



Implementing Green Infrastructure:


Creative Approaches to Reducing Regulatory
and Financial Barriers in Rural and Urban
Communities

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“Managing Stormwater:
Economic Factors that Influence
Developers’ Decisions”

ECONorthwest



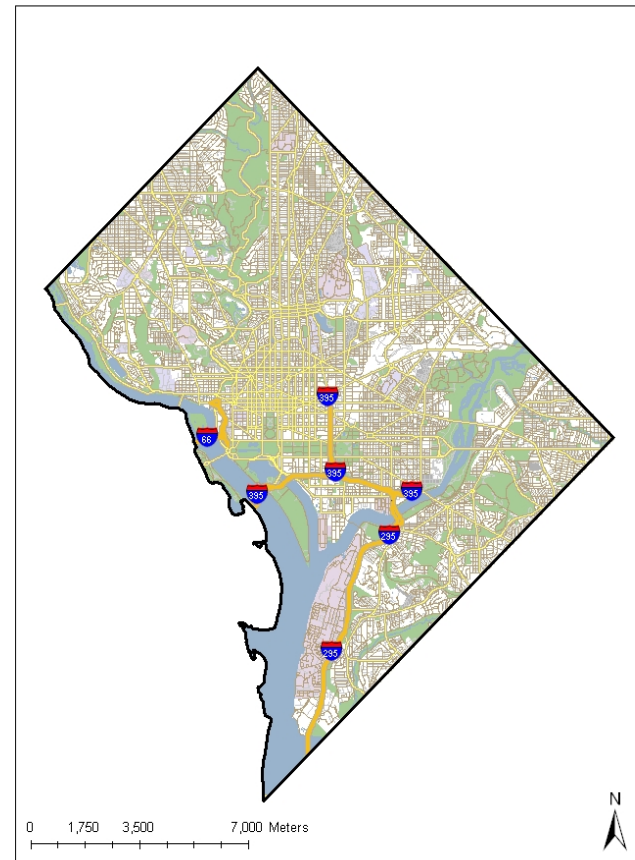
Downtown vs. North East



District of Columbia

Context for Regulatory Programs:

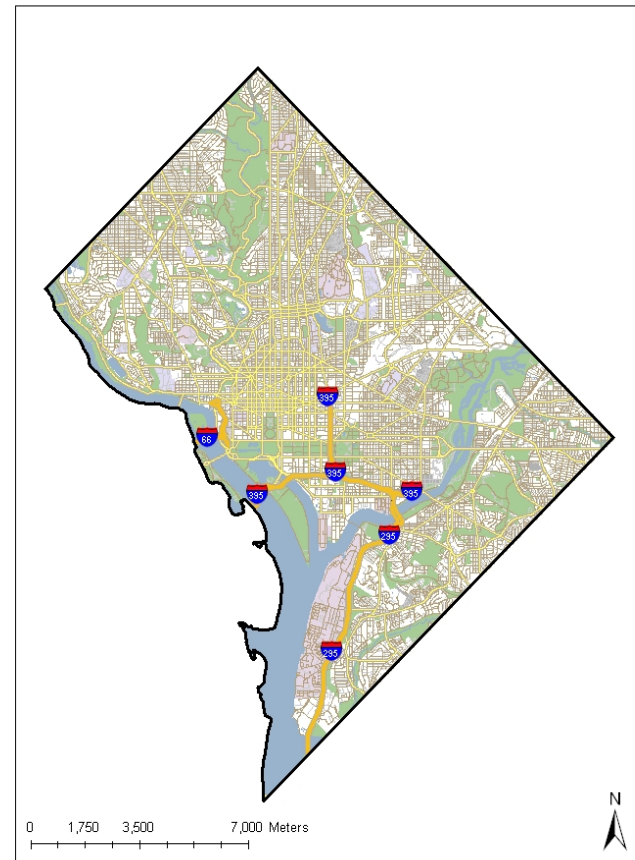
- MS4 Permit:
 - 1.2” retention standard for new and redevelopment for sites that disturb 5,000 sq feet
 - Retrofit of 418 acres including 35 acres in ROW during 5 year permit term.
 - No alternative to GI
- Combined Sewer Overflows (LTCP)



District of Columbia

District of Columbia

- Stormwater Retention Credit Trading Program
- Private Use of the Public Right of Way



District of Columbia

SWRC Trading Program

- **Scenario A: On-Site Retention Only**



1.2” retention on site 1 (the
“Regulated Development”)

