

Green Infrastructure and the Greenprint Program in Maryland: A Framework for
Greenway Planning and Design Studio Practice

David N. Myers, Ph.D., ASLA Assistant Professor Director, Digital Studio

Landscape Architecture Program

Department of Natural Resource Sciences and Landscape Architecture

2146 Plant Sciences Building

University of Maryland

College Park, MD 20742-4452

Phone 301 405 4350 Fax 301 314 9308 email dm243@umail.umd.edu

This paper gives a brief overview of green infrastructure and Green Print programs of Maryland and their significance to our GIS greenway planning and design studio. Maryland has a long and substantive history of activity in land conservation and the corollary development of ecologically and recreationally-based greenways. In 2000 the Maryland Greenway Atlas (Maryland Greenways Commission, 2000) documented an extensive and comprehensive greenway system with over 1500 miles of protected corridors and 600 miles of trails with four primary types of designated greenways: 1) ecological corridors, 2) recreational corridors, 3) connectors, and, 4) water trails. Greenways and open space planning receive widespread support by the citizens of Maryland (Maryland Greenways Commission, 1995). Despite this support, land development in Maryland, particularly low density residential land development, and its resultant deforestation and fragmentation, threatens the environmental support systems and hydrological and biological quality of the environment. The percent of land conversion from resource lands to low density residential has risen from 47% in 1973 to 58% in 1997 and is expected to reach 62% by 2020 (Maryland Department of Planning, 2001). Weber and Aviram (2003) indicated in an analysis of Maryland's identified 2000 green infrastructure that "if current trends continue a large fraction of Maryland green infrastructure may be seriously degraded by 2020".

Facing these threats Maryland, like Florida and others (Benedict and McMahon) instituted green infrastructure initiatives to provide a more science-based and comprehensive view of land conservation efforts. The purpose of the integration of green infrastructure (GI) into Maryland's greenway programs was to:

- “1) Systematically identify and protect ecologically important lands
- 2) Address problems of forest fragmentation, habitat degradation and water quality
- 3) Maximize the influence and effectiveness of public and private conservation investments
- 4) Promote shared responsibilities for lands conservation between public and private sectors
- 5) Guide and encourage compatible use and land managements practices and
- 6) Provide coordination and targeting of mitigation efforts to enhance urban environments and land conservation goals” (Maryland Greenway Commission, 2000, p. 3)

To create a GI plan, the green infrastructure assessment (GIA), a science-based GIS method, was developed to determine ecologically significant lands regardless of ownership (Weber, T. 2001). Landscapes were conceptually organized into hubs and corridors. Hubs, a

minimum of 100 acres in size, were large contiguous tracts of ecologically significant and undeveloped landscapes. A variety of ecological parameters were assessed to determine their significance. Corridors, linkages between hubs, were designated at a minimum width of 1,100 feet wide. Potential hubs and corridors, often in agricultural lands, were also identified. The GIA was applied using a regional perspective underscoring the rich and complex physiographic character of Maryland. Criteria for hubs and corridors are detailed in Weber (2001). The GIA identified 33% of the state that was either undeveloped or held potential infrastructure landscapes that represented the ecologically important areas for providing basic biological habitat and ecological functions. In addition to determining priorities for acquisition and conservation easements, the GI also identifies landscapes that could be targeted for restoration. As identified in 2000, 26% of the GI was held in some form of protection either in direct ownership or held in conservation by public or private entities. Thus three quarters of the ecologically important landscapes of Maryland remain under threat of land conversion or degradation.

The GreenPrint Program, passed into legislation in May 2001, allocated funds for 5 years from the existing Program Open Space (funded by real estate transfer tax and bonds) to purchase available properties identified by the GI. Its focus was to target key gaps in hubs and corridors in the GI. Twenty five percent of these funds were designated for agricultural easements through the existing Maryland Agricultural Land Preservation Foundation (MALPF). Given the budget crisis facing Maryland this year, the change in available conservation funds is expected to be significantly reduced from 2004 to 2005 (State of Maryland, 2004). However it appears that the Greenprint program status and funding may be better than some of the other programs (e.g. Rural Legacy Program) within open space conservation thus ensuring a more ecologically based framework for determining land conservation priorities even with overall fewer dollars for land conservation efforts.

