



SUSTAINABLE DEVELOPMENT: MOVING TOWARD A GREENER COMMUNITY

TOPENA



Sustainable Development — Choosing A Path Toward the Future.

Choices must be made as a community grows and develops. How a community manages its stormwater runoff and plans for green infrastructure greatly affects its livability and ultimately its sustainability. This is the story of how Topeka, Kansas is working in partnership on these two issues to move toward a greener community...



Security Benefit

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Population 124,000
State Capitol Building

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“As a community grows it needs to make informed choices that balance social, economic, and environmental considerations and lead it to a sustainable future.”

**— Adela Backiel, Director
USDA Office of Sustainable Development**

SUSTAINABLE COMMUNITIES

Sustainable development involves the consideration and balancing of social, economic, and environmental factors by a community. As communities grow, the urbanized landscape displaces lands that were once used to grow forests, raise crops, graze livestock, and provide natural areas. Wildlife habitat is replaced with human habitat. Natural functions of the landscape, like nutrient cycling, surface water flows, and groundwater recharge are impaired by paved surfaces, buildings, and compacted soils. This has been the classical pattern of urban growth. In short, the natural functions of the landscape that absorb, filter, and transport rain water are replaced by storm drains and impervious surfaces, and the forest and fields of our youth are replaced by residential and commercial development, leaving only scattered parklands that provide few environmental benefits.

Communities have long understood the need for **“gray infrastructure”** like water and sewer lines, power lines, and roadways. More recently, the importance of **“green infrastructure”** that consists of a planned and managed, interconnected network of natural areas (waterways, wetlands, forests and conservation lands like greenways and parks) and adjacent working lands (farms, ranches, and corporate lands) has gained recognition in many communities. Together these lands have the potential to support wildlife, maintain ecological processes, sustain air and water resources, and contribute to the health and quality of life for communities. Green infrastructure, as an integral part of the urban and rural landscape, can provide the strategic conservation framework needed for environmental, social, and economic sustainability.

Opportunities for community sustainability occur:

- ◆ within existing development
- ◆ within areas of future development, and
- ◆ as part of the larger watershed and landscape



“Agroforestry embraces the concept of *Working Trees* — the right tree, in the right place, to do a job. Many agroforestry technologies that were originally designed for farms and ranches can be modified to help communities. This is especially true for issues like stormwater runoff, riparian restoration, green space, and wildlife habitat. Agroforestry solutions can readily be applied at the urban/rural interface and in many cases within an urban area.”

**— Dr. Greg Ruark, Director
USDA National Agroforestry Center**

TOPEKA: AN EXAMPLE TO FOLLOW

Topeka is leading the way in innovative stormwater management in Kansas and the Midwest. In addition to providing for stormwater and sewage needs of the community, the City seeks to improve water quality and improve surface and groundwater by filtering stormwater runoff through natural vegetated systems. This also provides opportunities to expand the City’s green infrastructure. These natural systems are being incorporated into street and parking lot designs, parks, and open spaces that serve surrounding neighborhoods.

Topeka faces many of the same regulations, issues, and fiscal constraints as other cities and towns throughout the United States. Topeka is coordinating efforts with the Mid-American Regional Council (MARC) in the Kansas City Metropolitan Area, to develop best management practices and engineering guidelines for applying green infrastructure technologies, like agroforestry, to manage stormwater. The knowledge and experience gained through these efforts will help other communities see how they too can address their water management issues using green infrastructure.

Topeka's Stormwater and Green Infrastructure Goals

- ◆ Flood and Erosion Control
- ◆ Water Quality Protection
- ◆ Wetlands/Habitat Management
- ◆ Recreational Development
- ◆ Community Aesthetics

Although flood control and water quality improvement are interrelated, cities often approach them in disjointed and counterproductive ways. However, “Green Topeka” and the “North Topeka Master Drainage Plan” are community-wide efforts that harmonize future projects to alleviate flooding, improve water quality, and enhance neighborhood livability.

Benefits Include:

- ◆ Pedestrian/Bike Path
- ◆ Handicap Access
- ◆ Amphitheater
- ◆ Picnic Shelters
- ◆ Sculpted Landforms
- ◆ Interpretive Trails
- ◆ Boardwalks
- ◆ Pedestrian Bridges
- ◆ Environmental Education
- ◆ Wetland Systems
- ◆ Increased Wildlife Habitat



“GREEN TOPEKA”

In November 2000, the City initiated Green Topeka to address water quality and quantity concerns. Green Topeka is a partnership that includes state agencies, Kansas State University, local government, nonprofit organizations, private stakeholders, and the USDA National Agroforestry Center (NAC). The partnership is working to develop and implement a Stormwater Master Plan. Green Topeka views stormwater projects holistically and is using the experience to develop a set of Best Management Practices (BMPs) to address stormwater concerns and to increase green infrastructure throughout the community. Using natural techniques in combination with conventional approaches can retain many of the existing vegetated drainage ways. This approach to stormwater planning on the front end of development projects rather than retrofitting costly stormwater fixes after urban growth has occurred can get the job done.

The Green Topeka partnership recognizes that creating and maintaining a sustainable community and responsible management of all water resources is too big for any single department or agency. Many different fields of expertise and funding sources are necessary.



“Green infrastructure offers a smart solution to our land conservation challenges because it seeks to plan land development and land conservation *together* in a way that is consistent with natural environmental patterns.”

