

Project Overview

Project Title: Protecting and Restoring Urban Tree Canopy for Stormwater Management

What is This Project?

The state of Florida is one of seven southern states that has received funding to carry out a project to link urban tree canopy to stormwater mitigation, specifically for cities with Municipal Separate Storm Sewer Systems (MS4). The project will help southern cities utilize their urban forests as a vital tool for managing and reducing stormwater runoff. Excessive stormwater runoff accounts for more than half of the pollution in America's surface waters and causes increased flooding and property damages as well as public safety hazards.

Valuing the benefits of the urban forest helps us to better understand the contribution of trees to the 'ecosystem services' that trees provide such as cleaner water, air, shade, stormwater uptake and aesthetic values. An important feature of ecosystem services is that they often provide cost savings over the construction and use of traditional grey infrastructure.

Cities who participate in this project will show leadership by being innovators for effective, greener stormwater management. They will be able to showcase their work across their states and receive regional and national recognition for this work. They will also learn new tools, techniques and strategies for being effective stewards of their environments and effective managers of public resources.

Why has the Project Been Funded?

Rapid urbanization and climatic fluctuations have led to increased risk of flooding and degraded water quality in cities. Trees can be utilized as a key strategy for addressing this problem. Trees intercept, store and transpire stormwater and are a vital tool in abating and cleaning stormwater runoff. One urban tree can intercept thousands of gallons of water annually. But while the benefits of trees are well known, most cities do not include trees as a component of their stormwater management strategies.

The U.S. EPA, under the Clean Water Act, requires cities with separate storm sewers to develop programs to manage this runoff in order to reduce nonpoint source pollution (see box). Cities must also have best management practices to abate runoff.

This pilot project will demonstrate why and how cities can utilize their urban forests as a vital component of their 'green infrastructure' and use their trees as a best management practice. This project will help cities map, evaluate, protect and restore their urban forests to achieve better stormwater management and clean water.

How Long Will This Take?

The project is estimated to take 14-18 months, dependent on when the city is ready to begin (fall 2016 possible).

Who Can Participate as a Partner City?

Seven states -- VA, NC, SC, GA, FL, AL and OK -- from across the Southern Region of the USDA Forest Service have been awarded funds to provide cities with technical assistance to achieve this goal. Each state will select 1-2 cities to participate in the project. The project will evaluate each city's urban tree canopy and determine how to best incorporate their urban forests into the city's stormwater management programs (i.e. Municipal Separate Storm Sewer Systems (MS4)). Each state forestry agency will nominate the cities to participate. Each city will need to agree to participate and provide matching

efforts in the form of staff time, meeting rooms or other in-kind contributions.

Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local rivers and streams without treatment. EPA's Stormwater Phase II Rule establishes an MS4 stormwater management program that is intended to improve the Nation's waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

In 1990, EPA promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase I program for MS4s requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a stormwater management program as a means to control polluted discharges from these MS4s. The Stormwater Phase II Rule extends coverage of the NPDES stormwater program to certain "small" MS4s but takes a slightly different approach to how the stormwater management program is developed and implemented.

What Will the Partner Cities Get for Participating?

The primary outcome is a process for integrating trees into the city's stormwater management program. This process will be developed during the project with significant input by the participating cities and be described in a project case booklet produced at the end of the project. Ultimately, each city will have a more strategic and effective process for combating stormwater runoff.

In addition to a developed process, each city will get:

- Updated tree canopy and impervious land cover map used to map current canopy and analyze runoff, stormwater benefits and potential for mitigating stormwater (map and in GIS digital format) + metadata.
- Potential planting areas map (digital GIS) used for strategic planning to set future canopy goals.
- Codes and Ordinance Audit for urban trees to facilitate better management and care.
- Workshops with local committees to provide education and solicit input.
- Model ordinance language or other program/policy documents for using trees to meet stormwater regulations.
- Written step-by-step- strategy and methodology for linking urban forest systems to urban MS4 requirements for each of the specific partner city(s).
- Case study of the project suitable for sharing at workshops, with elected and appointed officials and other agencies and stakeholders.

In addition to the outcomes listed above, by better evaluating and planning for its trees, cities will also realize other 'ecosystem services' of the urban forest such as cleaner water, air, aesthetic values, open space, walkable and bikable streets, safer pathways, improved climate for businesses and better real estate values. These other values can also be calculated as part of the project.

What Does the City Need to Have in Place to be Selected as a Partner City?

1. *A willingness to consider using the urban forest for meeting goals for stormwater management.* A process will be developed for each city to follow – it will be up to the city to determine whether to adopt the process.
2. *The right staff in place:* at least one representative from stormwater management (e.g. engineering or public works), planning, GIS staff/department, parks and related agencies to be able to share data and review results. Staff will need to contribute their time to attending meetings (no more than 6 in-person meetings during the project) as well as occasional free

webinars to review data created by the project. One staff member needs to serve as the team liaison to work with the project's consultants.

