Making Great Neighborhoods: Greening State Stormwater Permits and Programs

Congress for New Urbanism
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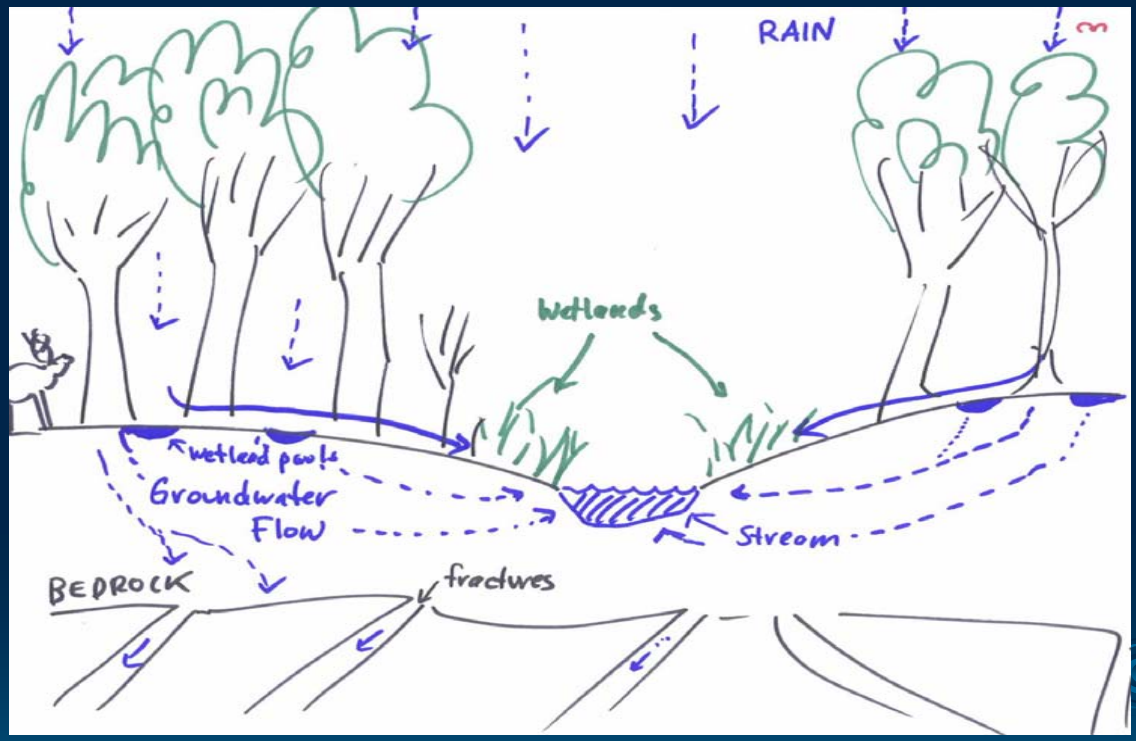
Smart Growth Program

