Preparing Stormwater Systems for Climate Change

October 10, 2013

Resilient Grand Rapids

Mike Lunn,
Environmental Services Dept. Manager
Grand Rapids, Michigan
Combined Sewer Overflow

WATER QUALITY IMPROVEMENT IMPLEMENTATIONS
CSO CONTRACT NO. 26B
2012 - 2013 CONSTRUCTION

GREEN INFRASTRUCTURE LEGEND

- PROPOSED INFILTRATION BASIN
- AREA SEPARATED BY PROJECT
- POTENTIAL TREATMENT AREA
- NEW PARKWAY TREE
  (MORE WILL BE PLACED THAN SHOWN)
- SURFACE FLOW DIRECTION
- HYDRODYNAMIC SEPARATOR
- POROUS PAVEMENT
  PARKING LANE
- PROPOSED PROJECT LIMITS
Infiltration Basin
## Mary Waters Park Storm Water
up to 85 acres

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Quantity</th>
<th>Estimated Difference (per unit)</th>
<th>Estimated Added Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground Storage/Infiltration</td>
<td>Gal</td>
<td>85,000</td>
<td>$5</td>
<td>$425,000</td>
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<tr>
<td>Bioswale</td>
<td>Ea</td>
<td>4</td>
<td>$10,000</td>
<td>$40,000</td>
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<tr>
<td>Trees</td>
<td>Ea</td>
<td>40</td>
<td>$350</td>
<td>$14,000</td>
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<tr>
<td>Infiltration Basins</td>
<td>Ea</td>
<td>4</td>
<td>$600</td>
<td>$2,400</td>
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<tr>
<td>Storm Sewer</td>
<td>LS</td>
<td>1</td>
<td>$270</td>
<td>$270</td>
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<tr>
<td><strong>Possible Future Savings</strong></td>
<td>LS</td>
<td>-1</td>
<td>$250,000</td>
<td>-$250,000</td>
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<tr>
<td>Porous Pavement</td>
<td>Syd</td>
<td>1,000</td>
<td>$45</td>
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<tr>
<td>Hydrodynamic Separators</td>
<td>Ea</td>
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<td>$80,000</td>
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</tbody>
</table>

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Net Additional Cost = $356,670  
CE/I/Adm (30%) = $107,001

Estimated Total Project Cost = $463,671
Additional Cost per Acre = $5,455

Annual Maintenance = $12,000

• Update to 1994 Manual
• Used by Developers and Engineers
  – Plan Review Procedures and Submittal
  – Stormwater Manager Design Guidance
  – Soil Erosion and Sedimentation Control Standards
• Goal is to Remove Engineering Technical Details from Chapter 32
Project Outcomes and Investments

• Complete Situation Assessment
• Complete Stormwater Asset Management Plan
• Update to the 1994 Stormwater Master Plan
• Update to the 1994 Stormwater Technical Reference Manual (to include Low Impact Development and Green Infrastructure Guidelines)
• Capital Improvement Requirements and Schedule
• Compliance with our permit requirements
  – Stormwater Management Plan required for 2016 Permit Application
  – 2016 Permit will contain Asset Management Requirements
Communication and Stakeholders

Communication

- Engaged stakeholder team
- Open meetings
- Shared document storage
- Weekly brief status meetings
- Numerous in-depth working sessions

Stakeholder Team

- Environmental Services Department
- Engineering
- Office of Energy and Sustainability
- City GIS Contractor
- Chamber of Commerce
- West Michigan Environmental Action Council
- Community
- Tetra Tech (consultant)
City of Grand Rapids
Water Services Building Roof

Haris Alibašić; Office of Energy and Sustainability
Renewables
Water conservation: over 15%
Energy Efficiency: over 10%
Renewables: 22.8%
Grand Rapids, Michigan

CITY OF GRAND RAPIDS

FY 2011 through FY 2015
(7/1/2010 – 6/30/2015)

SUSTAINABILITY PLAN

As Amended June 21, 2011

Managing the Economic, Social, and Environmental Resources of the City through a Framework of Sustainability Outcomes and Targets

Office of Energy and Sustainability
Initiatives

- Grant Planning
- Green Infrastructure Opportunity Assessment
- Planning for Climate Change
Questions?

- Website – http://grcity.us
- Environmental Services – http://grcity.us/esd
- http://grcity.us/enterprise-services/officeofenergyandsustainability/Pages/Climate-Change-and-Resiliency-.aspx