

Webcast Sponsored By EPA's Watershed Academy

Wastewater Utilities Using Sustainable Watershed Approaches

Feb. 20, 2008



Andy Crossland, U.S. EPA

Kevin Shafer, Milwaukee Metropolitan Sewerage District

Stefanie Farrell, Hallsdale-Powell Utility District

Topics for Today's Webcast

- Sustainable Water Initiatives
- Milwaukee Metropolitan Sewerage District
- Hallsdale-Powell Utility District





Sustainable Water Infrastructure Initiative

Why “Sustainable Water Infrastructure?”

- Wastewater and drinking water systems are aging, with some system components exceeding 100 years in age
- U.S. population is increasing and shifting
- The gap between water infrastructure capital spending and needs is growing
- Investment in R&D has declined
- Climate change will have impacts on infrastructure needs
- Current treatment and management may not be sufficient to address emerging issues and potentially stronger requirements

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•EPA Gap Analysis (2002) - If revenue grows at 3% per year, the potential gap between water infrastructure capital spending and needs is approximately \$21 billion (in 2001 dollars) for wastewater infrastructure and \$45 billion (in 2001 dollars) for drinking water infrastructure.

•2004 Clean Watersheds Needs Survey - nationwide capital investment needs for wastewater pollution control is approximately \$202.5 billion for up to a 20-year period.

•2003 Drinking Water Needs Survey - \$276.8 billion in drinking water infrastructure needs between 2003 and 2023.

•GAO report (2003) - By 2013, 36 states are projecting water shortages.

•USGS - Studies of water use show that water withdrawn for the public supply increased by 7 percent from 1995 to 2000 -- an increase of 1 trillion gallons.

•U.S. Bureau of Census - National population will increase by 3% by 2010, 12% by 2020, and 30% by 2040.



The Infrastructure Gap

No Revenue Growth Scenario			Revenue Growth Scenario		
Total Payment Gap (20 Years) (Average in Billions of Dollars)			Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water		Clean Water	Drinking Water
Capital	\$122	\$102	Capital	\$21	\$45
O&M	\$148	\$161	O&M	\$10	\$0
Total	\$271	\$263	Total	\$31	\$45

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- U.S. Bureau of Census - National population will increase by 3% by 2010, 12% by 2020, and 30% by 2040.



Sustainable Water Infrastructure Initiative

- Foster adoption of innovative approaches and new technologies to help ensure that the Nation's water infrastructure is sustainable.
- Collaborate with partners and conduct research in the following four "pillar" areas:
 - **Better Management**
 - **Full Cost Pricing**
 - **Water Efficiency**
 - **Watershed-Based Approaches**

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Better Management - The Better Management "pillar" involves changing the paradigm from managing for compliance to managing for sustainability. EPA's comprehensive strategy for better management includes developing more productive and sustainable utility practices, attributes and tools.

Full-cost Pricing - Our strategy also includes efforts to ensure that customer rates fully and continually reflect the value of the service delivered to homes and businesses. Under this "pillar", EPA is developing tools and techniques to assist utilities interested in recognizing and recovering the long-term, full cost of providing service. Our goal under this "pillar" is to help utilities correct market signals that have been distorted by years of subsidies, and to help communities find appropriate options for cost allocation and rate design.

Full cost pricing isn't always the easy thing to do, but it's the right thing to do. It also recognizes there will be a need for lifeline rates and other hardship exceptions.

Water Efficiency - The Water Efficiency "pillar" involves reducing per capita demand on our water infrastructure. Through water efficiency, utilities can delay expansions to deal with population growth and make better use of existing resources. Our water efficiency "pillar" is about providing consumers and communities with information and choices, establishing pricing policies to encourage efficiency, identifying technologies and promoting programs to detect and repair leaks, and encouraging water reuse.

Watershed-based Approaches - The basic goal of this "pillar" is to break down the stove-pipes that exist at the local level so that all reasonable options for water and wastewater infrastructure are examined and prioritized, and the best decisions that meet community needs and values are made. In its ultimate form, this involves integrated planning in all programs affecting local water resources in order to achieve the watershed's water resource goals in an optimal way. Using a watershed approach, multiple stakeholders integrate regional and locally-led activities with local, State, Tribal, and Federal environmental management programs.



Better Management

Water utilities face critical challenges due to rising costs, increasing performance requirements, energy and climate considerations and aging infrastructure.

Utility Management Collaboration

- ***Ten Attributes of Effectively Managed Water Sector Utilities*** – Agreement between EPA and six national water utility professional organizations to promote *Ten Attributes* in effective utility management across the water sector.
- ***Keys to Management Success*** - The Agreement also identifies five *Keys*, designed to assist utility managers in the implementation of these Attributes.

www.epa.gov/waterinfrastructure/bettermanagement.html

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the American Public Works Association (APWA),
Association of Metropolitan Water Agencies (AMWA),
American Water Works Association (AWWA),
National Association of Clean Water Agencies (NACWA),
National Association of Water Companies (NAWC),
the Water Environment Federation (WEF)] and
the U.S. Environmental Protection Agency



Effective Utility Management

<p>Ten Attributes of Effectively Managed Water Sector Utilities</p> <ul style="list-style-type: none"> <i>Financial Viability</i> <i>Operational Optimization</i> <i>Employee and Leadership Development</i> <i>Community Sustainability</i> <i>Product Quality</i> <i>Stakeholder Understanding and Support</i> <i>Customer Satisfaction</i> <i>Operational Resiliency</i> <i>Infrastructure Stability</i> <i>Water Resource Adequacy</i> 	<p>Keys to Management Success</p> <ul style="list-style-type: none"> <i>Leadership</i> <i>Strategic Business Planning</i> <i>Organizational Approaches</i> <i>Measurement</i> <i>Continual Improvement Management</i>
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www.epa.gov/waterinfrastructure/bettermanagement.html

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Several key products to help utilities manage more effectively under this framework are anticipated soon, including:

- Implementation Guide — to help utilities assess current operations and facilitate adoption of the Attributes and Keys to Management Success;
- Utility performance measures — linked to the Attributes and Keys to Management Success to help utilities gauge progress; and
- On-line Resource Toolbox — linking utilities to key resources and tools to help them manage based on the Attributes and Keys to Management Success.