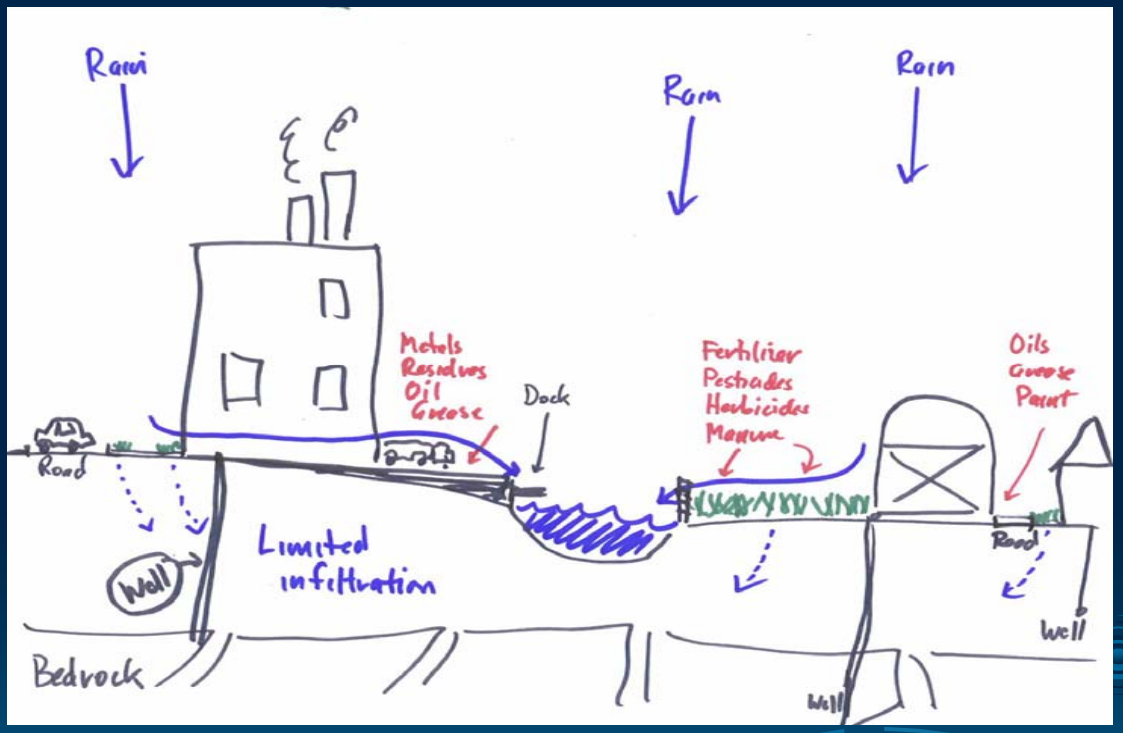
Stormwater Management is Nothing New

Nature has an elegant system for taking the water from the sky,and soaking it into the ground or having trees and other plants use it.



Stormwater Management is Nothing New

But, when we place houses, shops, office buildings, roads, parking lots and other “impervious surfaces” on the ground, the natural system is interrupted and runoff is created.



When we go from this…

And develop the landscape…

We create lots of impervious surface…

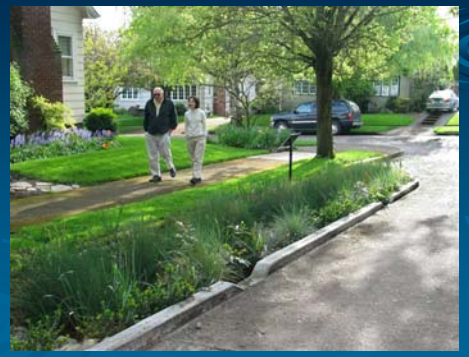
And we create runoff problems

“Green” Stormwater Guiding Principles

1. Manage stormwater runoff both at the source and at the surface.

2. Use plants and soil to slow, filter, cleanse, and infiltrate runoff.

3. Design facilities that are simple, low-cost, and aesthetically enhance the community.



Clean Water Act Stormwater Requirements

- **Phase I Stormwater Requirements**
  - First permit cycle-- 1990
  - Medium and large cities (100,000 people or more)
  - Individual permits for large cities
  - 5-year permit cycles -- most permits up for renewal in 2009
- **Phase II**
  - First permit cycle– 2003; new permits will be issued in 2008 and 2009
  - Small municipal separate storm sewers systems (MS4)
  - Small urbanized areas, as defined by US Census
  - States issue one general stormwater permit that covers all the MS4s in the state
  - MS4s are required to meet the standards put forth in the permit, e.g., set up programs and procedures for developers to follow
  - States now are in the process of reissuing these general permits

OPPORTUNITY! States need new permit language for 2008 and 2009

Principles

- Use green infrastructure, e.g., practices that infiltrate, reuse, and evapotranspire runoff, to be the foundation for a state's stormwater management program
- Look at several scales: watershed, neighborhood, and site
- Recognize that some development patterns have better environmental performance, e.g., redevelopment





Basic Permit Framework

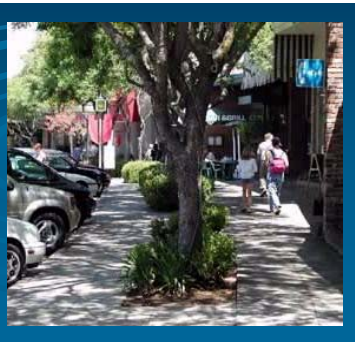
- All development use green infrastructure approaches to manage stormwater on site.
  - 90 % of average annual storm events

- For projects that cannot meet 100% of the requirement on-site, two alternatives are available: off-site mitigation and payment in lieu.