—The Conservation Fund

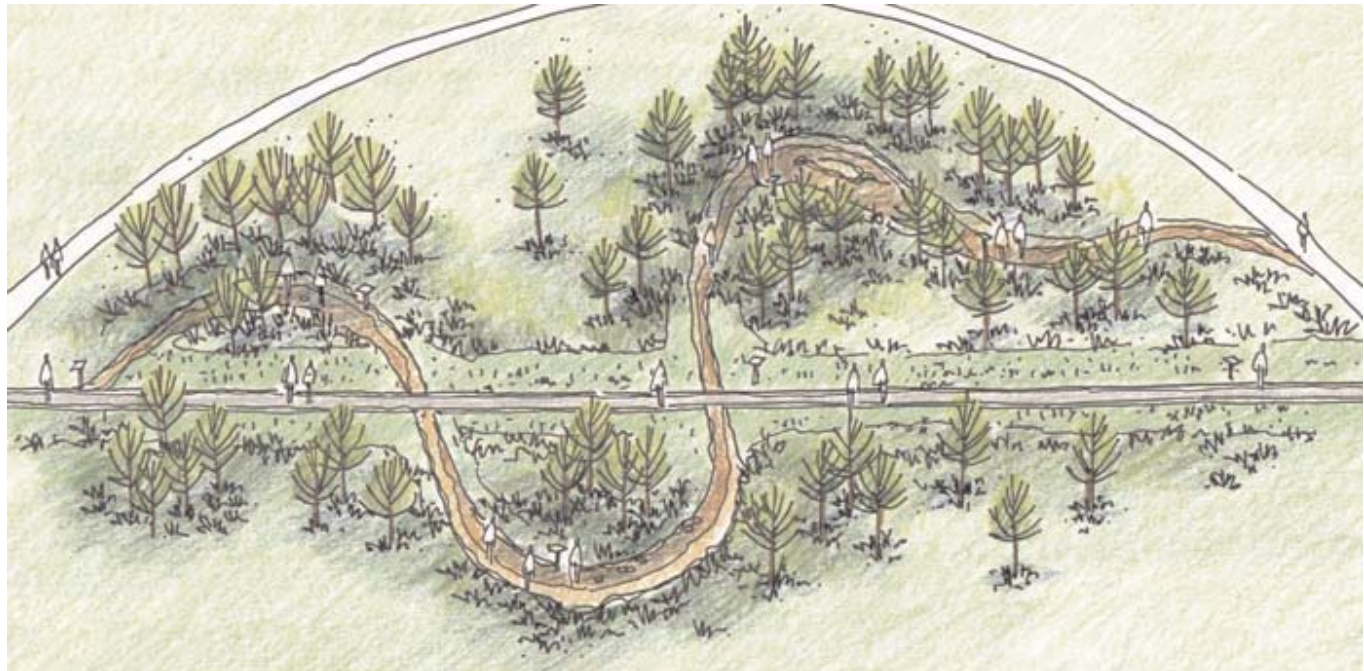
EXISTING COMMUNITY DEVELOPMENT

Topeka, like many communities, is changing the way it manages stormwater in newer developments, but, just as importantly, Topeka is taking advantage of opportunities to change stormwater management within established neighborhoods.

Green infrastructure technology can be incorporated into existing systems as aging gray infrastructure requires maintenance and replacement. Old systems that were originally designed merely as conveyance systems can be augmented with green infrastructure to achieve many other benefits. In Topeka, opportunities for change are created in many different ways. A few examples are:

- ◆ North Topeka Master Drainage Plan
- ◆ Old Soldier Creek and Garfield Park
- ◆ Hillcrest Community Center Parking Lot

A proposed all-accessible trail educates users about stream functions by comparing a winding stream to a straightened channel.



NORTH TOPEKA MASTER DRAINAGE PLAN

The driving force behind the North Topeka Master Drainage Plan was citizen concern over frequent flooding. The conventional response would be to dig up the storm drain pipes and replace them with larger pipes to handle larger flows. However, the City also needed to respond to Environmental Protection Agency (EPA) Phase I requirements for addressing non-point pollution from stormwater systems.

The Master Drainage Plan for the North Topeka area was developed utilizing input from a multidisciplinary workshop. The Plan's goal is: *To make those improvements required to protect property from flooding in an environmentally friendly and aesthetically pleasing manner, while striving to meet all regulatory requirements and community needs and goals in a fiscally responsible manner.*

The North Topeka drainage basin flows directly into the Kansas River via Old Soldier Creek. This watershed is now a "pilot" area for exploring innovative practices, like vegetated swales and constructed wetlands, to detain and clean stormwater runoff. The *Working Trees*, other vegetation, and soils in these practices, when properly

designed and sited, can take up water and absorb and break down contaminants. The lessons learned in this pilot effort will help other communities address their EPA Phase I and II stormwater program needs and meet Total Maximum Daily Load (TMDL) requirements.

The North Topeka Drainage Plan calls for the following actions:

- ◆ Improve wildlife habitat in the Old Soldier Creek corridor by planting native prairie grasses, shrubs, and trees.
- ◆ Construct a wetland system to serve as a natural stormwater retention area near the mouth of Old Soldier Creek at Garfield Park
- ◆ Develop a trail system along Old Soldier Creek to connect Garfield Park to the YMCA as well as shops and restaurants within the North Topeka Area.

The retention wetland will also enhance the Garfield Community Center by providing aesthetic values and educational opportunities with:

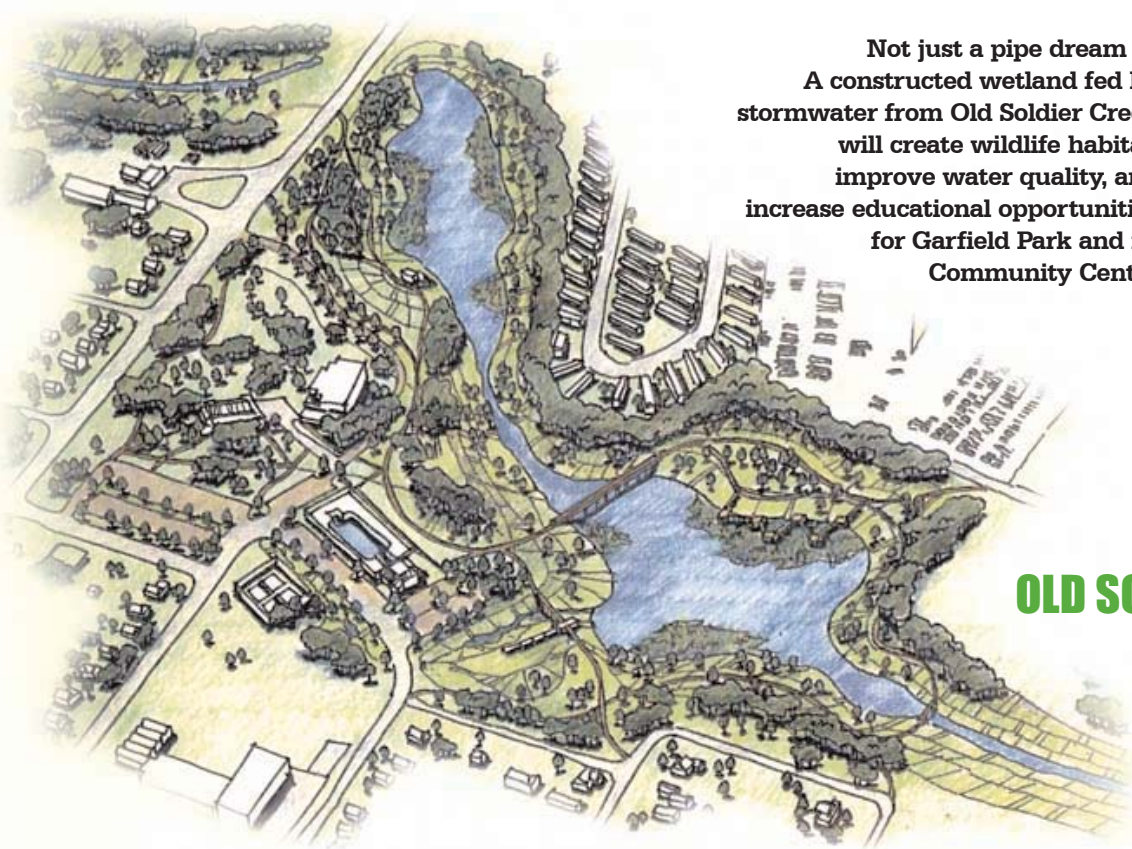
- ◆ An all-accessible hiking and biking trail within the Old Soldier Creek corridor.
- ◆ Interpretive signs along the trail to describe the use of vegetation in stormwater management and the role of the many partners needed to improve water quality.



“As vegetation is replaced by impervious surfaces (roads, buildings, parking lots), infiltration, groundwater recharge, groundwater contributions to streams, and stream base flows all decrease, while overland flow volumes and peak runoff rates increase. Stream channels respond by increasing their cross-sectional area to accommodate the higher flows. This channel instability triggers a cycle of streambank erosion and habitat degradation in riparian areas.”

**—National Academy of Science,
March 2002**

Natural stream channels can effectively handle runoff, while providing ecological functions, wildlife habitat, and aesthetic beauty.



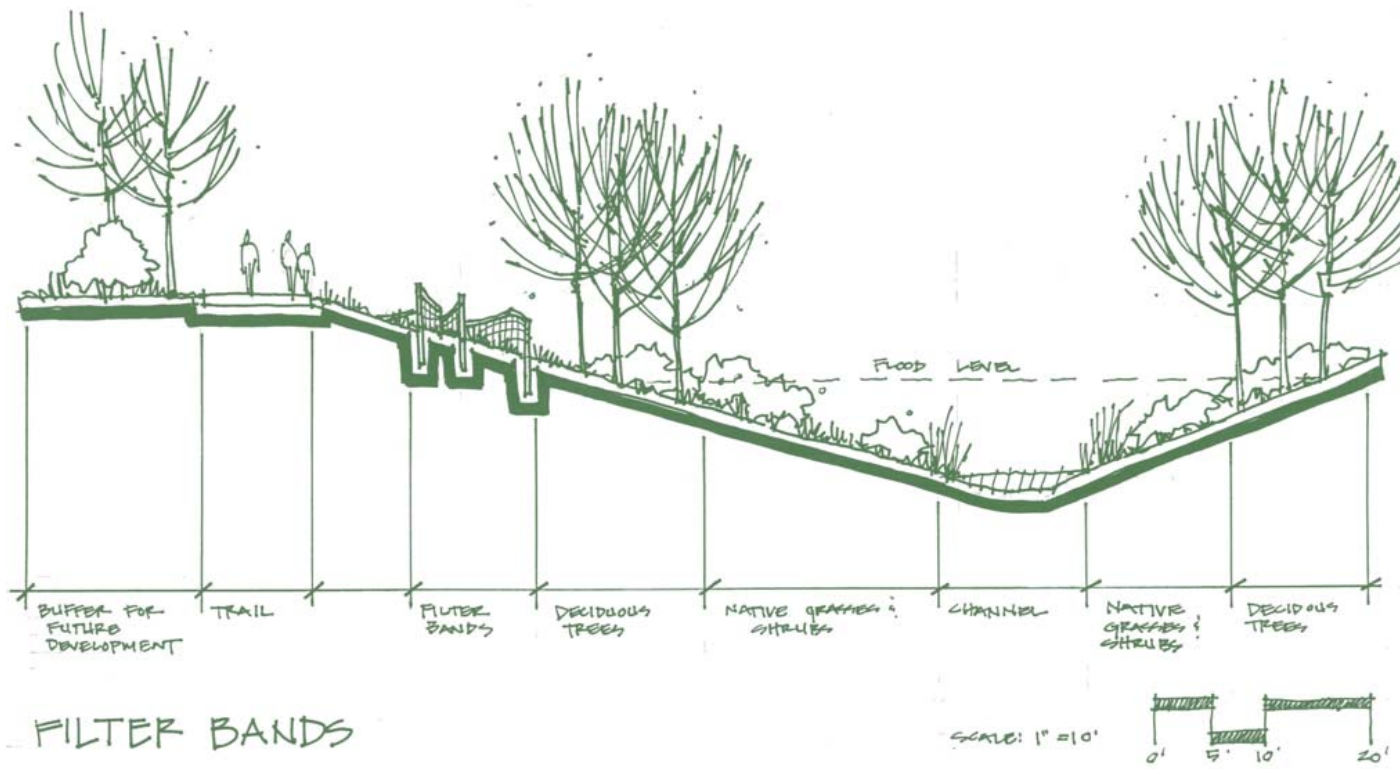
**Not just a pipe dream —
A constructed wetland fed by
stormwater from Old Soldier Creek
will create wildlife habitat,
improve water quality, and
increase educational opportunities
for Garfield Park and its
Community Center**