Better Management of Energy Use

- For many utilities, energy is one of the largest costs for on-going operations – 30% of O and M is typical.
- Energy consumption by water and wastewater utilities is expected to grow by 20 percent in the next 15 years...
- ...which make energy efficiency a prime opportunity for significant savings that will help with out overall infrastructure costs.
- EPA has recently posted a Web page that brings together a number of resources to help with Water / Energy issues

www.epa.gov/waterinfrastructure/bettermanagement_energy.html

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the U.S. Environmental Protection Agency



Full Cost Pricing

For our infrastructure to be truly sustainable, the upkeep and renewal of our systems cannot be subject to uncertain funding sources.

- We pay less for water than any other developed country.
- Rate structures should reflect the true cost of providing service.
- www.epa.gov/waterinfrastructure/fullcostpricing.html

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A National Brand for Water Efficiency

Why Water Efficiency?

- Saving water reduces the demands we place on drinking water and wastewater infrastructure
- GAO report: At least 36 states expect local, state or regional water shortages by 2013.
- Increasing demand from growing populations depletes aquifers at rates exceeding recharge.
- WaterSense, Reducing Water Loss, Re-use

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EPA has always supported water efficiency as one of the many tools utilities and communities can use to support a sustainable infrastructure, but in 2006 we launched a more concerted effort to promote water efficiency as a way to protect the future of our nation's water supply.

The need was obvious: A report released by the U.S. Government Accountability Office in 2003 found that at least 36 states expected some kind of water shortage within 10 years. And, as we saw in the Southeast last year, they have a real reason to be worried.

Our population is growing by leaps and bounds, faster than our water and wastewater infrastructure can keep pace; aquifers across the country are being depleted at a rate far exceeding their recharge rate.

EPA's Office of Water has conducted a national survey on the needs of publicly owned wastewater treatment works. The report estimates that nationwide capital investment needs for wastewater pollution control are \$202.5 billion for up to a 20-year period. In addition, EPA's third report to Congress on Drinking Water Needs identified drinking water infrastructure needs totaling \$276.8 billion between 2003 and 2023.

Water conservation programs can help stem the tide, and water efficiency is a critical component of an effective conservation plan.



WaterSense®: A Simple Solution


- WaterSense offers a simple solution for utilities implementing water efficiency
 - National, consistent brand
 - Easy-to-recognize label
 - Certified for performance and efficiency
- 120 toilets and 30 faucets have earned the label
- More than 500 partners have joined since 2006, including 200 utilities, districts, cities and states
- www.epa.gov/waterinfrastructure/waterefficiency.html

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The key to water efficiency? Keep it simple. And WaterSense offers that simple solution for communities that want to make water efficiency a priority. WaterSense has created a consistent, national brand that is backed by the credibility of EPA and easy to recognize in the form of a simple label that manufacturers can only use if they are independently tested and certified to meet EPA's criteria for both efficiency and performance.

We've released two product specifications so far, and already more than 120 toilets and 30 faucets have earned the WaterSense label.

Since we launched the program in June 2006, more than 500 partners, including 200 utilities, water districts, cities, and states, have joined our effort to promote water-efficient products and services.




Watershed Approaches to Infrastructure

By thinking beyond the utility ‘fenceline’ and making decisions on a watershed basis, we can make our infrastructure dollars count

- Green Infrastructure approaches to wet weather
- Watershed-based permits and water quality trading programs
- Source water protection
 - see www.protectdrinkingwater.org -- new local officials guide to be released soon
 - www.epa.gov/waterinfrastructure/watershedapproaches.html

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EPA is committed to helping our partners sustain progress and increase opportunities for SRFs through financial stewardship, innovation, and collaboration. With a focus on promoting investment in sustainable infrastructure and encouraging greater creativity in project planning and development, we look forward to working with our state and local partners to make the program even more effective.



Watershed Approaches to Infrastructure

Green Infrastructure approaches


- A tool for mitigating sewer overflows

- Has benefits that go far beyond reducing infrastructure costs
 - Reduce heat island effect
 - Improvements to water quality in streams and rivers
 - Recharges aquifers

- Examples include things like:
 - Rain gardens, green roofs, permeable pavement...

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Watershed Approaches to Infrastructure

Watershed-based permits

- Protect the watershed in a more holistic manner while ensuring that investments that contribute to those goals are made cost effectively
- Not for every constituent in every watershed, but lots of untapped opportunities are out there

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Today's Webcast will Highlight
Wastewater Utilities Using
Sustainable Watershed Approaches

- **Milwaukee Metropolitan Sewerage District**
- **Hallsdale-Powell Utility District**

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Sustainable Water Infrastructure Initiative

Contact information:

Andy Crossland
Sustainable Infrastructure Coordinator
U.S. EPA, Office of Water
202-564-0574
crossland.andy@epa.gov

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Questions?