Permit language is for states to consider: there is no EPA requirement to implement these standards







Stormwater Credits

- Some developments types can receive a 10% reduction stormwater; incentives are additive:
  - Redevelopment
  - Brownfield redevelopment
  - High Density (7 or more units per acre)
  - Vertical density (18 or more units or 2.0 FAR)
  - Mixed Use and Transit-Oriented Development





Why credits?

- Some development patterns, like redevelopment and higher density, reduce stormwater generated:
  - A George Washington University study (2002) found that for every brownfield acre that is redeveloped, 4.5 acres of open space are preserved.
  - An analysis by King County, Washington, demonstrated that property that is vacant and eligible for redevelopment in the county's growth areas can accommodate 263,000 new houses—enough for 500,000 people.
  - Grand Rapids, Michigan recently implemented a 80-percent stormwater credit for high density.





Creating a foundation for “Green Streets”

- Assess street and road standards and parking requirements.
  - Purpose of this assessment is to start a conversation between stormwater and transportation staffs
  - Minimize the creation of unnecessary impervious cover
  - Begin to create great neighborhoods
- Consider green infrastructure approaches when public streets or parking lots are repaired, modified or reconstructed opportunities

Narrower roads mean less impervious surface

Eliminate barriers

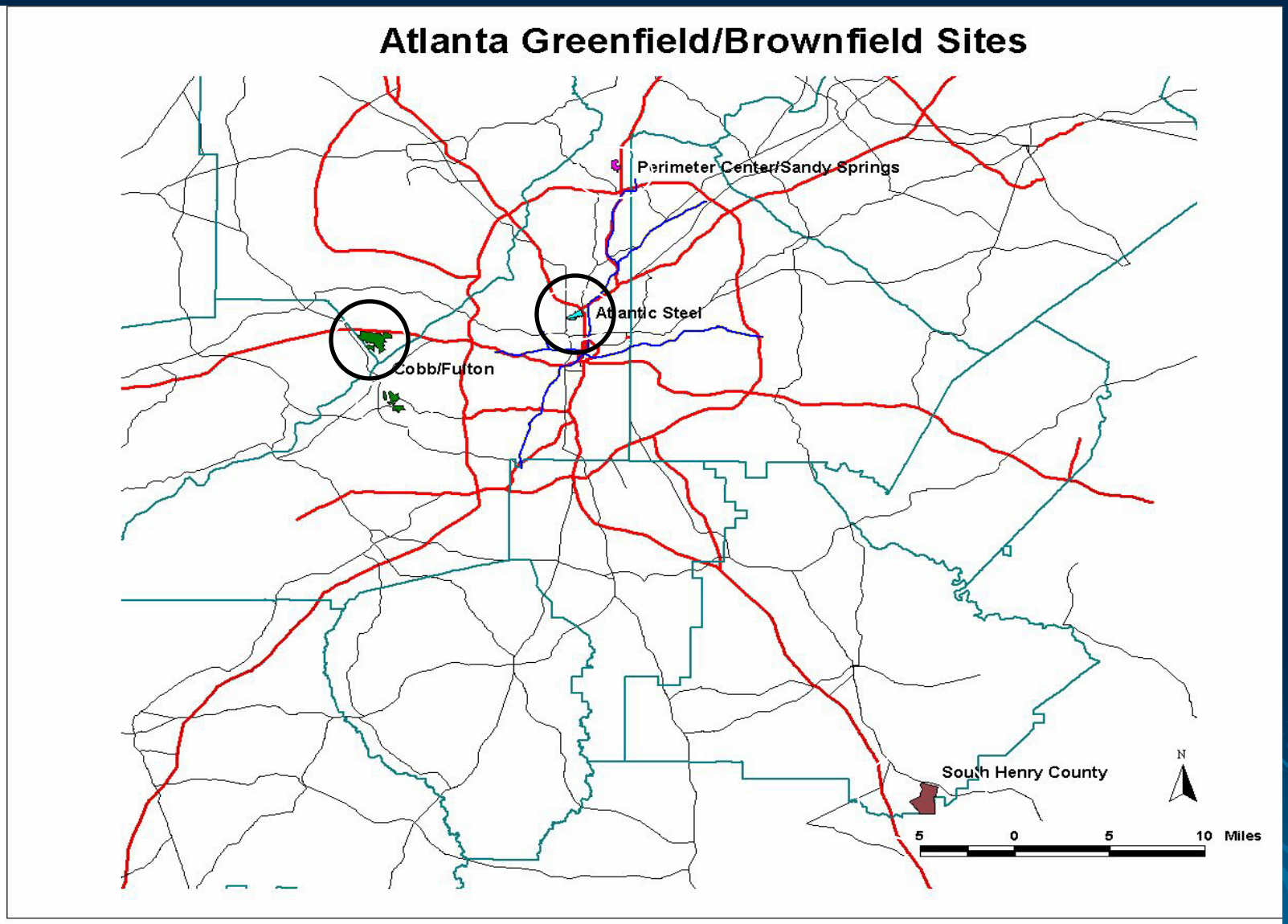
- In many communities, building codes and other ordinances prohibit the use of many green infrastructure practices.