OLD SOLDIER CREEK and GARFIELD PARK

North Topeka is one of the original areas of the city, and has a combined system for handling stormwater and sewage. A combined system is undesirable for several reasons. First, large volumes of stormwater create more work for the wastewater treatment plant. Second, the system backs up during periods of intense rainfall, causing overflows which can dump raw sewage into the Kansas River. And third, the city has scheduled replacement of a stormwater pump sta-

tion that is required to move the stormwater over the Kansas River levee during flood events.

Due to the flat topography of the area, the pipes for the combined system were installed deep in the ground to produce slopes that would ensure proper flow. A pump is used to raise the combined waste waters over the Kansas River levee. Due to the large volume of flow, this aging pump station needs to be replaced. However, instead of routing the stormwater to the pump station, the city will



Old Soldier Creek Channel will be managed in a new way that will not only convey stormwater, but also reduce flooding, improve runoff water quality, and increase recreational opportunities.

separate the stormwater and wastewater by installing a new stormwater system that discharges into the Garfield Park constructed wetland. This new system will eliminate combined sewer overflows (CSOs), provide enhanced treatment of stormwater, and eliminate the need for the costly replacement of the stormwater pump station. In addition, the city will be able to downsize its current wastewater pump station.

Old Soldier Creek is a two-mile channel cut-off from the original Soldier Creek that flows

through Garfield Park and into the Kansas River. This section of Soldier Creek was bypassed by New Soldier Creek to prevent flooding in North Topeka. Old Soldier Creek was channelized and has 20 to 30 percent side slopes. Mowed grass covers the majority of the channel with some scattered volunteer trees. As part of the stormwater management plan, the riparian zone of Old Soldier Creek will be replanted with native grasses, trees, and shrubs. The native vegetation will require less maintenance and will filter runoff more effectively than the

existing grasses. The trees will canopy the stream and provide cooler water for wildlife and aquatic habitat.

Under the new drainage plan much of the North Topeka stormwater will be directed into Old Soldier Creek. To handle this increased flow, Garfield Park will be redesigned to include several micro-pools that will hold the runoff, allowing the nitrogen to be taken up by plants and soil or to dissipate into the air. The pond will add new vitality to the currently underutilized park.



This newly constructed bioswale in the Hillcrest Community Center's parking lot helps to reduce storm-water runoff volume and improve water quality.



Rocks, located at curb cuts, reduce runoff velocity and energy from the parking lot.

HILLCREST COMMUNITY CENTER PARKING LOT

A new bioretention system demonstration at Topeka’s Hillcrest Community Center, provides for a different approach to stormwater management. This bioretention filter in the Center’s parking lot will treat stormwater runoff from an adjacent hillside and the parking lot while creating an aesthetically pleasing entrance to the community center. Changes in the stormwater quality before it enters the bioretention filter, and when it leaves, is being monitored by the Topeka Water Pollution Control Division.

The bioswale consists of a five-foot-deep excavated portion of the parking lot that has been refilled with a “soil” made of biosolids (a product of the wastewater treatment process), sand, and topsoil. The swale is designed to capture and treat a 10-year rain event (in Topeka this is 4.4 inches over a 24-hour period). A drain pipe was placed under the soil to receive stormwater after it has percolated through the soil. Flood tolerant grasses, shrubs, and trees were planted in the swale. The plants and soil will absorb most of the water and nutrients, while decreasing the delivery of stormwater into the City drainage system.

“It’s time for stormwater management systems to provide more to Topeka residents. A concrete pipe that simply passes stormwater onto our downstream neighbors is not enough. By incorporating “green technologies” future stormwater systems can protect our rivers and lakes from contaminants, while moderating runoff peaks, enhancing wildlife habitat, and providing outdoor recreation opportunities.”

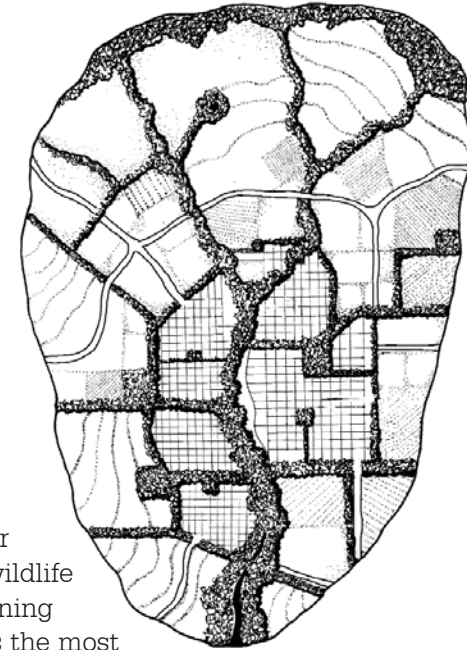
**— Mark Green, P.E., Superintendent,
Water Pollution Control Division,
Topeka Department of Public Works**



FUTURE COMMUNITY DEVELOPMENT

As Topeka grows in population, it is expanding into the surrounding area. It takes community-wide support to plan now for future stormwater management that will allow for creative solutions that incorporate roles for trees, shrubs, and grasses in managing runoff. Agroforestry technologies, like riparian forest buffers, can be designed to get the job done in more aesthetic ways and often at a lower cost. Many other benefits, like more open area and green spaces for wildlife and people result from planning in new ways. Designing sustainability into a neighborhood or development is the most economic way to meet the needs of inhabitants, address nonpoint source pollution in stormwater, and maintain environmental processes in the community and surrounding landscape.

