

ATTACHMENT 3

September 23, 2008

MEMORANDUM

TO: Sue Edwards, I-270 Corridor Team Leader
Community-based Planning

VIA: Mary Dolan, Environmental Supervisor
Environmental Planning

FROM: Steve Findley, Planner Coordinator
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SUBJECT: Germantown Master Plan
Worksession # 3
Environmental Discussion Topics – Forests and Sustainability

The General Plan Refinement of 1993 lays out the goals and objectives for environmental protection and stewardship in Montgomery County's Land Use Planning. It recognizes the importance of preserving forests and biological diversity, protecting wetlands and sensitive habitats, improving water quality and air quality, and conserving energy. Events since its adoption have demonstrated the wisdom of these goals and objectives, and in fact have focused greater attention on their importance. In particular, the growing threat posed by Global Climate Change has increased the need to change behaviors that contribute to emissions of greenhouse gasses. Land use decision-making can either exacerbate these problems or offer solutions. The concept of Sustainability in land-use planning incorporates new planning strategies designed to reduce environmental impacts, as well improving transportation and quality of life in a world that is becoming more populous. Sustainability is about securing a better future for ourselves and our children. Sustainability has two aspects in Germantown: preserving and enhancing the natural systems that have buffered the impact of development and building green communities that minimize the impact of additional homes and jobs.

The health of our aquatic and terrestrial communities is directly associated with human health, quality of life, and the sustainability of our society. Forests and meadows filter air and water, reduce energy consumption, absorb carbon dioxide, and generate oxygen. Likewise, aquatic systems provide habitat for fish, birds, mammals, and invertebrates in addition to supplying drinking water for our communities. Of particular concern in Germantown is the health of Little Seneca Lake, which serves as an emergency drinking water supply for the region and a recreation resource for the upcounty area.

Water quality and habitat in the smaller tributaries to the lake have already been degraded significantly by the tradeoff in the 1989 Germantown Plan that protected a substantial greenbelt around the town. This greenbelt has functioned to protect the mainstem of the Little and Great Seneca streams; however, the intensity of development anticipated to further concentrate growth will put additional strain on the

tributary streams and eventually on the mainstems and Little Seneca Lake. While the concentration of growth will be a good thing countywide, providing a large number of homes and jobs in an area well served by transportation options and a diversity of uses, the protection of key resources is critical to habitat and water quality.

Benefits of Forest Preservation

Benefits of urban trees and forests are well documented. Trees absorb CO₂ from the atmosphere and store carbon in the biomass of the tree, helping mitigate effects of greenhouse gas emissions. Forests therefore serve as carbon “sinks” where large amounts of carbon are sequestered. Because forests and street trees also cool the landscape through shading, they lower local ambient summer temperatures and reduce air conditioning demand. The resulting energy savings further reduce greenhouse gas emissions.

Trees and forests contribute to improved air quality by removing such pollutants as sulfur dioxide, nitrogen dioxide, carbon monoxide, and airborne particulates from the atmosphere.

Urban trees and forests benefit water quality by reducing soil erosion and concomitant sedimentation of receiving waters. Trees and forests prevent nitrogen, phosphorus and other nutrients from reaching streams and ponds. Forests are particularly important as groundwater recharge areas. One study has estimated that a 5% increase in tree cover reduces stormwater runoff by about 2%.

Urban forests provide habitat for local wildlife as well as a green refuge where human beings can briefly escape the pressures of the built environment. Numerous studies show the human health benefits of green spaces in urban areas. Of particular interest is a study showing that hospital patients recover faster if they have a view of trees outside their hospital room window.

Resource Protection and Forest Preservation Recommendations

The Germantown Forward public hearing draft describes the general forest, wetland, and watershed resources and conditions and made recommendations for protection and enhancement of these resources and their functions. The Plan highlights existing forest resources and stream buffers that form the basic green infrastructure for Germantown, wetland and watershed resources including the Germantown Bog and the watersheds draining to Little Seneca Lake. Countywide Stream Protection Strategy (CSPS) monitoring shows a declining trend in water quality conditions throughout most of the Germantown study area. Despite this trend, Germantown is fortunate to have high quality natural resources that are still buffering the impacts of development and providing wildlife habitat. **Protection of these existing resources is the first priority in fostering a sustainable Germantown.** One important element of this system is a significant forest in the North End District.

The northern and western portions of the study area drain to Seneca Lake via two main tributaries and portions of other watersheds that originate outside of the study area. The *Milestone Tributary* watershed comprises about 700 acres in the northern portion of the study area. The watershed originates in the Germantown Bog, a unique resource in Montgomery County, which provides unusual

habitat and a source of clean groundwater to the stream. The stream drains directly into Seneca Lake without any intervening regional stormwater management lakes. The lake is a major recreational resource and is used to augment Potomac River water intake at the Potomac Filtration Plant in times of emergency. While there are reasonably wide forested stream buffers along some of this tributary, the section just west of I-270 has been affected with some buildings, cleared areas and parking lots within or very close to the stream buffer. The Milestone Tributary stream valley farther west includes numerous springs, seeps, and seasonal pools that serve as breeding habitat for amphibians. There is growing concern worldwide about declining amphibian populations and upstream increases in stream buffer protection could improve the sustainability of these areas.