- Review and change ordinances, building codes or other local regulations to allow or require green infrastructure:
  - Green roofs;
  - Tree canopy,
  - Landscaping requirements;
  - Infiltration practices, such as rain gardens, curb extensions, planter gardens, porous and pervious pavements,
  - Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses.





Atlanta Greenfield/Brownfield Sites



An example: Atlantic Station

- Atlanta Station
  - 139 acres
  - Brownfield redevelopment (2 credits: 1 for redevelopment, 1 for brownfield)
  - High and Vertical density (2 credits)
  - Mixed use and TOD (1 credit)
  - Permit would require 1/2” of runoff to be managed
  - Starting runoff: 6.7 million cu/ft/yr
  - Runoff managed on site: **3.4 million cu/ft/yr**
- Cobb/Fulton
  - 1200 acres
  - Single use, low density
  - No credits available
  - Permit would require 1” of runoff to be managed
  - Runoff generated: 26.3 million cu/ft/yr
  - Runoff to manage on site: **23.6 million cu/ft/yr**

Integrating Rain with Urban Design:





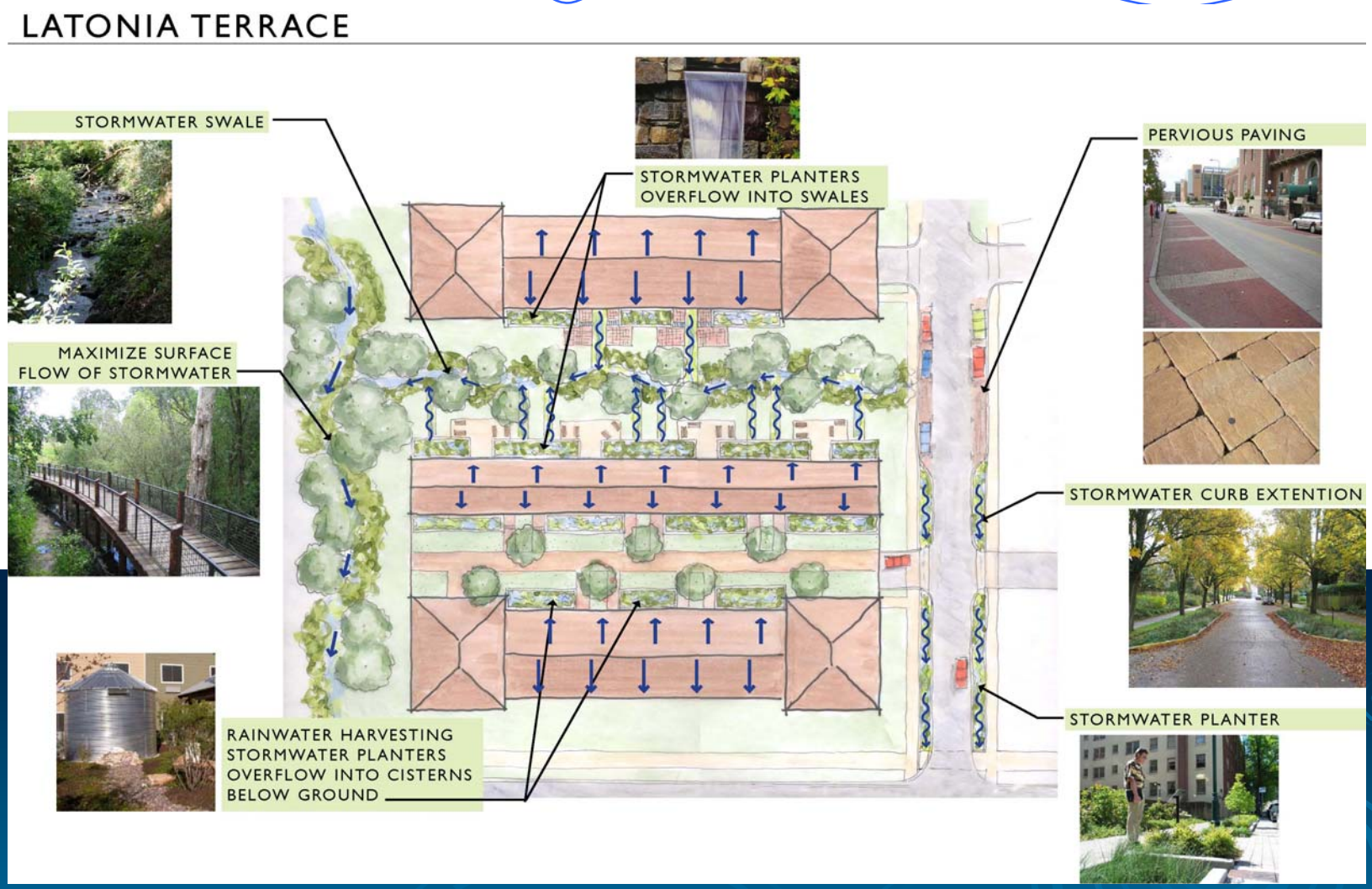




Latonia Terrace-Increased Density / Mixed-Income Development

Drawn by Rick Williams

Stormwater Tools – In Action



Drawn by Kevin Perry

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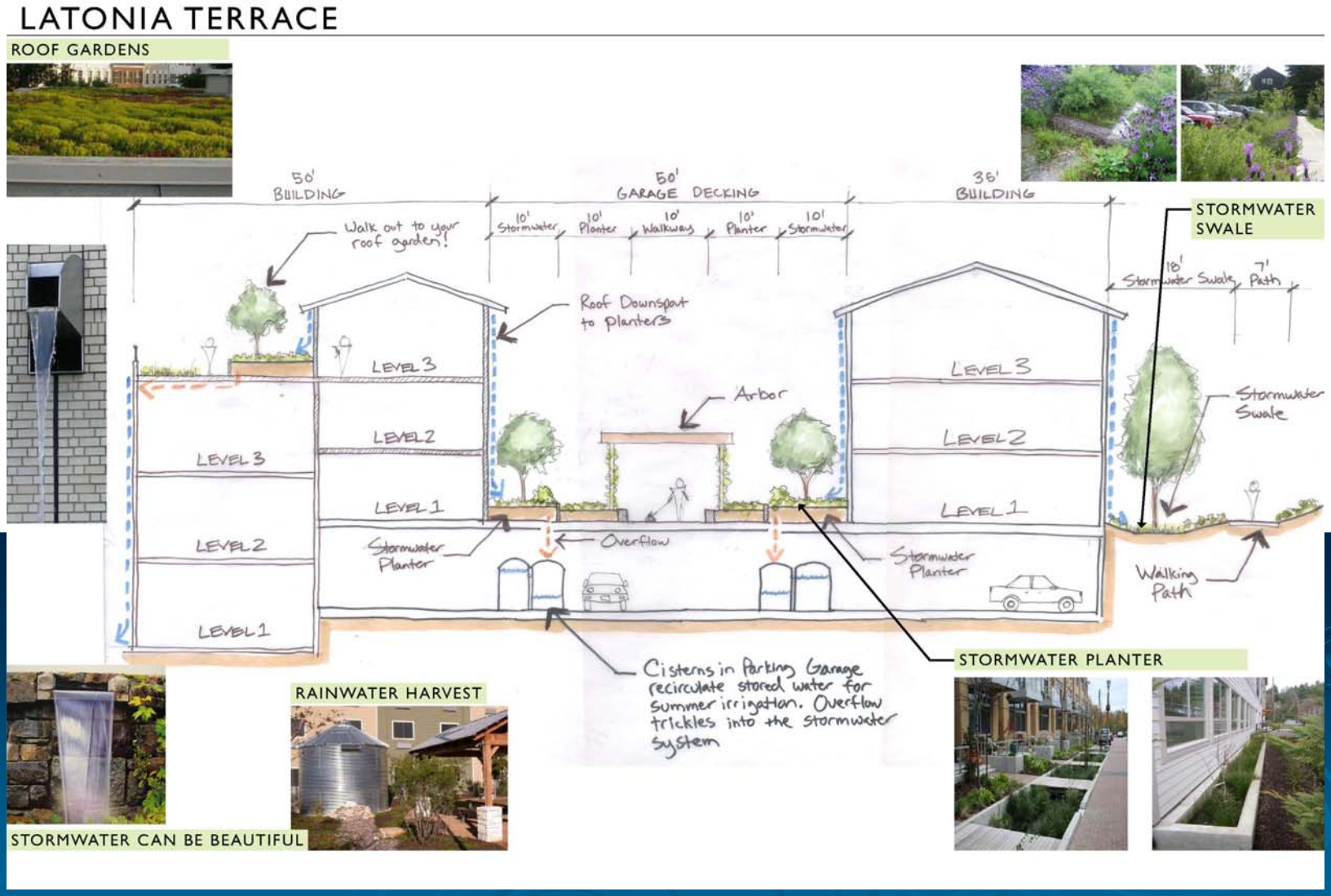