- **Scenario B: Trading (On-Site & Off-Site Ret.)**



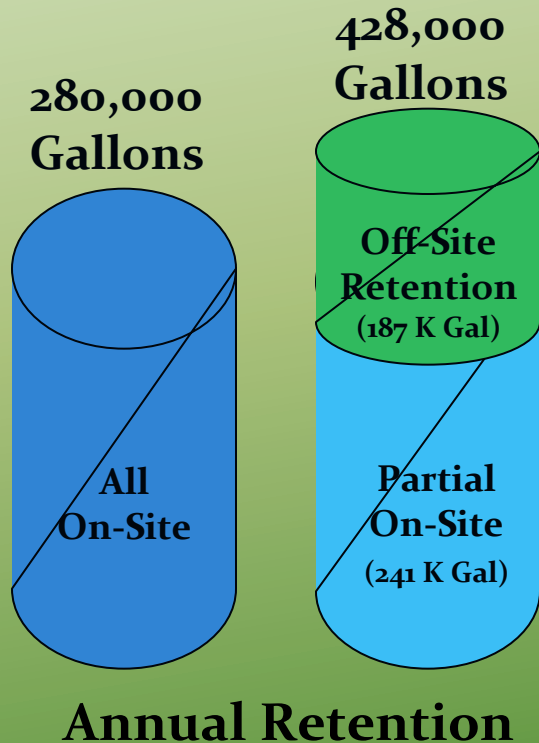
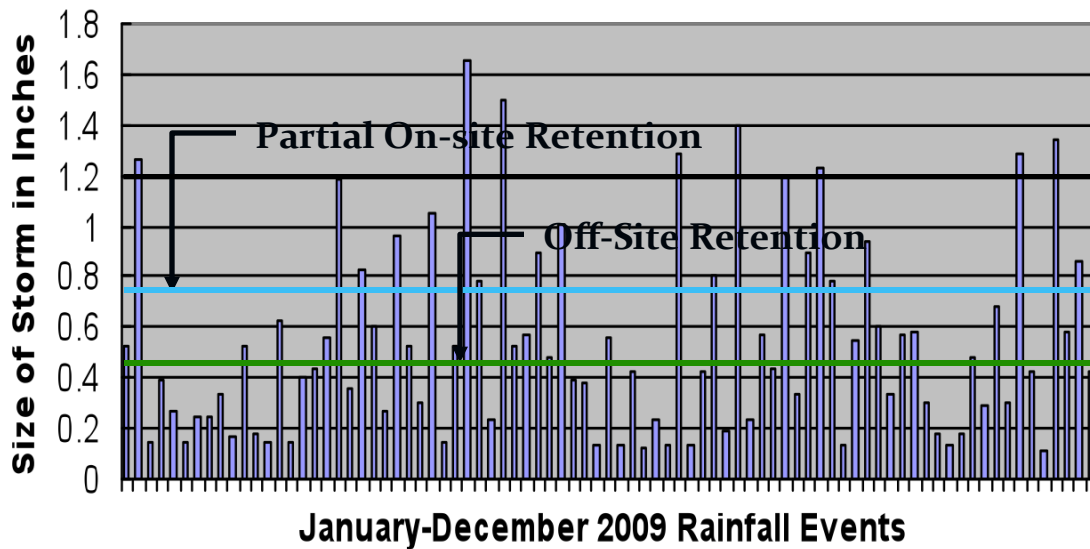
0.75” retention
on site 1



0.45” retention
on site 2

Why is annual retention greater under Scenario B?

Figure 1: 2009 Rainfall Events*



*Based on rainfall data downloaded from NOAA for Reagan-National Airport.

Smaller SMPs on 2 sites use full retention capacity more often, for greater annual retention & capture of first flush.

Flexibility for Regulated Sites

Hypothetical Comparison of Cost Savings from Scenario A vs. Scenario B			
	Scenario A: On Site Only	Scenario B: Trading	% Change via Trading
Annual Vol. Retained *	280,280 gal.	428,675 gal.	+53%
Estimated Retention Cost**	\$25,152	\$17,603	-30%

*Annual volume retained, based on 2009 rainfall data.

**Retention on Site 1 is \$3.25/gallon and on Site 2 is \$0.65 per gallon. (Based on analysis of the incremental cost to achieve retention, compared to existing District regulations, by Industrial Economics, Inc.)

