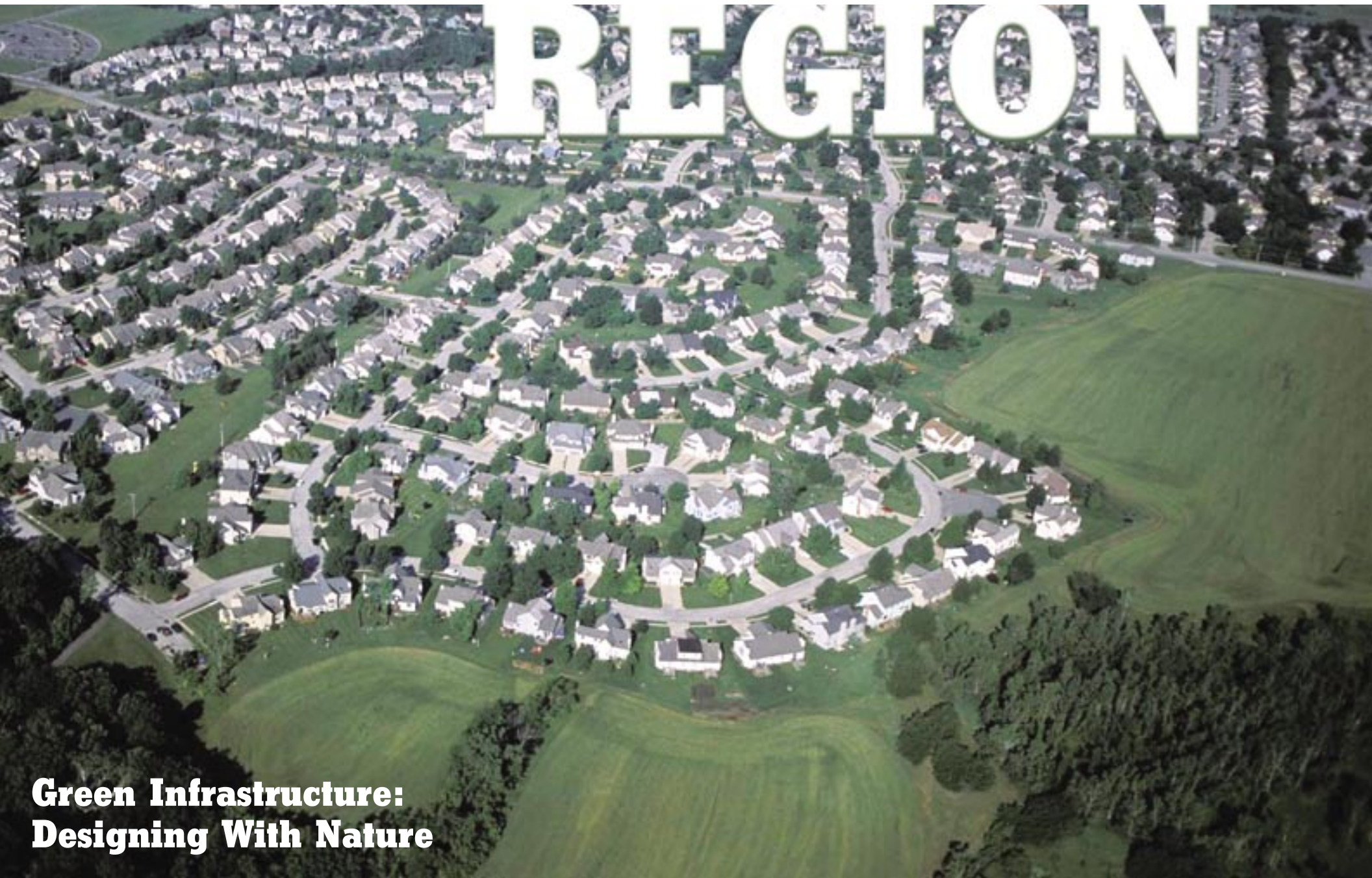


# KANSAS CITY

# REGION



**Green Infrastructure:  
Designing With Nature**



## **Vision**

The Kansas City region will strive to create and implement cost-effective, green planning and design approaches that contribute to the health and quality of life of local communities, support wildlife species, maintain natural ecological processes, and sustain air and water resources.

## **Growth Pressures**

Since 1982, the Kansas City metro area population has increased by 17 percent, to nearly 1.8 million. Over the same time period, developed land area increased by approximately 37 percent, more than twice the population growth rate. Like many other locations in the nation, the citizens of the Kansas City area are increasingly concerned with the loss of green space and the many benefits they draw from nature.