Drawn by Kevin Perry

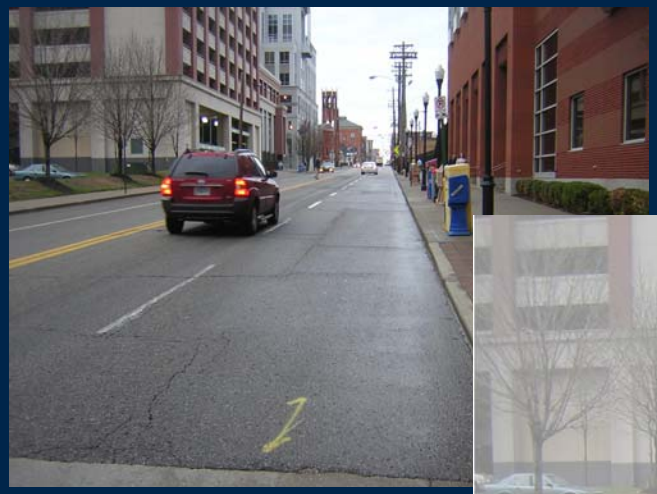
What about here? Covington, KY

BEFORE: Madison Avenue and 15th

AFTER: Madison Avenue with Stormwater Swale

Drawn by: Kevin Perry

What about here?