Andy Crossland, Sustainable Infrastructure Coordinator,
U.S. EPA

Working *with* Nature - Milwaukee's Green Infrastructure Initiatives



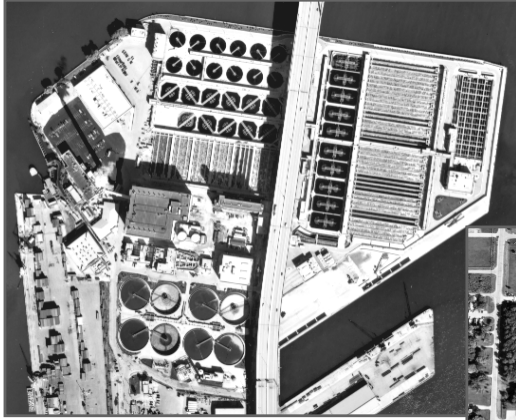
milwaukee metropolitan sewerage district

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What is MMSD Today?

- **State-chartered regional agency**
- **Provides wastewater treatment and flood management**
- **Serves 1.1 million customers in 28 communities**
- **Covers 411 square miles**

Jones Island



Water Reclamation Facilities

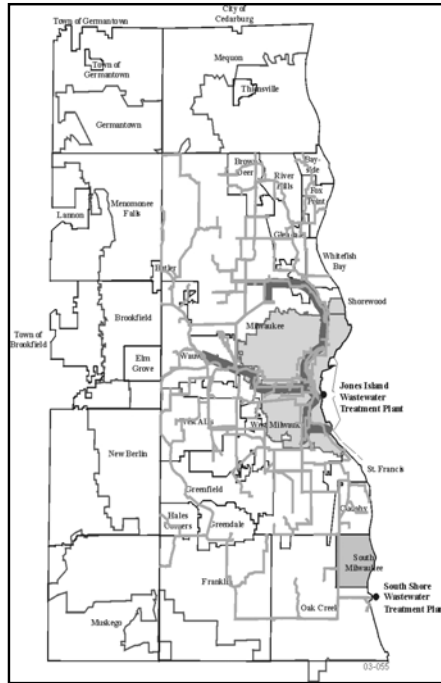


South Shore

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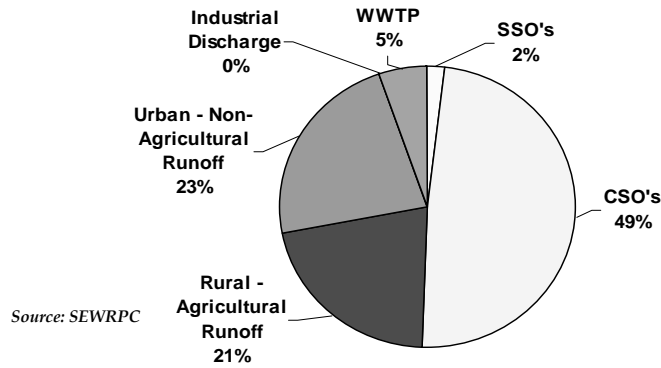
How does the water get to the Treatment Plants?

- 300 miles / MMSD sewers
- 3,000 miles / Community sewers
- 3,000 miles / Private property sewers

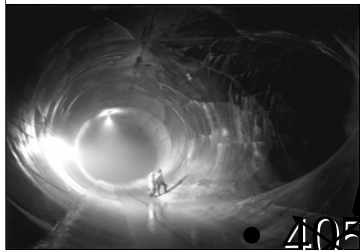


Greater Milwaukee Region's Combined Fecal Coliform Loadings

1975

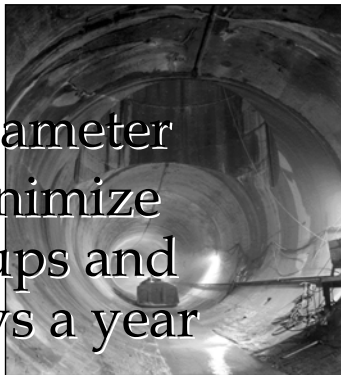


Source: SEWRPC

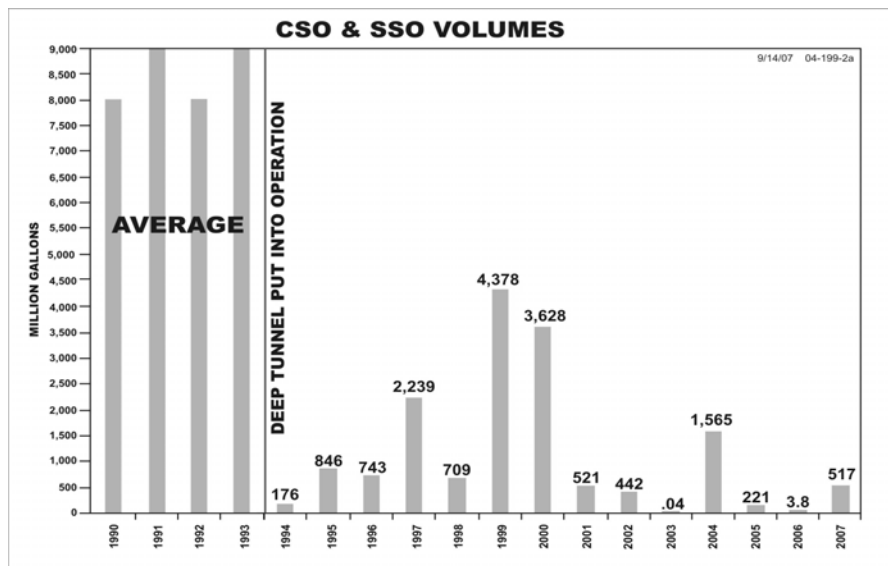


Deep Tunnel System in ~~1994~~ ²⁰⁰⁶

- ~~405~~ ⁴⁹⁴ million gallons
- 300 feet below ground
- ~~10.4~~ ^{26.5} miles long
- 17- to 32-foot diameter
- Designed to minimize basement backups and for 1-2 overflows a year