Little Seneca Creek and all tributaries above Little Seneca Lake, including the Milestone tributary and portions of the North End District draining to the Little Seneca mainstem, are Maryland Use IV-P streams. Use IV streams typically contain water that is cold and clean enough to support recreational (i.e. "put and take") trout fisheries. The "P" designates these streams as part of the public water supply.

Due to a combination of the high proportion of sensitive resources contained within these watersheds, including the Germantown Bog, large numbers of seeps, springs and seasonal pools providing amphibian habitat, high quality mature forest adjacent to existing park land, good water quality that is already declining, the Maryland Use IV-P status, and the fact that these areas drain directly to Seneca Lake without any intervening regional stormwater management treatment, **the Milestone Tributary and the portions of other watersheds draining to Seneca Lake in the North End District are the highest priority for protection and restoration.** Continued degradation of these watersheds may ultimately impair the function of Seneca Lake as an emergency water supply and diminish its recreational value.

The *Churchill Tributary* also drains to Seneca Lake via Lake Churchill. Lake Churchill provides some measure of pre-treatment for water quality before the water reaches Seneca Lake. As noted above, Seneca Lake augments water supply during emergency low-flow conditions. The Churchill Tributary is a Maryland Use I-P stream. Use I streams are designated for "water contact recreation and protection of non-tidal warm water aquatic life." Due to its degraded condition and the fact that it drains to Little Seneca Lake, **the Churchill Tributary should be considered for restoration.**

In the North End district, we are recommending that a 25-acre area of forest be designated High priority for retention. This high quality forest is dominated by mature oak and beech trees. The forest exhibits good habitat structure, and is relatively free of invasive plant species. It adjoins the stream buffer of Little Seneca Creek just above Little Seneca Lake and abuts Black Hill Regional Park. This forest serves many important natural resource functions, including forest habitat provision, water quality protection, air pollution mitigation, energy conservation, and amelioration of greenhouse gas emissions.

In addition to natural resource functions, this forest should serve as an amenity for local residents, providing a cool, shady area of outstanding natural beauty for walking, birdwatching, and similar passive recreational pursuits. As most of Black Hill Regional Park lies north of Little Seneca Creek, preservation

of this forest will extend the kind of benefits provided by the park into the north Germantown community.

Preserving this forest area and concentrating mixed uses closer to the future transit station would serve to achieve the goal of creating a community that is compact, transit-oriented, and walkable, being both pedestrian and biker-friendly.

Due to the exceptional quality of the forest, its position adjacent to the existing high quality forest in Black Hill Regional Park, the protection provided for steep slopes directly above the mainstem of Little Seneca Creek draining to Little Seneca Lake, and its roles in sequestering carbon, ameliorating heat island effect, and protecting water quality, and its potential role as a recreational amenity, we feel that **the protection of this forest area is essential to the protection of key natural resources that make Germantown a sustainable community.** This recommendation for forest preservation is also consistent with the Forest Conservation Law, and contributes to the goal established in the 2004 Forest Preservation Strategy Update to protect 500 acres of upland forests per year for five years.

Summary of Natural Resources and Forest Recommendations, West Side Germantown

- **Establish the Milestone Tributary and the portions of other watersheds draining to Seneca Lake in the North End District as the highest priorities for protection and restoration.**
- **Establish the Churchill Tributary as a secondary priority for restoration.**
- **Any future redevelopment in the vicinity of the Germantown Bog should include extraordinary measures, offering protection no less than stringent than currently provided.**
- **Preserve the 25 acre forest block on the northern edge of the North End District.**

Sustainability Recommendations

The following recommendations are based on a list of Principles for Sustainable Development (see Attachment) as applied to Germantown:

- ❖ **Establish a goal to stop increasing greenhouse gas emissions by 2010 and reduce them to 80 percent of 2005 levels by 2050.** This countywide goal is established in county legislation and incorporated in the Healthy and Sustainable Communities 2008 Report. This plan supports sequestering carbon in forests and landscaping and reducing carbon emissions by design of transportation systems, land use configuration, buildings and open/green space design. Carbon dioxide, the gas responsible for global warming, can be reduced in the most significant amounts by decreasing the number of automobile trips taken and designing "green" or "high performance" buildings. The following specific recommendations advance this goal:
 - **Design new buildings to reduce carbon emissions through energy efficiency, on-site sources of renewable energy and recycling of waste materials from construction and demolition to the fullest extent possible as part of compliance with county law to achieve LEED certification level or equivalent.**
 - **Provide a safe, attractive and continuous network of sidewalks and bikeways throughout the study area.**