Sustainable communities are planned for and created. They don't materialize out of haphazard and uncoordinated expansion. Applying green technologies into new developments is far easier than retrofitting them into the built-out areas of a community. Even so, there is a tendency to choose the most familiar and expedient methods for new development planning. Successful community planning must involve stakeholders if decisions are to withstand the test of time and development pressures. Stakeholders in a watershed include citizens, developers, local and state regulatory authorities, agricultural producers, and businesses.



Above: A conceptual watershed plan demonstrates how green infrastructure can be used to connect the rural and urban community.

Left: Stormwater management choices range from concrete channels to natural streams.

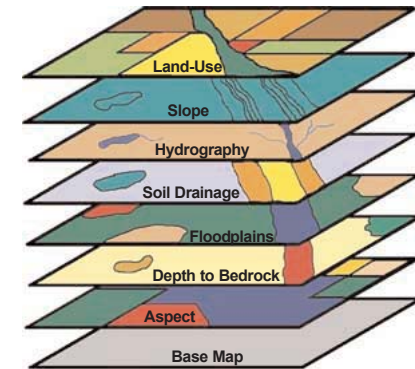
LANDSCAPE/WATERSHED

Watersheds contain a variety of land uses, like forestry and agriculture. Communities occupy only a portion of a watershed but they can greatly affect their watershed and are, in turn, affected by the activities of others in their watershed. Topeka is striving to look beyond the basic responsibilities of managing stormwater runoff and treating wastewater within its borders. It is looking to understand and manage water quality at the watershed and landscape level.

When the primary water management approach in a watershed is to convey runoff through terraces and tile drains, through channelized streams, and through underground stormwater pipes, the hydrology of the landscape is dramatically altered. Water is no longer allowed to percolate into the soil and into subsurface and groundwater flows. The results are reduced base flows of streams and wetlands, and degraded in-stream and terrestrial habitats. The management of water quality and quantity at the watershed scale is much more complicated than merely constructing a wetland at the mouth of the watershed to intercept and filter large quantities of stormwater. Such a wetland would be overwhelmed by large pulses of water and contaminants and cannot maintain season-long base flow. The better approach is to manage the water resource with a coordinated and connected green infrastructure throughout the watershed in conjunction with traditional stormwater management techniques.

Topeka lies within portions of three different watersheds in Shawnee County and shares a joint planning commission with the County. The planning commission coordinates watershed management policies throughout the watersheds. Working in partnership, the Topeka-Shawnee County planning commission can create a coordinated and connected green infrastructure that meet the federal, state, county and city water quality goals.

Topeka is working with the USDA National Agroforestry Center and Kansas State University in a research project that utilizes computerized Geographic Information Systems (GIS) to determine how best to locate conservation practices on the landscape.



Geographic Information Systems (GIS) Technology Can Aid Project Design

To optimize the benefits that *Working Trees* provide to communities and the landscape, planners can utilize GIS, a collection of computer hardware and software designed to efficiently store, update, analyze, and display all forms of geographically referenced information. Information such as land-use, topography, and soils data can be readily combined in GIS to reveal the best locations for trees to solve multiple issues like improving water quality and wildlife habitat. GIS can help ensure that public resources are spent efficiently and wisely while creating a network of *Green Infrastructure* that achieves community goals.



CITY OF TOPEKA

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Date: 9/11/00

To: Bob Achison, Phil Bach, Gary Bentrup, Dennis Brinkman, Julie Coleman, Lynn Couch, Kim Feldkamp, Mark Green, Kate Grover, Kelly Haller, Bill Hargrave, Steve Hennessey, Sara Hosenfeld, Steve Hunt, Gary Larson, Dennis Lewis, Paul Lisch, Jim Martin, Chris Marmolite, Greg Ruark, Richard Straight, Jeff White, Robert Wilson, Alyce Wolf

CC: Meyer

From: Kate Grover, City of Topeka - 1642

RE: Urban/Rural Watershed Focus Group

Enclosed please find a copy of the agenda and notes from the Urban/Rural Watershed Focus Group discussion of Thursday Aug. 31, 2000 at the Oakland Wastewater Treatment Plant. Also attached is an outline of Mark Green's PowerPoint presentation and the list of attendees. If you have any questions, please feel free to contact me at (785) 368-1642.