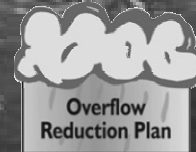


Overflow Reduction



Overflow Reduction Plan

- > \$1 billion by 2010
- > Treatment Plant Upgrades
- > Deep Tunnel
- > Sewer Rehabilitation



\$900 million

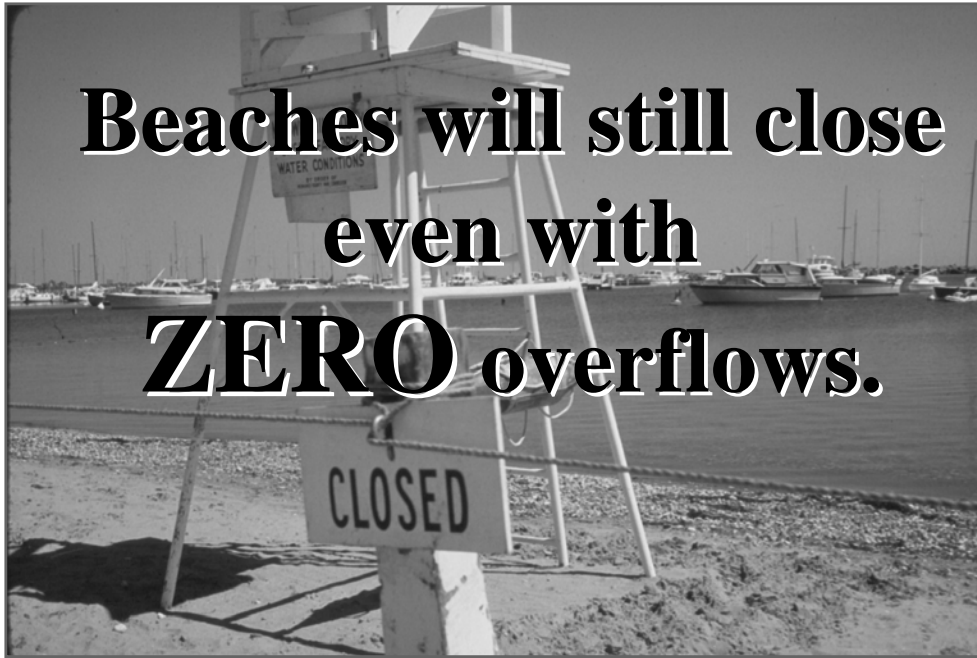


Lincoln Creek



- **Concrete Removal**
- **Minimized Floodplain**
- **Habitat Enhancement**







**Beaches will still close
even with
ZERO overflows.**



Every DROP COUNTS

- Rain Gardens
- Stormwater Trees
- Downspout Disconnection
- Rain Barrels
- Green Roofs

We started because it made sense...

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Water conservation, every drop counts logo

Green Seams



- 454 acres in 2006
- Over 1,300 acres since 2001
- \$8.9 million since 2001
- \$891,000 grants since 2001



Stormwater Ordinances

- In 2002, MMSD implemented a “Stormwater rule”
 - Requiring 28 communities to implement a stormwater runoff ordinance for all new impervious areas greater than 1/2 acre.
 - 100-year runoff release rate - 0.5 cfs/acre of new impervious area
 - 2-year runoff release rate - 0.15 cfs/acre of new impervious area

Rain Barrels

1,638
Sold in 2006

7,144
Since 2003



Lead by Example

MMSD Headquarters

- Installed Summer 2003
- 435 containers in “green grid” container system
- Covers 4,000 square feet

Green Roof





Stormwater BMPs

**MMSD has
sponsored
23 projects
since 2003**



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Rain Gardens

- **Shorewood - 50 rain gardens**
- **Urban Ecology Center**
- **Auto Recyclers**



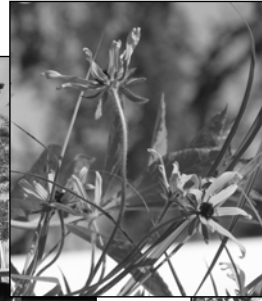
34

Reduce the volume and rate of runoff
Absorb and filter pollutants
Require minimal maintenance



6,298

Plants sold in 2006



Cisterns

- **Walnut Way Neighborhood**
 - **4 residential cisterns**
 - **Water source for community gardens**



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Walnut Way Pilot Project

In early August, the U.S. Environmental Protection Agency (EPA) presented to the Mayor and DCD staff an opportunity for a \$100,000 grant which would focus on stormwater retention and management. The City, in partnership with EPA, is proposing to transform a portion of the 2.25-acre schoolyard at Lloyd Street School from asphalt pavement to a bio-retention area (rain garden) planted with native Wisconsin plants. The project would reduce storm water runoff from the site and develop an environmental education curriculum using the schoolyard's natural area as a sustainable education on-site teaching tool for students and the surrounding community.