At the county level where most land regulatory programs are applied, the state's GI plans and concepts have led to some counties exploring or adopting finer scale green infrastructure programs. Prince George's County (2004), directed in the 2002 General Plan to consider green infrastructure, is currently developing a finer grained green infrastructure plan as part of the Functional Master Plan. This finer grained approach will be more detailed than the state's and be coordinated with county regulatory program as well as county acquisition programs. The draft of Prince George's GI map is scheduled to be completed this fall (Watson, 2004).

Our GIS regional design studio is a vehicle to explore greenway and green infrastructure as landscape typologies. This focus on greenways recognizes 1) the growing importance of greenways at a variety of spatial scales (Fabos and Ahern, 1995; Foreman, 1995) 2) the leadership roles that landscape architects have in GIS (Tulloch, 2000) and greenway planning and design, and 3) an existing rich greenway environment in private and public practice in this region. Due to the green infrastructure efforts at state and county levels Maryland provides a rich laboratory in which to engage in studio greenway planning and design. Both at the state and county levels, green infrastructure maps and concepts provide the framework for ecological decision making. Our studio's relationship in the last three years has been to work with the local counties to provide greenway envisioning deliverables for local planning agencies, communities and local non-profits. This work has included inventory plans, suitability plans, conceptual master plans and fine scale development plans of focus areas as well as brochures that highlight greenway and green infrastructure concepts. Due to the urban context of the counties, restorative designs at the local scale are a significant component of the greenway exploration as a way to

enrich both the cultural and ecological benefits of the proposed greenway connectors. At this site scale low impact development techniques, stream restoration, green roof technology, and other restorative practices are explored in studio within the framework of strengthening green infrastructure. Green infrastructure, in these contexts, serves not only as landscapes for conservation but more importantly as a restorative model in these highly urbanized landscapes.

References

Fabos, J. G. & Ahern, J. (1995): *Greenways (special issue)*. Landscape and Urban Planning 33, pp. 1-480

Benedict, Mark A and Edward T. McMahon. *Green Infrastructure: Smart Conservation for the 21st Century*. Washington, D.C.: Sprawl Watch Clearinghouse, Monograph Series. Web site: <http://www.greeninfrastructure.net/>.

Forman, R.T. (1995): *Land Mosaics*. Cambridge University Press, New York

Maryland Department of Planning. 2001. *Maryland's Changing Land: Past Present and Future*. Maryland Department of Planning, Baltimore, MD.

Maryland Greenways Commission. 1995. *Attitude Survey of Maryland Residents Regarding Greenways and Open Space*. Maryland Greenways Commission, Annapolis, MD. April 1995.

Maryland Greenways Commission 2000. *Maryland Atlas of Greenways, Water Trails and Green Infrastructure* 2000 Edition. Maryland Greenways Commission, Annapolis, MD.

Prince George's County. 2004 Countywide Green Infrastructure Functional Master Plan Web Site: <http://www.mncppc.org/county/greeninfrastructure.htm>

State of Maryland. 2004. *Unpublished preliminary program open space budget*. Department of Natural Resources. Maryland. March 2004.

Tulloch, D. L. (2000): *Data Shaping The Landscape GIS and Stewardship*. Landscape Journal. 19: 211 -219

Watson, C. 2004. Personal communication. Department of Planning, Prince George's County.

Weber, T. 2001. *Maryland's Green Infrastructure Assessment: Detailed methods, version 5.1*. Maryland Dept. Nat. Res., Annapolis, MD. Web site: File name: [\\ccws62585\greeninf\GI_v5_1\documents\GI_v5_1_methodology.wpd](http://ccws62585\greeninf\GI_v5_1\documents\GI_v5_1_methodology.wpd)

Weber, T and Aviram (2003) *Forest and Green Infrastructure Loss in Maryland 1997-2000, and Implications for the Future*. Web site: <http://www.dnr.state.md.us/greenways/fgil/fgil.pdf>