

# Takoma/Langley Crossroads

sector plan



## Appendix 5 Environment

The residential portions of Takoma Park between Long Branch and University Boulevard are stable communities that are unlikely to redevelop in the foreseeable future. Properties most likely to redevelop are the large commercial properties fronting University Boulevard and New Hampshire Avenue. These properties developed according to an older model of development, and contain little to mitigate environmental impacts. Stormwater management is absent, asphalt parking lots dominate the landscape, and what little landscaping exists is more decorative than functional. In addition, little attention was paid to making the area pedestrian- and bicycle-friendly with large block sizes, fragmented sidewalk systems, and inadequate trail connections. These issues must be addressed when the area redevelops.

### Watersheds

The commercial blocks fronting University Boulevard drain to Northwest Branch, which is designated a Use IV (recreational trout stream) stream here; the remainder of the study area drains to Sligo Creek via Long Branch. These latter are Use I streams (recreational waters). Use IV implies a higher value use than Use I, and receives additional protection in the form of wider stream buffers (125 feet vs. 100 feet for Use I) where streams occur. Any small streams or wetlands in the commercial area have been paved over long ago.

### Stream Water Quality

Stream water quality in the Takoma/Langley Crossroads area is monitored by Prince George's County using a biological monitoring system similar to the system used in Montgomery County's Countywide Stream Protection Strategy. Both systems analyze fish and aquatic macroinvertebrate communities to determine an Index of Biological Integrity. Based on this testing, Prince George's County has found that water quality is "very poor" for Long Branch, Sligo Creek, and Northwest Branch in Takoma/Langley Crossroads. This corresponds to the "poor" rating used in Montgomery County.

Long Branch Stream Valley Park, which forms the southwestern boundary of the study area, is the only significant natural resource in this part of Takoma Park. While water quality is poor and the stream has been degraded by uncontrolled and untreated runoff, the stream valley still harbors a strip of mature forest adjacent to the stream. This forest provides both habitat for urban wildlife and a cool respite for local citizens. Long Branch and Sligo Creek Stream Valley Parks connect Takoma Park to the network of parks and open spaces in both Counties.

## **Imperviousness**

Improvements in water quality are mandated by law and policy, and are necessary for sustainable living. Water quality declines have been closely linked to increases in impervious surfaces in developed areas, and to loss of forest land. Studies show that stream water quality begins to deteriorate when imperviousness covers 10 percent of watershed. Watersheds with levels above 25 percent usually have poor water quality.

GIS analysis shows that about 48 percent of the land in the Montgomery County portion of the Takoma/Langley Crossroads Sector Plan area is covered by paving and buildings. The Montgomery County portion of the Sligo Creek subwatershed receiving runoff from Takoma/Langley Crossroads has an overall imperviousness of about 30 percent; the Northwest Branch subwatershed in this area is about 35 percent impervious. The effect of this imperviousness can be reduced through the application of innovative stormwater management that will improve stream conditions. Stream quality will likely remain poor to fair because most land uses in these watersheds (within and beyond the Plan area) will not change.

## **Stormwater Management Approach**

This Plan recommends incorporating the principles of Environmental Site Design including integrating stormwater management into building sites and open spaces at every opportunity. These techniques require minimizing imperviousness, dispersing rather than concentrating stormwater treatment, and employing approaches such as bioretention facilities, rain barrels, green roofs, and permeable pavements to manage runoff. Where possible, stormwater should be retained for irrigation and other appropriate uses. Water quality improvements can also be realized through the application of urban forestry practices. Refer to Montgomery County stormwater regulations and guidelines for specific stormwater management requirements.

## **Tree Canopy Cover and Urban Forestry**

GIS analysis indicates that about 15 percent of the Montgomery County portion of the Takoma Park/Langley Crossroads Sector Plan area is covered by tree canopy. Ideally, trees should cover 25-30 percent of the area.