Stormwater Management Education



Milwaukee River Flushing Station

Whole Demonstration Sites

Alterra Coffee Shop

- Porous pavement
- Downspout Disconnection
- Rain Barrels
- Rain Garden
- Water Quality Inlet Filter
- Estimate 30%
reduction in runoff



Hart Park Flood Management



Stormwater Reduction BMP Volume Reduction

➤ 1. Downspout Disconnection (dd)	12%
➤ 2. Rain Barrel (w/ dd)	14%
➤ 3. Rain Garden (w/ dd)	36%
➤ 4. Rain barrel and Rain Garden (w/ dd)	38%
➤ 5. Green Roof	22%
➤ 6. Bioretention	70%
➤ 7. Green Parking Lot	76%
➤ 8. Stormwater Trees	10%

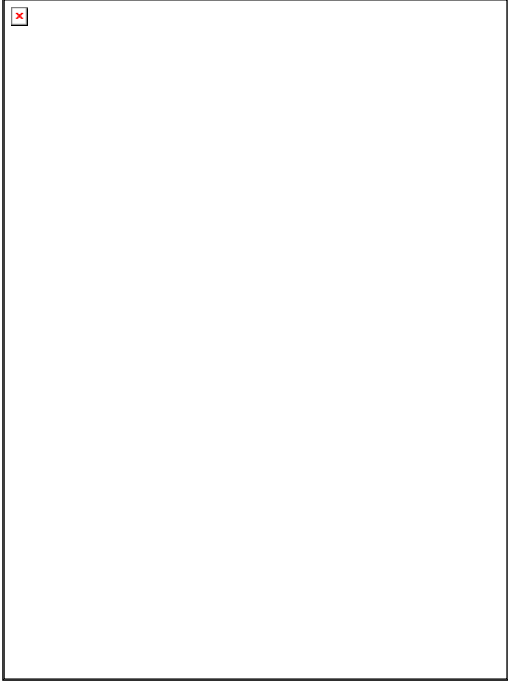
Source: CDM

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Pollutant Removal Estimates for Stormwater BMPs

Pollutant	Infiltration Practices	Bioretention	Porous Pavement	Constructed Wetland
Total phosphorus	70	34	85	49
Soluble phosphorous	85	38	--	35
Total nitrogen	51	84	--	30
Nitrate	82	31	30	67
Copper	--	51	--	40
Zinc	99	71	--	44
TSS	95	81	85	76

Sources: National Pollutant Removal Performance Database for Stormwater Treatment Practices, Center for Watershed Protection, June 2000
 Pennsylvania Stormwater Manual (draft, 2004)



Water Quality Initiative

Study Area

*Regional Management
Using the Watershed Approach*

milwaukee metropolitan sewerage district

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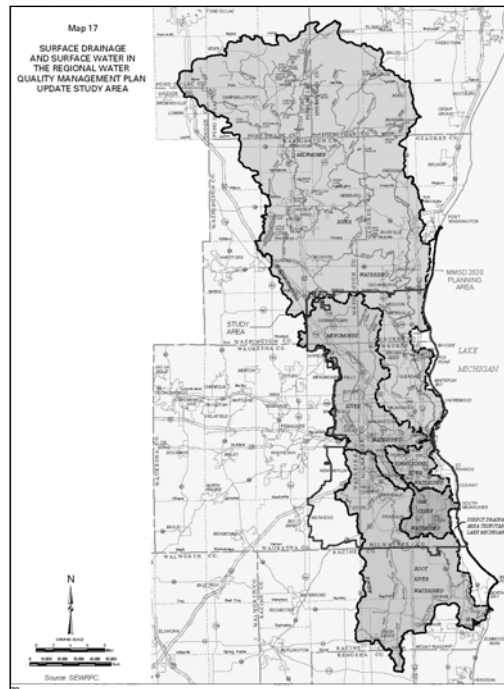
Karen: Explain what the watersheds are.

- 6 watersheds
- Drainage areas cross geo-political boundaries
- Integrated planning outside of MMSD planning boundary

The Water Quality Initiative

A Watershed Approach

<u>Watershed</u>	<u>Area (square miles)</u>
Kinnickinnic River	24.7
Menomonee River	135.8
Milwaukee River	700.0
Oak Creek	28.2
Root River	197.6
Lake Michigan Direct Drainage Area	40.7
Total	1,127.0
Number of Counties	9
Number of Local Municipalities	83



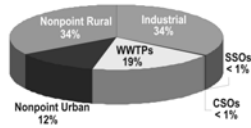
Milwaukee River Watershed Sources of Pollution

PIE CHART KEY

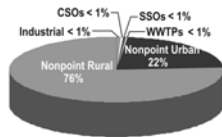
- NONPOINT URBAN
- NONPOINT RURAL
- INDUSTRIAL SOURCE
- CSO's
- SSO's
- WWTP's

Source: SEWRPC

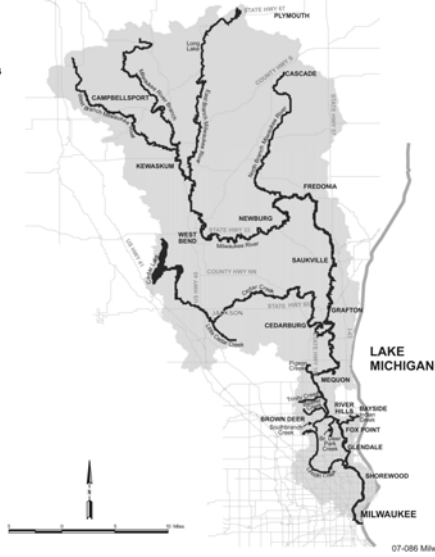
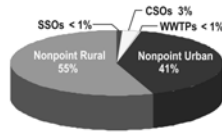
Existing Loads of Total Phosphorus