Attachments

9/11/00

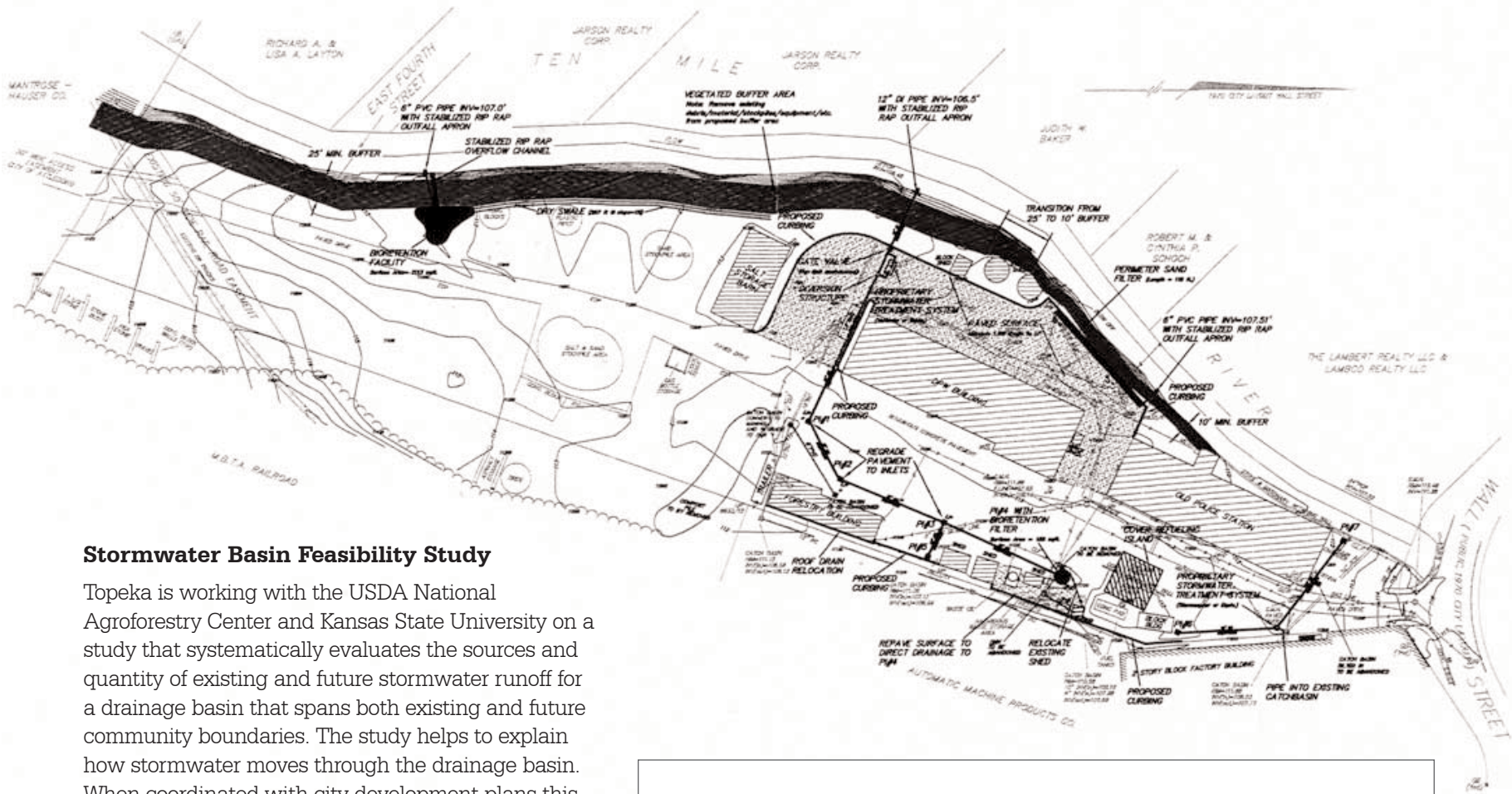
**Topeka is part of three watersheds —
improving the neighborhood starts with
becoming a better neighbor.**

POLICY INSTRUMENTS

The goals and functions of any sustainable community must be well defined and supported by guiding policy instruments if they are to be achieved over the long haul.

It is not just a matter of writing new ordinances or regulations, but also reviewing existing policies, looking for regulations that inadvertently prohibit the utilization of green infrastructure technologies. Topeka Water Pollution Control Division (WPCD) is working with the Kansas City Metropolitan Area's Mid America Regional Council (MARC) to review the American Public Works Association's (APWA) Stormwater Manual, Section 5600, looking for just those kinds of standards and specifications. The next step is to write new APWA standards that allow for and encourage stormwater BMPs that embrace green infrastructure technology.

Many communities are learning that it doesn't cost anymore to develop and maintain green infrastructure. The biggest barrier is overcoming the tendency to choose the most familiar and expedient approach to addressing the issues. Policy instruments that promote green infrastructure solutions and new methods of funding move communities toward sustainability.



Stormwater Basin Feasibility Study

Topeka is working with the USDA National Agroforestry Center and Kansas State University on a study that systematically evaluates the sources and quantity of existing and future stormwater runoff for a drainage basin that spans both existing and future community boundaries. The study helps to explain how stormwater moves through the drainage basin. When coordinated with city development plans this information can help determine where green infrastructure components can most effectively handle stormwater flow and meet future open space and habitat needs. By planning ahead, many existing vegetated drainage ways can be retained and incorporated into the city’s green infrastructure. This avoids the expensive mistake of destroying the existing natural drainage system and replacing it with cement channels or underground pipes.

Water Quality & Environmental Awareness Survey

Topeka’s Water Pollution Control Division (WPCD) worked with Kansas State University and the USDA National Agroforestry Center to develop a survey to assess city residents’ awareness of water quality issues and their preferences for addressing them. Results from the 2,500 returned surveys have been very useful in helping public officials design effective ordinances. A majority of the respondents rated water quality as “Important” to “Very Important” for public health. (92.4 percent), for wildlife and plants (85 percent), and as a civic duty (83 percent).

The following three ordinances stem from the desire to make Topeka a more sustainable, livable city. Out of the top five reasons individuals choose a place to live; open space and greenways make up two. Topeka is striving to provide quality spaces to live and work.

STREAM BUFFERS ORDINANCE

A buffer ordinance can prescribe the minimum width of vegetated land that must be maintained on either side of a drainage way. The prescribed buffer width is determined by the amount of land that drains into a stream. Larger streams require wider vegetated buffers to moderate peak flows and neutralize excess nutrients and contaminants.