3. A current *MS4 permit*.
4. An *urban forest program* (e.g. a staff arborist, a tree ordinance).

How Much Does Participation Cost?

This is a technical assistance program only, so no funds will be awarded to the partner cities. However, each city will receive up to a thousand hours of services. Each city will need to commit to matching that contribution, which can be done as an in-kind contribution.

Matching funds can be contributed in the form of staff time (salary and fringe), time from the public who attend any presentations, waived fees for meeting rooms and so on. See Appendix B: example matching formula. Cities will submit quarterly matching documentation showing the ways in which they have met their matches and the states will assist in identifying match sources.

Who Provides the Project Services?

The Green Infrastructure Center (GIC) will provide the technical support and project management. They are responsible for preparing all the deliverables. The GIC is a non-profit organization and will be paid by the NCFs Urban & Community Forestry Program. Their staff consist of planners, natural resources managers, foresters, GIS modelers and educators. More information is available at www.gicinc.org.

APPENDIX A: Work Flow

1. **Form a technical review committee made up of city agencies** (e.g. planning, engineering, forestry). Convene group for orientation (anticipate at least 4-6 technical meetings over the project year).
2. **Capacity Audits** (to be done concurrently).
 - i. **Perform data audit** (assess all data layers available, especially land cover, tree canopy, stormsewer, etc.)
 - ii. **Perform code and ordinance audit** – review whether and how trees can be used for stormwater management as well as how well the city's codes and ordinances protect, expand or restore the urban forest (tree ordinances, landscape codes etc.).
3. **Stormwater and trees calculations methods review:** Assess current software (i-Tree, i-Tree Hydro, other reference manuals and models) for determining stormwater uptake. Report results and recommended method.
4. **Analysis of current extent of the urban forest:** GIC will utilize current high resolution tree canopy or create new canopy data. Determine city's current canopy coverage and calculate stormwater (and related) benefits. Create Possible Planting Area Analysis (PPA) to determine how much canopy could be expanded. Determine potential future stormwater benefits.
5. **Recommendations:** Suggest code changes/incentives/programs that can integrate and utilize the urban forest for better stormwater management.
6. **Outreach and education:** Hold community forum(s)/workshops to educate developers, decision makers, community about the proposed approach.
7. **Write up recommendations:** Suggest how city can best adopt new programs, codes, processes to better integrate the city's trees as part of their stormwater management program.
8. **Sharing the work:** Create a case booklet and a PowerPoint presentation which features each of the seven participating states; detailing the project, methodology, lessons learned and best practices for other cities who wish to do this work. Present the case booklet at: state forestry conferences, the

national Partners in Community Forestry Conference, the American Planning Association, Stormcon (stormwater engineers' conference) and possibly the Water Environment Federation (WEFTech).

Comments or questions? Contact GIC at 434-244-0322 or firehock@gicinc.org

APPENDIX B: Grant Match Examples for a small city – large cities use large city spreadsheet

From Locality*	# of people	using only federal volunteer rate **	Hypothetical professional rates (salary & fringe)	Weekly Hours (avg)	Weeks in the year	TOTALS with federal volunteer rate *	TOTALS using likely professional rates **
Planner - Team Leader	1	\$23.07	\$40.00	4	52	\$4,798.56	\$8,320.00
Planner	1	\$23.07	\$35.00	2	52	\$2,399.28	\$3,640.00
City Arborist	1	\$23.07	\$30.00	2	52	\$2,399.28	\$3,120.00
City Engineer	1	\$23.07	\$35.00	2	52	\$2,399.28	\$3,640.00
Parks Director	1	\$23.07	\$35.00	2	52	\$2,399.28	\$3,640.00
Soil and Water District Staff	1	\$23.07	\$35.00	2	52	\$2,399.28	\$3,640.00
Community Review							
Community Workshops	80	\$23.07		2	3	\$11,073.60	\$11,073.60
Facility for Meetings	1	\$100		2	3	\$600.00	\$600.00
Facilities							
		Rental Rate		Hours			
Meeting space		\$60.00		2	10	\$1,200.00	\$1,200.00
Other things to consider adding							
Services							
Printing meeting flyers, maps						\$1,000.00	\$1,000.00
Match from GIC							
On-Line meeting services - web on line						\$500.00	\$500.00
Pro-rata rental for GIC's Office		\$250			12	\$3,000.00	\$3,000.00

Add the value of any non-federal state-funded staff, supplies or office space							
Forester							
Water Quality							
					TOTAL	\$34,168.56	\$43,373.60

Notes

* if the locality is using their offices, include their overhead, office space etc. as match

** if person's professional rate is known to be higher, use the higher professional rate