DC Trading Program: Credit Generators

- Regulated development with excess capacity
- Unregulated renovation and retrofit projects
- Public retrofits

DC Trading Program

- Strong mechanisms for certification, tracking and enforcement
- Runs with the land
- Annual compliance obligation
- Annual payment-in-lieu option
- No double counting

DC Trading Program

➤ Benefits:

- WIN: Give developers greater flexibility.
- Win: Lower costs, greater efficiency
- WIN: Maximize benefit to District waters.
- WIN: Social benefits of GI (env. Justice)
- Win: Leverage private \$ for public retrofits

Public Rights of Way

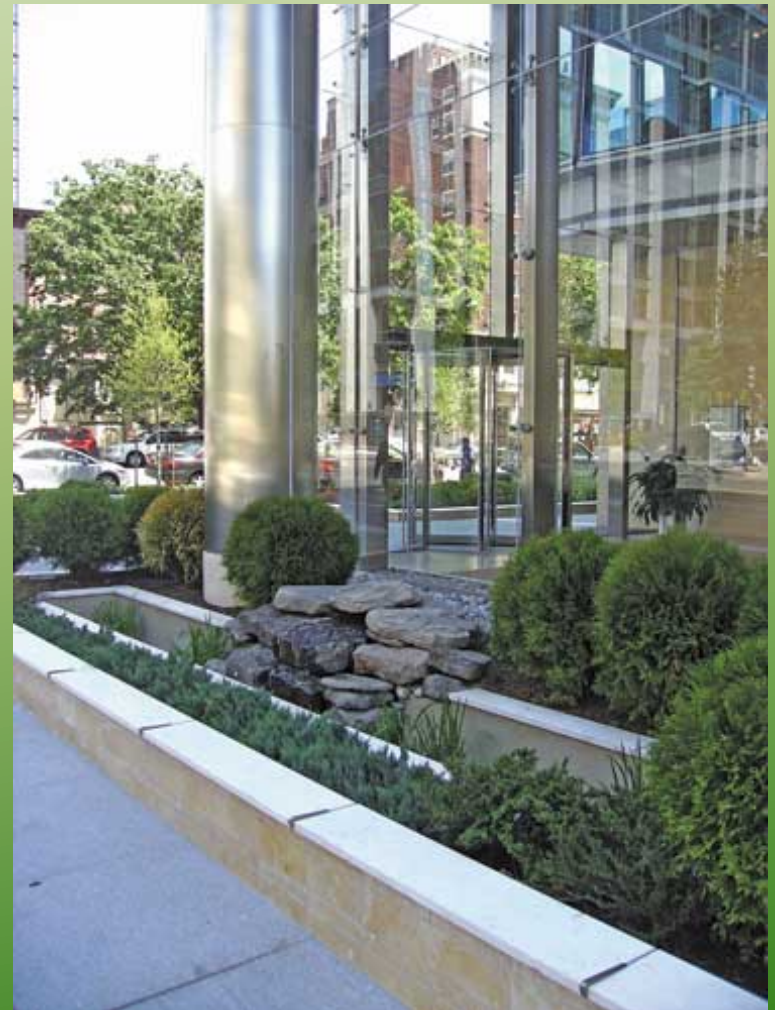
One Constitution Square



Public Rights of Way

- How it could benefit:
 - Lower Costs for Private Development
 - Better products and performance
 - Amenity value to tenants and the public
 - Leverage private \$ for public stormwater

1050 K Street NW



1050 K

- 10,000 gallon fiberglass cistern in right of way: \$20,000
- 5,000 gallon concrete cistern in parking deck: \$25,000
- Project Treats 3000 square feet of improved ROW; avoided cost to city: \$8,100 (does not include site work)

ROW Obstacles

- Primary Issues

- Utilities
- Maintenance
- Liability
- Equity: should public space be used for private purposes?
- Future needs

- Interested Parties

- Utilities
- Water and Sewer Authority, Metro
- DOT, Department of Planning, Parks and Rec, etc.
- Developers

Potential Outcomes

- Develop qualifying criteria and regulations for private use of ROW for GI.
- Incorporate ROW stormwater management into the permit application process.
- Credits and fee reductions for treating public SW
- Annual fee for use of ROW for the treatment of private SW.

Flexibility

- Trading Programs
- Public Space Access
- Offsite Mitigation
- Public/Private partnerships
- Multi-use projects
- Economies of scale
- Centralized facilities

Canal Park



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