BEFORE: Madison Avenue and Convention Center

AFTER: Madison Avenue with Stormwater Swale

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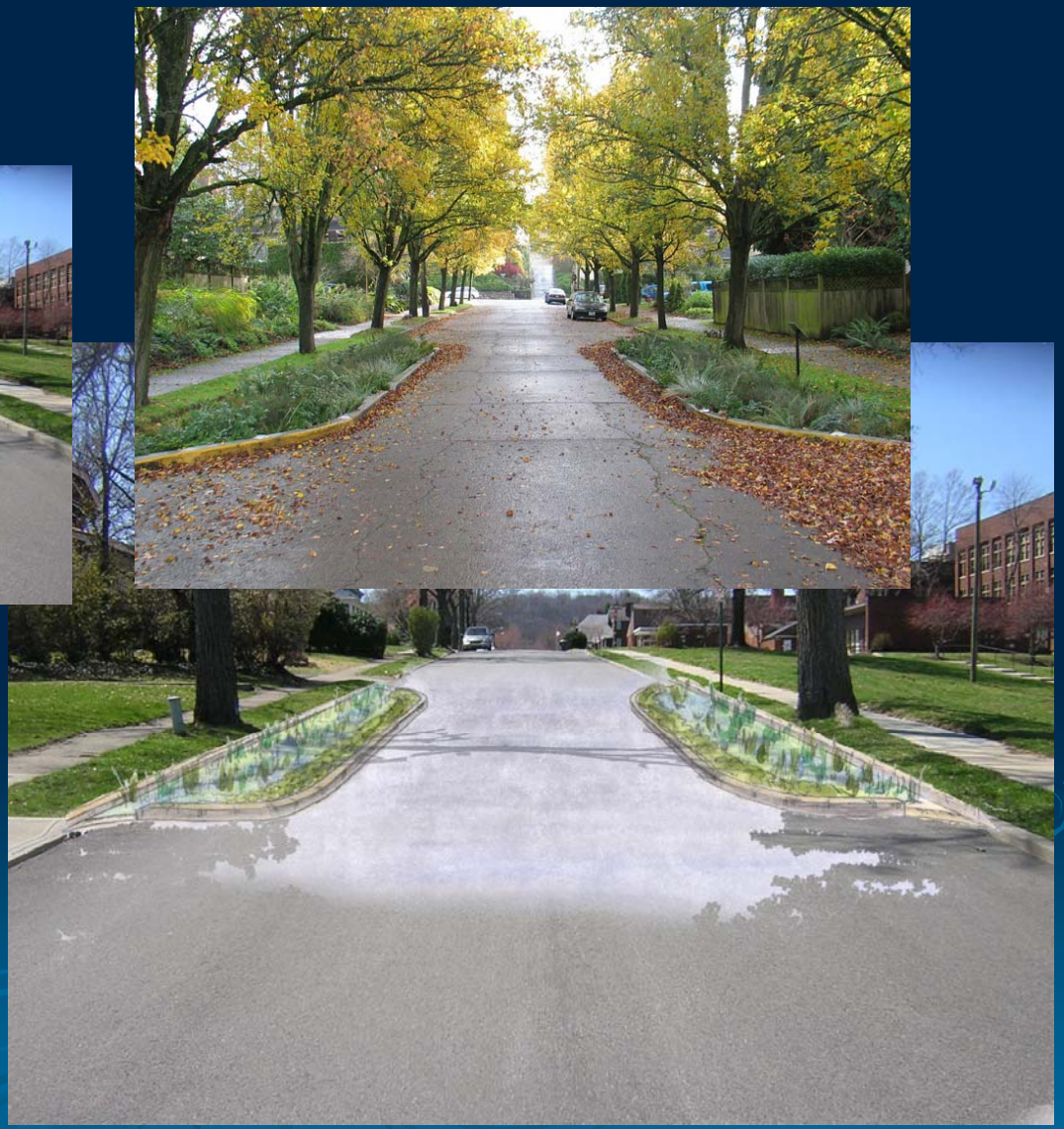
What about here?

BEFORE: Residential Street



AFTER: Residential Street with Curb Extensions

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What about here?

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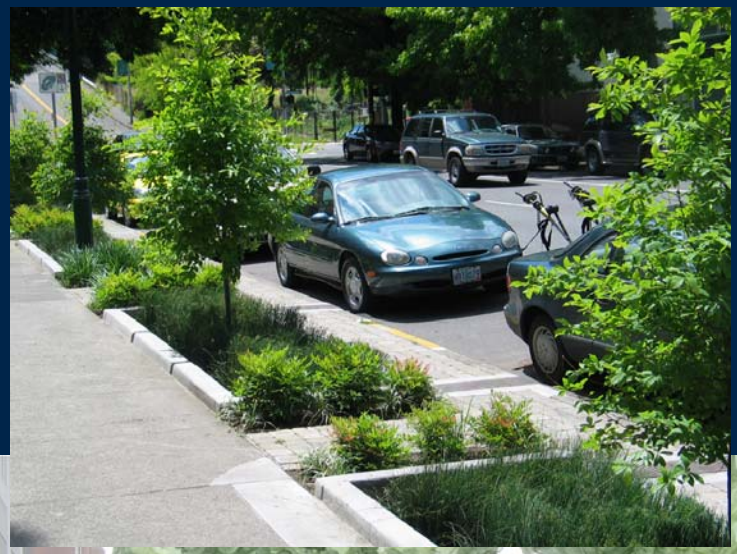

AFTER: Madison Avenue with Stormwater Planters

Drawn by: Kevin Perry

Thank You

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