INTEGRATED COMPLETE STREETS
TO REVITALIZE OUR COMMUNITIES
Impervious Cover and Runoff

Natural Ground Cover:
- 25% shallow infiltration
- 25% deep infiltration

75%-100% Impervious Cover:
- 10% shallow infiltration
- 5% deep infiltration

Evapotranspiration:
- 40% evapotranspiration
- 30% evapotranspiration

Runoff:
- 10% runoff
- 55% runoff
Green Infrastructure is . . .

. . . technologies that replicate and restore the natural hydrologic cycle and reduce the volume of stormwater entering the sewer system and ultimately local streams by:

- Infiltrate
- Evaporate
- Transpire
- Capture and reuse rainfall
2010 Green Infrastructure Plan

Key Plan Recommendations

1. Implement a comprehensive demonstration program
   a) Review existing CIPs
   b) GI Funding for Private

2. Implement policy actions
   a) Revise details and specs
   b) Revise Stormwater Ordinance for Redevelopment
   c) Stormwater Utility

3. Conduct extensive partnering and outreach

4. Develop technical tools/studies to support GI
   a) Models / Project Tracking, etc.

To provide more livable, sustainable neighborhoods for City residents and reduce combined sewer overflows and nutrient loads
The Plan Proposes to Manage over 1,200 Acres of Impervious Area and Capture over 1 Billion Gallons of Stormwater through Long-Term Implementation

- **Park Improvements**
- **Roads/Alleys/Sidewalks:**
  - Green Streets,
  - Disconnection,
  - Porous Pavement
  - Enhanced Tree Planting
- **Roofs/Parking Lots:**
  - Vegetated Roofs,
  - Disconnection,
  - Rain Gardens,
  - Porous Pavement,
  - Bioretention
- **Public Schools:**
  - Green Schools
- **Specific GI Demonstration Sites**
Integrated Infrastructure: Finding Cost-Effective Green Streets Opportunities

- Pavement Condition
- ADA Priority
- Basin Priority (CSO vs MS4)
- Street Slope & Other Factors
- Road Type
  - Width
  - Traffic
  - Ownership (City, State, private alleys)
- Tree Canopy
- Flooding locations
- Overhead Wires
- Sidewalk Condition
- Inlet Condition
- Lowest Overall Green Street Cost
Integrated Infrastructure: Finding Cost-Effective Green Streets Opportunities

- Incorporating Green Infrastructure and Complete Streets concepts into plans, ordinances and codes
- Implementing Projects that integrate GI and Complete Streets
Mulberry Street Two-Way Conversion
A Green & Complete Street

Stormwater Volume and Area Managed

<table>
<thead>
<tr>
<th>Stormwater Volume</th>
<th>Area Managed</th>
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<tbody>
<tr>
<td>Impervious Area Contributing (ft²)</td>
<td>167,000</td>
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<tr>
<td>GI Area (ft²)</td>
<td>21,000</td>
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<tr>
<td>Calculated Steerage Volume (ft³)</td>
<td>14,000</td>
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</table>

Construction Costs

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Construction Cost / Stormwater Volume ($/gal)</td>
<td>$0.34</td>
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<tr>
<td>Construction Cost / Acre Managed ($/acre)</td>
<td>$219,000</td>
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<tr>
<td>Actual Cost</td>
<td>$1,107,434</td>
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Nutrients Removed

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<thead>
<tr>
<th>Nutrient</th>
<th>Removal (lb/year)</th>
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<tbody>
<tr>
<td>Estimated TS Removal</td>
<td>10</td>
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<tr>
<td>Estimated TP Removal</td>
<td>12</td>
</tr>
<tr>
<td>Estimated TN Removal</td>
<td>62</td>
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</table>

Traffic Calming & Safer Parking
A pre-construction travel study on Mulberry St. showed speeds up to 30 mph. Now, narrower travel lanes are reducing speeds while making room for traffic calming practices in the right-of-way. Median plantings reduce speeds, shorten crossing distances for pedestrians and improve stormwater capture (above). Back-in angle parking also creates a safer street for everyone by limiting conflicts with opening doors and increasing visibility.

Pedestrian & Bicyclist Friendly
Intersections were upgraded to current ADA guidelines to improve accessibility. Traffic calming and pedestrian improvements include narrower travel lanes, a bike lane and sidewalks, Accessible Pedestrian Signals at all signalized intersections (above), curb extensions, panic key crosswalks, ADA curb ramps (above). All stormwater intents have bicycle safe grates. Fulton Elementary school children especially benefit from a safer route to school.

Tree Preservation & Landscaping
Protecting existing trees, replacing trees in poor condition, and planting new trees more appropriate for an urban corridor further the environmental benefits in addition to adding quality of life and economic value to the street. Over 100 trees along this 0.5 mile road create a nearly continuous canopy over the street. Tree pits were expanded and connected (above) and large trees were preserved by constructing vegetated curb extensions (below).

Porous Pavers & Rain Gardens
This project includes over 21,000 ft² of green infrastructure in the form of vegetated curb extensions, rain gardens (above) and porous pavers (below). Constructing 167,000 ft² of impervious area. As an affordable cost of $0.34 per gallon of stormwater, Mulberry Street helps move the City of Lancaster closer to eliminating its Combined Sewer Overflows (CSO) that pollute local watersheds and ultimately the Chesapeake Bay.

Public Awareness & Safer Parks
Before becoming a fully two-way street, the most northern block of Mulberry was tested as a two-way street, proving the concept and building public awareness. Signage along the street draws attention to the two-way traffic (above & below). Mulberry also intersects James St. (above), which is another green and complete street. This creates a network of safer streets around the Northwest Linear Corridor Park, which is used by the Boys & Girls Club and a local nursery.

SAVE IT! YOUR WATER, YOUR MONEY, YOUR CITY.
www.saveitlancaster.org

Ch2m
McCORMICK TAYLOR

Mulberry Street Map Key
- Bioretention Areas
- Porous Pavers
- Property Lines
- Shared Bicycle Lanes
Questions?

Contact information

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  717-291-4738

Visit: www.saveitlancaster.com