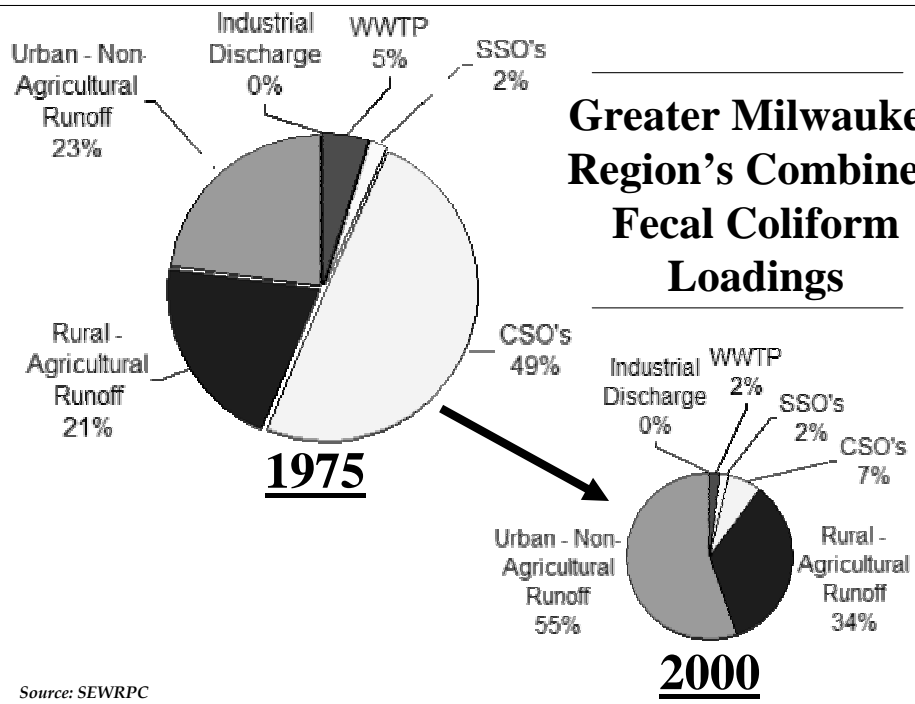
Existing Loads of Total Suspended Solids



Existing Loads of Fecal Coliforms



Greater Milwaukee Region's Combined Fecal Coliform Loadings



Source: SEWRPC

Source Identification Studies through University Partnerships

- DNA typing of pollutants
- Fate and Transport Study
- Human Source Studies of Stormwater
- Endocrine Disrupter Investigations



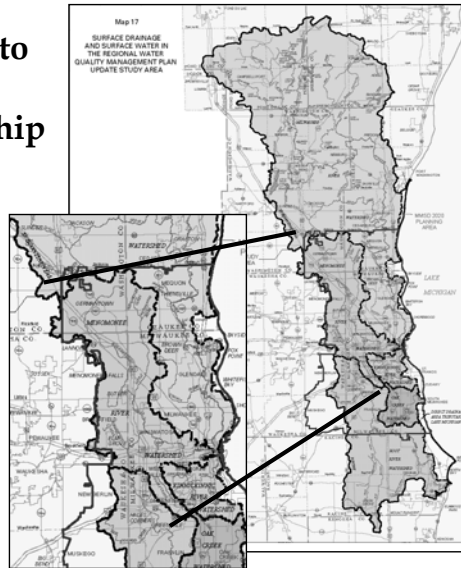
Expanding Water Quality Monitoring Program



Expanding extensive WQ database with additional ambient in-stream continuous monitoring

Building From Existing Frameworks

- Building a collaborative effort to look at all pollutant sources (Milwaukee Regional Partnership Initiative, i.e. Milwaukee RPI)
- Expanding 8-Municipality Menomonee River Watershed Stormwater permit
- MMSD to provide monitoring for the municipalities



Total Maximum Daily Loads for 303(d) Pollutants

- **A third-party TMDL will be initiated in Oct. 2007 for the Milwaukee River, Menomonee River, and Kinnickinnic River for the 303(d) listed pollutants.**
- **Existing modeling is approximately 80% of the TMDL. Menomonee River TMDL will be completed by 2009.**

