Regional Urban Water Management

Brookfield, Wisconsin

March 7, 2013
What is MMSD?

- Regional Agency
- Established by State Law
- Provide water reclamation and flood management

MMSD
Partners for a Cleaner Environment
Sewers

300 Miles
MMSD Sewers

3,000 Miles
Municipality Owned Sewers

3,000 Miles
Private Laterals
Deep Tunnels

300 Feet Below ground

521 Million Gallons of Storage

28.5 Miles Long

17- to 32-feet In Diameter

Designed to minimize basement backups and for 1-2 overflows per year.
## % of Volumes Captured & Cleaned

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>99%</td>
<td>98%</td>
<td>99%</td>
<td>97%</td>
<td>99%</td>
<td>94%</td>
<td>95%</td>
<td>99%</td>
<td>99%</td>
<td>100%</td>
<td>97%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>96%</td>
<td></td>
<td>99%</td>
</tr>
</tbody>
</table>

**Total Percent Capture:**

98.21%
2012

99.99999999 %

Capture & Clean
Harbor Siphons
Kinnickinnic
Concrete Removal

Before

After
Another inch would make June 2008 the rainiest month on record in Milwaukee.

Next: Flash flood watch

Swollen waters haven't receded, and more rain is forecast.
Lincoln Creek

Before

- Concrete Removal
- Minimized Floodplain
- Habitat Enhancement

After
County Grounds
The Water Quality Initiative
A Watershed Approach

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Area (square miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kinnickinnic River</td>
<td>24.7</td>
</tr>
<tr>
<td>Menomonee River</td>
<td>135.8</td>
</tr>
<tr>
<td>Milwaukee River</td>
<td>700.0</td>
</tr>
<tr>
<td>Oak Creek</td>
<td>28.2</td>
</tr>
<tr>
<td>Root River</td>
<td>197.6</td>
</tr>
<tr>
<td>Lake Michigan Direct</td>
<td>40.7</td>
</tr>
<tr>
<td><strong>Drainage Area Total</strong></td>
<td><strong>1,127.0</strong></td>
</tr>
</tbody>
</table>

**Number of Counties:** 9

**Number of Local Municipalities:** 83
SEWRPC’s Regional Water Quality Management Plan Update

Pollution Sources Summary

<table>
<thead>
<tr>
<th>Source Type</th>
<th>1975</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Agricultural Runoff</td>
<td>21%</td>
<td>68%</td>
</tr>
<tr>
<td>Urban-Non-Agricultural Runoff</td>
<td>23%</td>
<td>23%</td>
</tr>
<tr>
<td>CSO's</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td>SSO's</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Industrial Discharge</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>WWTP</td>
<td>5%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Estimated Pollutant Reduction over 25-Year Period About 50 Percent

CONCLUSION: Focus on abating stormwater runoff pollution
15,700 Plants Sold Since 2006
More than 18,000 sold since 2002.
Green Roofs
8 acres since 2003
Greenseams®
2,500 acres
Menomonee River

Watershed Permitting
LFG System Components

Raw gas is drawn from collection wells into a vacuum header system.

**1. EPL Gas Processing Facility**
Compresses and conditions gas for the pipeline and turbines.

**2. Pipeline**
Transports gas from EPL to JIWRF.

**3. New Metering Station**
Measures gas flow and quality exiting pipeline.

**4. Turbine Generators**
Produce electricity to power JIWRF and waste heat to produce Milorganite.

Dedicated Communication Link:

- Landfill Gas Created From Decomposing Garbage
- Perforated Pipe
- Liner and Cover to Contain Gases
- Gas flow and quality entering pipeline measured at EPL

EMERALD PARK LANDFILL (EPL)

Raw gas is drawn from collection wells into a vacuum header system.
Emerald Park LFG Processing Facility

- Raw gas from landfill
- Vacuum blowers
- After-coolers
- Dehydration system
- Compressors, siloxane removal, metering and controls inside building
- Hydrogen sulfide removal
- Off-gas flare
- Treated gas odorized and sent to pipeline
- Raw gas from landfill
Milwaukee Metropolitan Sewerage District’s Fiscal Condition:

DOWNSTREAM ACCOMPLISHMENTS, UPSTREAM CHALLENGES

An independent third-party analysis

“MMSD enjoys sound fiscal health and appears well-positioned for the future.”

- Public Policy Forum

• Healthy operating budget

• Extensive and well-managed capital assets

• Sound performance
Rooftops to Rivers II
Green Strategies for Controlling Stormwater and Combined Sewer Overflows
Questions

99.9999%

2012 Capture & Treat