Topeka and other communities with populations exceeding 100,000 were issued a Phase I stormwater permit by the EPA. The permit requires that Best Management Practices (BMPs) be implemented to reduce pollutant loadings from non-point sources. This requirement was discussed with the Kansas Water Office during the summer of 2000, which at the time was promoting a stream buffers initiative throughout the State. EPA

had already endorsed the effectiveness of streamside buffers for achieving pollutant load reductions. The City had responded to numerous resident calls with regards to stream bank erosion and property damage due to periodically rising waters. These factors provided the foundation for understanding and ultimately recommending stream buffers as an essential BMP.

The steps in developing the buffer ordinance were:

- ◆ Investigation was a must. Ordinances from other municipalities and States were reviewed, particularly those from the Northwest, Maryland, and Colorado. In addition, the draft ordinance from the Center for Watershed Protection (CWP) in Maryland provided a solid starting point.

- ◆ Local, State, and Federal agency expertise was relied upon to help tailor the draft ordinance. For example, there is little surrounding forestland and, therefore, instead of a three-zone system, a two-zone system was designed that did not require forested buffers and encouraged the protection of native/natural vegetation. This interpretation allows grasses and shrubs to also be used where appropriate.
- ◆ Local government was educated on the role of buffers in achieving water quality to obtain buy-in and commitment.
- ◆ Developer and homebuilder input was obtained through two initial meetings. Comments were studied during a subsequent workshop which looked at the results of the proposed ordinance on existing development and a new development.



A Quilt Covers More Costs

“Instead of a silver bullet, or single funding solution for financing environmental protection and restoration efforts, a community quilt of financing techniques has the potential to cover the variety of activities within the watershed. In the Chesapeake Bay, a typical watershed is divided into a mosaic of public, private, and non-profit land ownership and myriad land-use activities. Because there are funding assistance programs directed toward nearly each land-use and activity, using a collection of terms and concepts to describe these activities, such as wetlands, forest buffers, source water protection, stormwater control, education, agriculture, urbanization, etc., broadens the potential support for water quality and management.”

— Environmental Finance Center,
University of Maryland

- ◆ The ordinance was revised and re-sent to the developer and home builder groups for comments. Comments were minimal and the final ordinance was drafted.
- ◆ The ordinance was unanimously approved by the City Council.
- ◆ A public-awareness survey was conducted which indicated overwhelming public support for water quality and wildlife.

Key Features Include:

- ◆ Protects channels/ditches of drainage areas 50 acres or greater.
- ◆ Contains an existing development component - a line item will be established in the annual budget to retrofit existing streams in the current city limits. This program provides for 'impact' plantings with large trees in areas of high residential housing densities and maximizes the use of Kansas Forest Service conservation trees in lower density areas.
- ◆ Encourages the use of native grasses, shrubs, and trees.

Implementation will occur with both new and redevelopments. All public owned land and stream property will be displayed on a GIS map.

LANDSCAPING ORDINANCE

This ordinance provides guidelines primarily for commercial developers, utilizing vegetated areas, bio-swales, and detention ponds to reduce contaminated off-site runoff from roofs and parking lots. It was approved by the City Council and is primarily focused on aesthetics. It aims to 'green up' commercial developments by buffering properties from streets and breaking up large masses of asphalt parking with plantings. The WPCD reviewed the ordinance and provided input with regards to the 'engineering' of the landscape - making it more functional for collecting and treating runoff prior to discharge. Instead of using the typical raised islands that block runoff from entering the tree plantings, the ordinance promotes building depressions, planted with trees and other vegetation that can get their 'feet' wet for up to 48 hours. In an effort to encourage developers to use environmentally smart landscapes a 20 percent credit is allowed toward the total required points if landscape BMPs are used. The ordinance is written to allow flexibility for the developer and, depending on the size, dictates the number of required points. For example, an existing large diameter oak tree may be worth 50 points and a new juniper shrub only three points. By mixing and matching, the developer can meet the point total.

OPEN SPACE ORDINANCE

Green space and open space are much more than amenities. They are integral to functional green infrastructure and desirable, livable communities.

This ordinance is still in draft form and will primarily apply to residential developments. It requires the developer to set aside open space at a standard of five acres per 1000 residents. The area shall not be less than three contiguous acres unless it is an addition to an existing park. The goal is to ensure that open space is maintained as a quality of life and neighborhood value component. This also aids in preserving open space for park systems and trail connections, and it will complement the buffers ordinance. To provide the developer relief, if a development design plans for environmental features, such as stream buffers, those features can account for up to 25 percent of the open space requirement.

STORMWATER UTILITY FEE

Many cities maintain a general fund to support police and fire departments as well as other public services. It is much easier to fund high profile services such as police, fire and other emergency services than a service that is typically buried underground like stormwater pipes. Recently, Topeka created a stormwater utility fund as a stand-alone enterprise fund similar to a water or wastewater utility. Residents are charged for the amount of impervious surface contributing to runoff.

The stormwater utility fee is based on the square-foot area of impervious surface that is on a property owner's land. Impervious surfaces include roofs, sidewalks, driveways, and parking lots. The user fee is founded upon the principal that hard surfaces create water runoff for which the city must expend resources to convey and treat, therefore the property owner should pay for those surfaces. A typical fee for a home is about \$3.00 per month. Commercial sites with large parking lots are charged more. This fee generates \$4 million annually for Topeka. The fee is applied consistently to all property owners regardless of whether or not they are a government, non-profit, commercial or private landowner.





“Green infrastructure is America’s natural life support system. Since it provides the ecological framework for the sustainable use of land, we need to identify and protect critical ecological sites and linkages prior to the planning and construction of gray infrastructure and the development of land. Wherever possible, planning and protecting green infrastructure should come first due to the high cost of restoration and the difficulty of creating human-made systems that function as well as natural systems.”