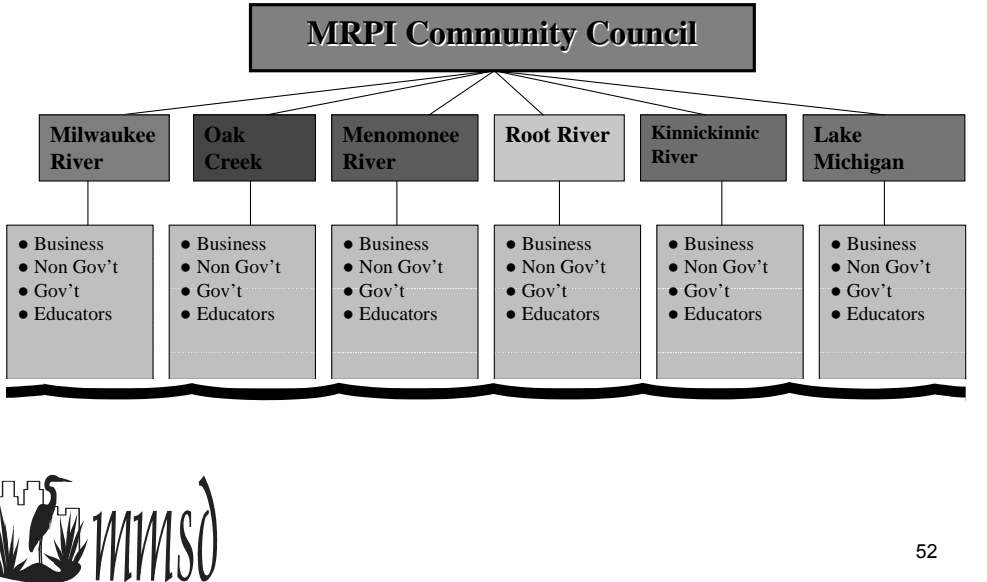
Working towards a Pilot Watershed Permit

- **In-stream water quality data will be the backbone of the permit**
- **TMDLs will be the measurable goal for 303(d) listed pollutants**
- **TMDLs will have embedded in them:**
 - **Targeted Greenseams**
 - **Targeted Green Infrastructure**
 - **Discovery Farms / Discovery Watershed approach**
 - **A timeline with interim milestones**
 - **Adaptive approach**
- **Watershed Permit will be the regulatory umbrella for TMDLs**

Water Quality Trading

- **A means of bringing a market based approach for inclusion of the non-regulated community into the watershed permit.**
- **Key component - incorporating agricultural community into the discussion at the table using a market-based approach.**

Milwaukee Regional Partnership Initiative



Most Importantly...

- **The Milwaukee RPI along with TMDLs, the Watershed Permit, and water quality trading will provide the path to go *beyond* the current regulatory requirements but in a cost effective manner that maximizes the environmental benefits.**

But, back to Leadership...

- **It all started with EPA**
 - **Green Infrastructure Statement of Intent**
 - **August 7, 2007 - Water Quality Trading Toolkit for Permit Writers**
 - **August 16, 2007 - Use of Green Infrastructure in NPDES Permits and Enforcement**
 - **August 23, 2007 - New Guidance on Watershed Permitting**

These are tools we needed!!

Questions?



Kevin Shafer, Executive Director
Milwaukee Metropolitan Sewerage District

Next Month's Webcast

Nutrient Management in Your Backyard

March 19, 2008, 1-3 pm Eastern

See epa.gov/watershedwebcast

for more details

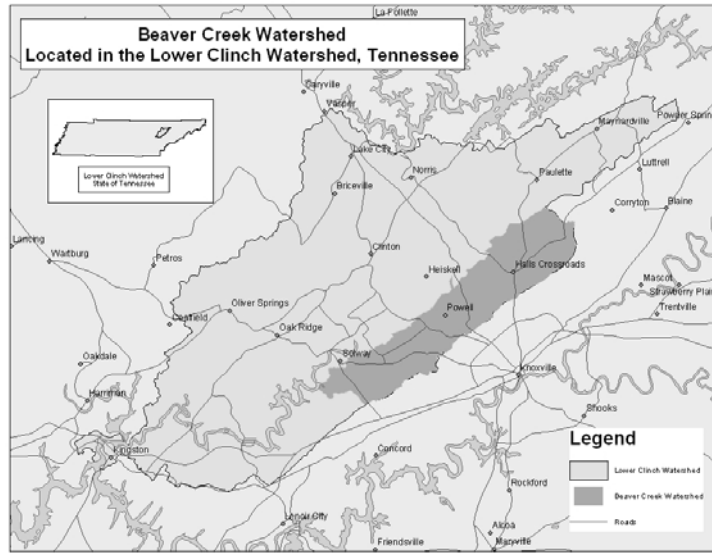


**Holistic Watershed
Management:**
*Integrating a Treatment Plant Upgrade
with Water Quality Improvement
in Beaver Creek*

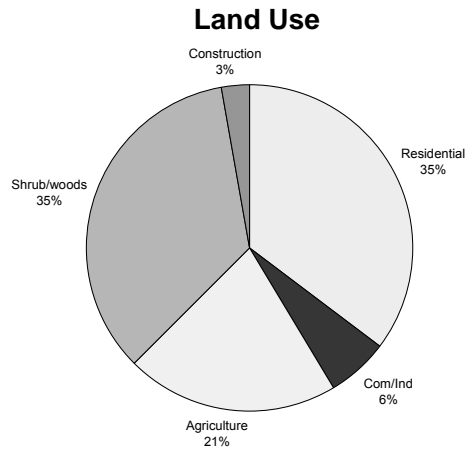
Presented By:

Stefanie Farrell

Background



Background



Causes of impairment:

- Siltation
- Phosphorus
- Nitrate
- E. coli*
- Habitat Alteration
- Dissolved Oxygen

Pivotal Projects Beaver Creek Initiative

- 1998: Beaver Creek Task Force Formed
- 1998: Updated FEMA Flood Study
- 2000: Floodplain no fill line expanded
- 2002: Initial BCW Assessment complete
- 2003: BC Watershed Association formed
- 2003: Part time Watershed Coordinator hired
- 2003: Intensive Watershed Education initiated
- 2003: Site Planning Roundtable convened

