessive noise.
- Incorporate compliance with the Adopted County Noise Control Ordinance (Chapter 31B of the County Code).
- Require compliance with the Planning Board's *Staff Guidelines for the Consideration of Transportation Noise Impacts in Land Use Planning and Development*.
- Evaluate development and redevelopment proposals using Phase I noise studies and noise models.
- Provide for the use of approved attenuation measures when noise issues are identified.