Urban forestry comprehensively manages trees in urban areas, including street trees, park trees, existing forests, landscaping, and neighborhood trees. Trees provide shade to reduce urban heat island effect and reduce energy consumption, reduce thermal impacts from runoff, intercept stormwater, reduce erosion, and improve air quality. Urban forests also create a greener, cooler community. The Plan recommends community design that incorporates extensive street tree planting and incorporating trees into community open spaces.

## **Open Space**

Design that incorporates urban open spaces offers the opportunity to accommodate both social needs for recreation and social interaction as well as environmental needs for reducing impervious surfaces, providing opportunities for stormwater management and urban forestry, and enhancing quality of life. The Plan recommends incorporating urban open spaces at every opportunity and striving particularly for multiple uses in these areas to achieve both community design and environmental goals.

## **Green Infrastructure and Green Links**

The Plan area is framed by the Northwest Branch stream valley to the northeast and by the Long Branch and Sligo Creek Stream Valleys to the southwest and south. These significant natural areas connect to a larger network of connected natural areas to form part of the green infrastructure that supports human life and wildlife in Prince George's and Montgomery Counties. Green infrastructure provides forests that filter air, vegetated buffers that filter and cool water, groundwater recharge areas, habitat for wildlife, and respite for human beings.

The Plan recommends preserving and connecting to green infrastructure in the Takoma/Langley Crossroads area. One approach recommended for Takoma Park/Langley Crossroads is to create a system of green streets and pedestrian paths augmented by landscaping and tree planting to link the commercial areas and neighborhoods to the green infrastructure.

## **Relationship to State Planning Laws**

As directed by the Maryland Economic Growth, Resource Protection, and Planning Act of 1992, the Plan is required, through its linkage to subdivision and zoning regulations, to protect streams and their buffers, 100-year floodplains, steep slopes, and habitats of threatened and endangered species.

The 1997 Priority Funding Areas Act directs State spending to Priority Funding Areas. Priority Funding Areas are existing communities and places where local governments want State investment to support future growth.

The traditional core of Maryland's urban development and areas targeted for economic development are defined as Smart Growth Areas that meet minimum criteria for zoning, density and infrastructure. Takoma Park is completely within the Priority Funding area established by Montgomery County under the State criteria and is eligible for available State funding.

## **Energy Efficiency and Air Quality**

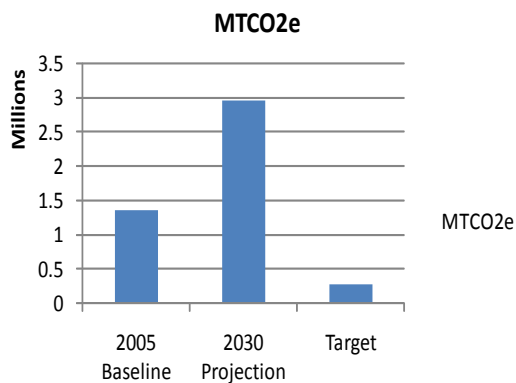
Growing concern over climate change, as well as increasing demand and costs for energy, make improvements in energy efficiency a critical goal in land use planning. Air quality is closely tied to energy production and consumption, so improvements in air quality can also be realized as energy efficiency is implemented. Transit-Oriented Development (TOD), with its focus on decreasing automobile use, increasing the use of mass transit and alternative modes of transportation (such as bicycling), creating walkable communities, and combining land uses, will help achieve environmental goals in Takoma/Langley Crossroads.

Additional gains can be made through compliance with LEED standards or their equivalent, including building and site design, building re-use and deconstruction techniques, increasing recycling rates, and increasing use of energy efficient lighting and appliances. The Plan encourages the use of renewable energy systems to reduce withdrawals from the power grid, including solar photovoltaic systems and geothermal heat pumps. Urban forestry practices will also help achieve both energy efficiency and air quality goals.

## Greenhouse Gas Modeling

Montgomery County law (Bill No. 34-07) requires the Planning Board to model the carbon footprint of planning areas as part of the Plan.