- Develop streets that are designed to give priority to pedestrians and bicyclists.
 - Support Transportation recommendations for transit and the highest possible mode share split.
- ❖ **Minimize loss of pervious land surface** which is currently at 55% of the entire Sector Plan study area. There is still a significant amount of property that has yet to be developed and this development will increase total imperviousness. However, we propose that properties that are being redeveloped remove surface parking and thus reduce imperviousness. It is unlikely that buildout will result no net loss of pervious land, however, careful development and redevelopment will keep the total impervious surface to a level that can keep water quality from degrading significantly. This intent is to allow sufficient infiltration of stormwater and provide adequate area for tree planting. Although the newly developing property is expected to be urban in character, this goal can be met by establishing a minimum pervious area for public use or open space, stormwater management treatment areas within new roads and right-of-ways, and a connected system of open space/parks.
- Create a requirement of 20% pervious area for all newly developing properties.
 - Create a system of connected primarily pervious open spaces distributed throughout the study area.
 - Apply new Road Code standards for stormwater management to new streets in study area.
- ❖ **Use environmentally sensitive design and traditional stormwater management techniques** such as green roofs, bioinfiltration, innovative stormwater features, underground stormwater management, green streets, and cisterns to the fullest extent possible during the development review process.
- ❖ **Establish a 30% to 40% tree canopy coverage goal** within the entire Sector Plan area. The current tree canopy coverage is about 20%. This goal can be met by increasing pervious area requirements on redeveloping properties, tree planting on new streets, and through Forest Conservation requirements.
- ❖ **Establish community character with native vegetation.** Vegetation is a highly visible factor in any urban or suburban landscape and can have great power in describing its character. Native trees, shrubs, and perennials are effective expressions of the uniqueness of the ecosystem and if used in a critical mass can bring substantial visual quality of place.
- Create sustainable landscape guidelines for biodiversity, native plant materials, water conservation and appropriate soil regimes to establish a unique character for the plan area.
- ❖ **Support noise-compatible site design** for projects located adjacent to existing and proposed noise generators and roadways of arterial classification or greater.

ATTACHMENT

Sustainability Principles

In addition to protecting the natural resources present in Germantown, it is essential that we provide the homes and jobs in ways that are comfortable and create the smallest carbon footprint possible. The following principles have been incorporated into the Germantown plan and should be carried forward in all aspects of the plan:

Energy and Air Quality

- Locate job centers, retail spaces, and residential areas in proximity to each other to minimize traffic and shorten commutes.
- Incorporate walking and biking paths and bike lanes to encourage non-motorized transportation.
- Encourage the use of proven green building design features to maximize energy efficiency for lighting, heating, and cooling, promote building deconstruction techniques and the use of recycled building materials.
- Promote the planting of street trees and establishment of urban tree canopies to provide shade for the reduction of urban heat island effects and lessen thermal impacts to aquatic systems. Street tree plantings should be closely spaced to maximize shading of paved areas.
- Maximize forest retention in site design. The goal of forest retention and tree planting recommendations is to achieve an overall forest and urban tree canopy cover of 30 to 40 percent over the next 15 years in the Germantown Master Plan area.
- Require tree planting and maintenance plans to ensure that appropriate site preparation, planting maintenance and other techniques are employed to maximize the success of forest planting and landscape tree projects.
- 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.
- Provide buildings as well as neighborhoods that meet the standards for Leadership in Energy and Environmental Design.

Water Conservation

- Incorporate on-site water quality and quantity treatment facilities into site designs.
- Increase pervious surface areas to maximize infiltration and reduce runoff. Where development proposals contain extensive areas of impervious surfaces, employ innovative methods or technologies, such as porous pavement, to increase infiltration of runoff.
- Maximize vegetated open spaces adjacent to streams and water features.
- Maximize forest retention in site design.
- Encourage use of captured stormwater for watering landscapes and promoting groundwater recharge.

- Promote construction of multi-level parking structures for retail and job centers to minimize sprawling parking lots.
- Protect wetlands that are not in public ownership by placing them in conservation easements and/or include them in park acquisition plans. Protect wetlands through establishment of natural buffers, fencing, and other techniques.
- Upon completion of the county's Great Seneca Creek Watershed Restoration Study, implement recommendations for stream restoration, stormwater retrofit projects, and low-impact development.

Biological Diversity

- Retain functional natural areas by minimizing impacts on natural areas.
- Reduce the development of open space by taking advantage of existing brownfields, developing previously disturbed lands, and retrofitting existing buildings.
- Strive for site designs that minimize edge and maximize interior areas.
- Minimize habitat fragmentation through the use of narrower footprints for linear infrastructure features; span rather than fill stream valleys and significant natural areas.
- Look for opportunities to (1) retain, (2) establish, or (3) enhance connections between natural areas.
- Maximize forest retention in site design.
- Maximize wetland retention in site design.

Recreation and Quality of Life

- Incorporate urban parks and open spaces into site designs.
- Include paths and trail systems in site designs.
- Where high-quality natural areas exist adjacent to existing parks, look for opportunities to acquire these areas through dedication or land purchase.
- Where feasible and appropriate, design pedestrian and bikeway connections to parks and other open spaces.

Noise

- Support noise-compatible site design for projects located adjacent to existing and proposed noise generators and roadways of arterial classification or greater.
- Locate new residential areas farther away from sources 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*.
- Provide for the use of approved attenuation measures when noise issues are identified.