— Principles for Successful Green Infrastructure Initiatives, #3

GETTING STARTED

When considering how to initiate a project at the watershed level, keep the following in mind.

Partnerships — A broad-based partnership provides necessary public support, funding, knowledge, and skills to meet diverse needs. To put the right trees in the right place to achieve multiple benefits partners need to rely on each other’s expertise. Partnerships can include local natural resource professionals, social groups, neighborhood improvement associations, conservation organizations, and special-use districts.

Policy — Local, county, state, and federal agencies can explain regulations that may help or hinder the use of green infrastructure approaches. Sometimes it is necessary to develop new policy instruments, like ordinances, that promote a new approach.

Practice — “Practice makes perfect” is not just an old saying, it’s the way we build skill, capacity, understanding, and support for new ideas. Compile a list of new development sites in need of work. Then start small; install a bio-swale into an existing parking lot, and work into larger scaled projects which might include improving the capacity of a pond to detain and cleanse stormwater.

Public Education — Inform the public. Educational signs along trails that are located next to drainage ways can explain how green infrastructure works for water quality and wildlife habitat. The same signs can give credit to all partners. Work with local media to promote the good work of your partnership and the benefits to your community. Public education can lead to public support once people understand how they benefit.

Perspective — People, water, and wildlife move in and out of every community. Consequently, how we maintain and develop our communities impacts all the resources and people around us, and in turn, our communities are impacted by the surrounding landscape.



KACEE

PARTNERS IN ACTION

Community Tree Planting

The City worked with the Kansas Forest Service, the USDA National Agroforestry Center, Topeka Parks and Recreation, Westar Energy, the Kansas Office of Community Service, AmeriCorps, and the Cottages of Topeka, a retirement community, to plant over 300 large trees along the Old Soldier Creek drainage in North Topeka. The trees helped reestablish a riparian buffer along the stream, as well as provided needed habitat for wildlife.

Wild World of Waste and Water

The City collaborates with the local school district to provide watershed education for all fourth graders in the district. The Wild World of Waste and Water is a project that involves the Outdoor Environmental Education program, the Shawnee County Recycling Department, Keep America Beautiful Topeka-Shawnee County, and Rolling Meadows Landfill. The project provides students with a glimpse of activities in the Kansas River watershed that could affect the quality of their surface water. It includes a full-day field trip where students learn about wastewater treatment, recycling, household hazardous waste, and the local landfill. In addition, the students visit both an urbanized stream and a natural stream to compare the quality of water. They assess plant and animal life by seining for fish and sampling for aquatic microorganisms.

Neighborhoods and Stormwater Retrofit

Topeka has sixteen Neighborhood Improvement Associations (NIAs). A great many stormwater retrofit projects occur in these older areas of the city. Aging infrastructure and systems that were sized properly before an area was built out, or before there was development surrounding it, are now experiencing stormwater quantity problems. Due to intense urbanization, many neighborhoods are proving to be an infrastructure challenge. The Topeka experience is showing that by working with, and through, established NIAs, retrofits gain better acceptance and construction runs more smoothly. Stormwater retrofits with green infrastructure are seen as assets to neighborhoods –increasing property values and enhancing livability.



Conceptual drawing of the Garfield Park constructed wetland. This area will provide recreational opportunities and public education.

Garfield Wetland and Educational Trail Advisory Team

The City is working with an Educational Advisory Team comprised of informal and formal educators from Topeka and the surrounding area to provide input on the Garfield Park Wetland and Old Soldier Creek Trail system. The Team will be asked to provide input on how to best utilize this all-abilities project for outdoor science-based education. In addition, the team will help identify local and regional needs for a broad range of learners who will visit the site once constructed.

Topeka Water Festival

Topeka worked with the Kansas Association for Conservation and Environmental Education (KACEE) and other local and state agencies and organizations to sponsor an annual Water Festival. Held each September, the Topeka Water Festival attracts 800 fourth grade students and their teachers from Topeka and the surrounding area to participate in “hands-on” activities to learn about water resources.



EDUCATIONAL OUTREACH

Education is an on-going process and learning occurs in many different ways and at different “teachable moments.” In a community it is important to inform and educate citizens both young and old. The public needs to see not only what is but “what could be.” Demonstration projects strategically located at frequented sites can help them visualize how green infrastructure will not only add trees and other plants to their environment, but will also improve the aesthetics and livability of their neighborhoods and the places where they work and play.

Public officials need and value information. It gives them a wider range of options and helps them make better decisions. It will be necessary to find and make opportunities to educate the City Council, especially when new members are elected. Developers, homebuilders, and public works employees are the ones who actually implement projects in a community. They need to be continuously engaged in a two-way dialogue so that they are made aware of alternative approaches to development and so that they have the opportunity to provide their input on what will or will not work.

Topeka is committed to planning for and incorporating green infrastructure into the community and looking for opportunities to blend natural approaches to stormwater management into its overall system as it reinvests in older parts of the city and expands to build new developments. This means working closely with Shawnee County and the City’s many partners to test new ideas and learn together how to develop best management practices that accomplish needed work, while providing for multiple benefits like clean water, wildlife, and recreation.

By planning and working in partnership and trying new approaches we are.....

Making Topeka Greener and Building a Sustainable Community.

RESOURCES

Center for Watershed Protection
8391 Main Street, Ellicott City, MD 21043-4605
www.cwp.org

City of Topeka, Kansas, Water Pollution Control Division
1115 Northeast Poplar Avenue, Topeka, KS 66616-1389
www.topeka.org

Green Infrastructure Working Group
<http://greeninfrastructure.net>

Kansas Association for Conservation and
Environmental Education (KACEE)
2610 Claflin Road, Manhattan, KS 66502
www.kacee.org

USDA National Agroforestry Center
East Campus-UNL, Lincoln, NE 68583-0822.
www.unl.edu/nac

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