What is Green Infrastructure?

Rethinking the large scale

Rethinking the details

Ecological Policy and Program Changes
What is green infrastructure?

- Soil
- Water
- Vegetation
Not like this . . .
but rather rejoined into a working ecosystem

Soil

Water

Vegetation
Allegheny Riverfront Master Plan
11th Street to Washington Boulevard in Highland Park
Pittsburgh PA

Rethinking the Large Scale

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Achieve 40% Urban Tree Canopy Cover using a Zonal Approach:

- Regenerative Zone: River’s Edge to 200 feet (80%)
- Regenerative Zone: Buffer to AVRR Green Boulevard (60%)
- Transitional Zone: AVRR Green Boulevard to Liberty Ave/Butler Street (40%)
- Preservation Zone: Butler Street to Site Boundary (25%)

40% canopy cover can only be achieved by incorporating significant open / park /green space (not built) in addition to a 200’ river buffer.
Strip District Today From 11th – 21st Street

View looking east from 11th Street

Envisioning the New Riverfront
Envisioning the New Riverfront

Proposed Strip District from 11th – 21st Street
A New Overlay: Green Infrastructure

- Recognize watershed boundaries, not just plat plans, political districts or historical boundaries.
- Use Small Storm Hydrology (95% of rain).
- Understand historical vegetation types, but plan with global warming in mind.
- Hire an ecologist/conservation biologist, soils scientist to help.
- Understand soils, water and vegetation to design an interconnected systems approach.
Site Master Plan

*Immaculate Heart of Mary, Monroe, Michigan*

For 280-acre site, reconfigure site entrances, circulation, parking, service, pedestrian paths, stormwater & landscape management.
“Because living sustainably requires a transformation of consciousness, the campus as a whole will provide opportunities for learning and experiences necessary for transformational education of mind, body and spirit.”

— IHM Vision Statement
Early Savannah Region – Our reference ecosystem told us what to restore

Diverse species emerge where once there was a monoculture

Shallow wet depressions manage small storms keeping the rain water resource on site

How might a system like this look?
“It’s a real ecological laboratory experience, and also an education experience... We hope the campus continues to provide that. We hope young people can come here and learn about sustainability.”

— An IHM Sister
East Whiteland Basin Retrofit for Trout Unlimited
Improve Water Quality, Reduce Flooding, Reduce Erosion

Manage the small Rainfalls
Investigate the Soils – can they infiltrate?
What Vegetation do The Trout need?
Change the perception of the RIGHT landscape

We forget that the water cycle and the life cycle are one.
– Jacques Cousteau
30 year old basin, heavily compacted with limestone close to the surface, mown, residential neighborhood, outlet designed for large storm events
Retrofit the pit!

- Prevent short-circuiting with berms and retentive grading
- Modify the outlet to hold small storms - weld a plate, drill new holes
- Storage: all things remain equal
- Flows and Velocity: worst case scenarios
- Modeling: only if required
Retrofit the pit!

Prevent short-circuiting with berms and retentive grading.

Modify the outlet to hold small storms—weld a plate, drill new holes.

Storage: all things remain equal.

Flows and Velocity: worst case scenarios

Modeling: only if required.
Volunteers planted 300 live stakes and 200 container grown trees and shrubs. After planting the basin was seeded with wet and dry native grass and forb mixes. April 2006
People think it is part of nature
Rethinking the details

Design for Place

Catch what you can

Funding:

Urban Heat Island
Economic Development
Stormwater Fees

It's always about more than water....

Complete Streets, Water Street Syracuse NY

Tree trenches along the street
Rain gardens in parking lots

Upper 4 photos courtesy of Meliora Design

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Ecological Policy and Program Changes

- Regulatory Changes - Stormwater
- Legalize Green Infrastructure
- Allow Downspout Disconnection
- Allow Clean Rainfall from Rooftops to Flow to the River
- Give Green Credits to Developers
- Provide Design Guidelines (LID Design Manual)
- Engender Collaborative Atmosphere to achieve cross-departmental/cross-agency/public-private cooperation
- Educate

Images courtesy of Meliora Design