The current greenhouse gas modeling effort uses a version of the spreadsheet model developed by King County, Washington that considers embodied energy emissions, building energy emissions, and transportation emissions in projecting total emissions for an area. The model defines embodied emissions as “emissions that are created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance (by both soil disturbance and changes in above ground biomass).” Building energy emissions are created in the normal operation of a building, including lighting; heating cooling and ventilation; and operation of computers and appliances. Transportation emissions are released by the operation of cars, trucks, buses, motorcycles, etc. The model supplies results for the total life of the development from construction to demolition, and are given in Metric Tons of Carbon Dioxide Equivalents (MTCO<sub>2</sub>e). Results of the modeling are given in the graph below. Please note that these results assume a “business as usual” approach to development.



### Recommendations for Reducing Carbon Emissions

Concern over climate change led to adoption in April 2008 of several Montgomery County laws that require the County to stop increasing greenhouse gas emissions by the year 2010, and to reduce emissions by at least 10 percent each decade thereafter, reaching the ultimate goal of reducing emissions to 20 percent of 2005 levels by the year 2050. Accomplishing this will require new development and redevelopment to incorporate both energy reduction measures and on-site

renewable energy production into building and site designs.

Among the measures that may be required are:

- reduce negative impacts to water quality, air quality, and global climate change through reduced imperviousness, improved stormwater management, and other environmental site design (ESD) and green building techniques
- use green roofs and/or low-reflectance roof surfaces
- employ urban stormwater practices that feature use of stormwater for non-potable water uses
- plant native species requiring little maintenance and consider planting wild grasses vs. grass requiring constant cutting
- orient buildings to maximize passive solar energy and for photovoltaic cell orientation (East-west building orientation to maximize active and passive solar energy opportunities is most practical for buildings east of New Hampshire Avenue.)
- use solar collectors to power County infrastructure like signage
- reduce heat island effect through forest preservation and street tree planting
- use geothermal heating and cooling systems
- provide a safe, attractive and continuous network of sidewalks and bikeways throughout the area
- develop streets that are designed to give priority to pedestrians and bicyclists.

## Montgomery Green Factor

To achieve water quality and other goals, a green factor system can be used to provide many environmental benefits including water and air quality, carbon sequestration, energy conservation, and reduction of heat island effect. The green factor would be a point-based system adjusted to the size of the property. Green features are assigned a point value based on environmental benefits, so that features with greater benefits are given higher point values. Similar systems are considered state-of-the art throughout the world.

Currently, County environmental standards and regulations focus on preservation and conservation, and are not well adapted to urban environments. Urban redevelopment under many zones often results in forest planting off-site, underground stormwater structures, and street trees. Re-creating the functions of natural systems to create community benefits in an urban setting requires a holistic approach to site design. The green factor would aim at creating a layered system that mimics nature, while reinforcing efforts to create more attractive buildings, improve air quality, reduce stormwater runoff, mitigate urban heat island effects, and create habitat for birds.

There are many benefits to using a green factor rather than setting requirements for specific environmental features like imperviousness and tree cover. It allows flexibility in design and cost-effective choices while still providing greater environmental benefits within the community. It incorporates sustainability into project development, instead of a regulatory requirement applied later in the process.

To create a livable, environmentally-friendly urban environment, a green factor system is proposed as part of the new CR zone. Its menu of environmental design features should include, but not be limited to, increased energy efficiency beyond the minimum standards, water quality improvements through runoff reduction, carbon sequestration, and urban heat island effect reduction. Developers can choose which features to incorporate into their plans but must meet a minimum point level for any development. Achieving a higher score allows the property to come closer to the maximum FAR allowed by the Plan.

Environmental features used in the green factor system could include:

- lawn and planting beds with a soil depth of less than 24 inches
- lawn and planting beds with a soil depth greater than 24 inches
- retention of existing trees
- planting of larger stock trees with larger canopies
- permeable paving
- vegetated roofs/green roofs
- vegetated walls
- achieving higher than LEED basic certification
- on-site renewable energy generation
- rainwater reuse

Extra green factor credit is proposed for landscaping features that:

- are visible or accessible to the public
- incorporate stormwater management
- use native plants or plants tolerant of urban conditions.

Benefits would be additive so that tree cover over a planting bed would get points for both benefits, mimicking the environmental benefits of a natural system.