An Urban Greening Initiative
Live Green: Organizational Overview

- Founded in 2004
- LIVE to Live Green
- New Mission: To build stronger, healthier communities through environmental projects
- 1.5 staff, approx. 150K budget
- Focus areas: ENERGY
  
  GREEN FACILITIES
  
  WATER
What We Do: Water

Began with:
- Rain barrel workshops
- Green roof project

Evolved to become Urban Watershed Initiative
Urban Watershed Initiative

- Development of City wide Green Infrastructure Plan
  - Assessment of impervious surface, identification of high impact projects, balance between green and gray

- Residential Education/Outreach
  - Rain barrels, green infrastructure “clinics,” native tree/shrub planting

- Institutional Education/Outreach
  - Green facilities, green roofs
Why Green Infrastructure?

- Environmental, social and economic impacts
- High return on investment
- Less costly than “gray” infrastructure

Infiltration basin at Villanova University that collects rain water from 7 acres of parking lot
Green Infrastructure Technologies

- Rain Barrels / Cisterns
- Porous Pavement
- Green Roofs
- Green Streets/Green Alleys

Source: CH2M HILL
Rain Barrels

Residential Green Infrastructure Workshops
Planter Box

Rainwater flows off the rooftop and into the downspout...

Rainfall enters the planter box and soaks into the soil...

...and across the pavement...

Protect the subgrade from heavy machinery and over-compaction

Soil/Compost Mix

Infiltration bed (optional) containing clean, uniformly graded stone

Stormwater infiltrates and recharges the groundwater

Source: CH2M HILL

Decorative Cisterns

Rain water enters the cistern from the rooftop runoff...

The stormwater is stored inside the blocks...

...and is used to water the landscaping around the library

Source: CH2M HILL
Porous Parking Lots
Morris Arboretum - Philadelphia, PA - 1984
What is a green roof?

A **green roof** is a vegetated roof cover that is installed on top of an otherwise conventional roof, giving the roof characteristics that more closely resemble a natural environment.
Lancaster County Planning Commission received a grant from the Department of Environmental Protection Energy Harvest Fund in 2008

The goal of this project is to demonstrate the many benefits of roof greening while developing the capacity of local businesses to respond to increased demand for this innovative technology.
Benefits of Roof Greening
Energy Conservation / Storm Water Management

- Green Roofs provide additional insulation for the building
- They decrease heating and cooling loads
- They decrease summer temperatures on a roof
- They reduce the “urban heat-island effect”

- Reduces stormwater run-off from 70 to 90 percent
- Delays run-off
- Filters toxins and pollutants from run-off
- Reduces combined sewer overflows
- Minimizes amount of land needed for development
Green Streets: Before…

Source: CH2M HILL
After...
Commercial Green Street: Before...
Commercial Green Street: After...
Lancaster Green Infrastructure Plan
Overview

- Site Reconnaissance
- GIS mapping of land use & impervious cover to determine GI opportunities
- Demonstration project conceptual plans
- Cost analysis
- Runoff / CSO reduction & benefit analysis
- Grant Acquisition Assistance
- Green Infrastructure Fact Sheets
Combined Sewer Outfalls
### GI Benefit Calculator

Estimates Runoff Reductions

<table>
<thead>
<tr>
<th>Area / Impervious Source</th>
<th>Impervious/Contributing Area (acres)</th>
<th>Green Infrastructure Project / Program Type</th>
<th>Assumed Percent of Impervious Area Managed</th>
<th>Impervious Area Managed (acres)</th>
<th>Total SW Runoff (MG/yr)</th>
<th>Assumed WQv or BMP Capture Volume (in.)</th>
<th>Runoff Reduction (MG/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>481</td>
<td>Green Street</td>
<td>10%</td>
<td>48.1</td>
<td>467</td>
<td>1.0</td>
<td>40.1</td>
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<tr>
<td>Drives</td>
<td>44</td>
<td>Disconnection</td>
<td>10%</td>
<td>4.4</td>
<td>43</td>
<td>1.0</td>
<td>3.7</td>
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<tr>
<td><strong>Parking Lots</strong></td>
<td>544</td>
<td>Porous Pavement, Bioretention</td>
<td>3%</td>
<td>16.3</td>
<td>528</td>
<td>2.0</td>
<td><strong>15.3</strong></td>
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<tr>
<td>Flat Roofs</td>
<td>438</td>
<td>Vegetated Roofs</td>
<td>3%</td>
<td>13.1</td>
<td>425</td>
<td>1.0</td>
<td>11.0</td>
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<tr>
<td>Vacant Lots</td>
<td>100</td>
<td>Vacant Lot Greening</td>
<td>10%</td>
<td>2.5</td>
<td>24</td>
<td>1.0</td>
<td>2.1</td>
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<tr>
<td>Street Trees</td>
<td>N/A</td>
<td>Enhanced Tree Planting</td>
<td>N/A</td>
<td>7.2</td>
<td>7</td>
<td>0.2</td>
<td>2.6</td>
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<tr>
<td>Other 1</td>
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<td></td>
<td>10%</td>
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<td>1.0</td>
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<tr>
<td>Other 2</td>
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<td>33%</td>
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<td>1.0</td>
<td>0.0</td>
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<tr>
<td>Various (Ordinance)</td>
<td>1853</td>
<td>New Stormwater Ordinance</td>
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<td>0.0</td>
<td>1798</td>
<td>1.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Total**

|                                      |                                      |                                      |                                      | 91.7                             | 74.7                    | 52.3                                    |

*Note: The highlighted row indicates the contribution from Parking Lots for runoff reduction.*
Scaling up individual projects
– 649 acres of Parking Lots (13% of City)
Parking lot at South Plum St
Green Alley: Reo Ave/Reiker Ave adjacent to Crystal Park
Next Steps

- Complete green infrastructure plan: clarify potential for CSO reduction in Lancaster
- Develop viable demonstration projects for the downtown & neighborhoods to further public education and acceptance
- Move ahead with residential and institutional education
- Increase tree canopy, develop tree management plan

Source: CH2M HILL
Questions?

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