When communities construct buildings, sidewalks, and paved parking lots, the lost vegetation and covered soil can no longer moderate the impacts of heavy rains by slowing down and absorbing rainwater. The conventional solution is to use more concrete to divert untreated runoff into storm drains, where it concentrates and eventually discharges into rivers and streams. These massive discharges into natural streams cause bank erosion, channel cutting and flooding downstream, while producing a general disruption in the ecological function and integrity of our waterways. In extreme cases, the stream channels themselves are lined with concrete. To complicate matters, communities and counties are now required by federal law to treat their stormwater discharges for water quality.

Development patterns are altering the habitats of both wildlife and people. In some communities only small remnants of open or green space remain. When green space is present, it is seldom connected to other vegetated areas in ways that would allow people or animals to travel from one area to another. The many social amenities that trees and other vegetation can provide are lacking where most people live and work.

## **“Green Infrastructure”**

Increasingly, communities have begun to reevaluate the ways in which they develop. They can't simply resort to conventional approaches and expect different results. Communities have long understood the need for infrastructure, like water and sewer lines, power lines and roadways. With strong support for “Creating Quality Places” and “MetroGreen” in the Kansas City region, communities now recognize the value of open and green spaces. Many communities increasingly appreciate the importance of “green infrastructure” — a planned, managed, interconnected network of natural areas like waterways, wetlands and forests; conservation lands like greenways and parks; and adjacent working lands like farms, ranches and corporate lands.

## MARC

The Mid-America Regional Council (MARC) is the metropolitan planning organization for the 116 city and eight county governments in the bistate Kansas City region. Through MARC's leadership, local governments and diverse community interests work together to address the region's problems and identify the opportunities for cooperative solutions. These efforts, in turn, enhance the effectiveness of local governments and foster better understanding and cooperation on issues that extend beyond the jurisdiction of a single city, county or state.

MARC recently conducted a greenways/trails survey to gauge citizen concerns and preferences:

- Preserving water quality was cited as the most important issue in every county and the establishment of buffers along rivers and streams was listed as the most important goal.
- By a wide margin, citizens were also supportive of developing multipurpose greenways that could be used as recreational walking/biking trails, serve as transportation linkages between neighborhoods, and provide wildlife habitat.

## Watershed / Landscape Scale

To effectively address green infrastructure issues, local communities must view themselves as part of a larger regional or watershed context. Water and air flow in and out of communities, as do traffic, people and wildlife. Urban and nearby rural residents need to learn how their land-use decisions affect one another and how they might work together to achieve common goals. New planning and computer mapping tools enable communities to analyze the surrounding landscapes and watersheds to determine how to best integrate environmental conservation and restoration efforts with other community goals and programs. And, increasing collaboration among area agencies and communities will help foster more integrated, cost-effective and sustainable watershed management practices over the long term.

## Riparian areas are lands that border streams, rivers and lakes. They

"...provide a wide range of functions critical for many aquatic and terrestrial species, for maintenance of water quality, for aesthetics, for the production of goods and services, and for a wide range of social and cultural values."

- U.S. National Academy of Sciences  
National Research Council (2002)





## Tools For Designing With Nature

MARC leads a variety of green infrastructure initiatives in close partnership with the Environmental Protection Agency (EPA), the University of Missouri — Center for Agroforestry (UMCA), the USDA National Agroforestry Center (NAC), and interested representatives of area agencies and communities. Efforts focus on the following:

**Natural Resource Planning Framework** — MARC recently completed an EPA-funded project to organize a regional natural resource inventory for community planning purposes. Green infrastructure initiatives will utilize this geographic information system (GIS)-based effort to help the metro area plan for future development in ways that consider natural systems.

One use of the resource inventory will be to identify locations suitable for effective agroforestry practices, whether on developed or undeveloped lands. For example, field windbreaks can reduce soil erosion while providing wildlife habitat and connecting fragmented forest patches. In agricultural settings, riparian forests buffer streams from fertilizers, pesticides, sediments and animal wastes. In urbanized areas, modified riparian forest buffer designs can be installed to protect urban streams, manage stormwater runoff, create wildlife habitat, provide recreational opportunities, and reduce noise and dust.

**Best Management Practices** — The project will help assess certain BMPs such as the use of native landscaping, to achieve multiple community objectives related to stormwater management, habitat conservation, and greenway trails. BMP design and evaluation will provide useful



*Approximately 22 percent of the region's land area has significant environmental conservation or restoration potential.*

guidance for local communities, building upon the MARC/APWA BMP Manual for Stormwater Quality completed in 2003.

Cutting edge new visualization software, CanVis, was developed by the USDA National Agroforestry Center to help decision makers and designers depict alternative resource plans and BMP design strategies. This software, for example, allows users to add vegetation and other materials necessary for some BMPs into an existing scene to illustrate design alternatives.

**Demonstrations / Education** — A raft of promising designs and management strategies will be demonstrated on selected sites within the metro region. Sites will be linked to focused research, educational programs and public outreach efforts.

For more information contact Tom Jacobs at MARC: (816) 474-4240 [tjacobs@marc.org](mailto:tjacobs@marc.org)

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