Pivotal Projects Beaver Creek Initiative

- 2004: USA/USSR assessments for 23 sub basins
- 2004: Green Infrastructure plan commissioned
- 2005: 604(b) Watershed Planning Grant
- 2005: GIS Land Use Map update
- 2005: BMP projects initiated
- 2005: EPA Consolidated Watershed Grant
 - Pilot Market Based Ecological Credit Trading Program
- 2006: Developed Watershed Plan

Beaver Creek Task Force Partners

- Beaver Creek Watershed Association
- CAC AmeriCorps
- Hallsdale-Powell Utility District
- Knox County
- Knoxville-Knox County MPC
- NRCS
- Knox County SCD
- KGIS
- TVA
- TDEC – Water Pollution Control
- University of Tennessee
- USGS
- West Knox Utility District

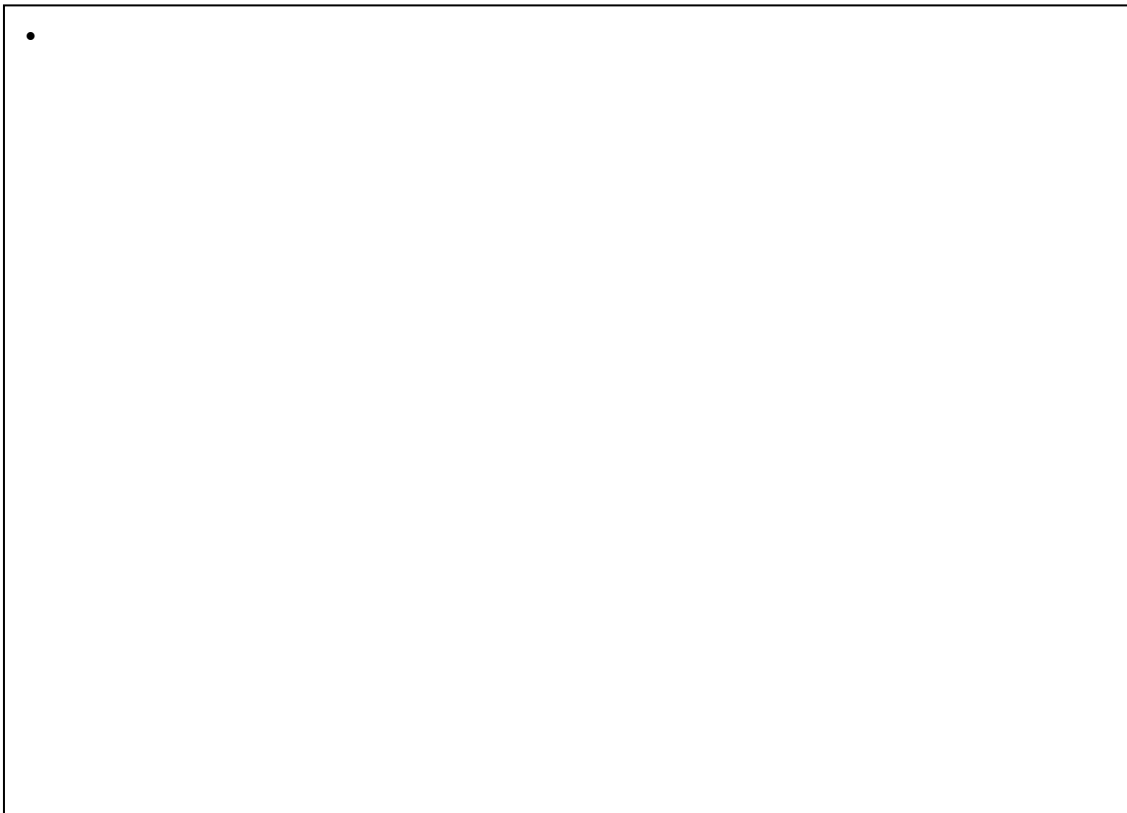
Watershed Improvement Projects

- Environmental Stewardship Program
- Ag BMP Projects
- Watershed planning process
- Expand education & outreach initiatives
 - AAW
 - Media...
- Develop construction BMP demonstration sites
- Expand Ag BMP program
- Eco-trading credit \$353,000
- Senate approved appropriations bills for \$500,000
- 319 Grant for \$919,000

What Is Watershed-Based Permitting?

An ***approach*** to NPDES permitting that results in permits:

- Designed to attain watershed goals with consideration of **all** sources/stressors in a watershed or basin
- A component of the watershed planning framework to better integrate monitoring, water quality standards, TMDL, nonpoint source controls, source water protection and other programs



Total Maximum Daily Load (TMDL)

- CWA Section 303(d)(1)
 - Requires States to identify waters that will not achieve water quality standards after implementation of technology-based limitations
 - TMDLs required for most impaired waters
- TMDL is defined as the amount of a pollutant that may be discharged into a water body with the water body still meeting water quality standards

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OK....who here has heard of a “TMDL” ??

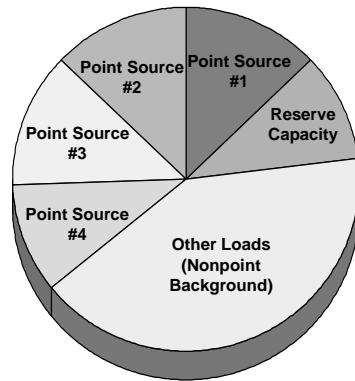
As many (or most) of you know, environmental groups have sued States and EPA because they have not developed these “TMDLs” as required by the CWA. Therefore, there is a lot of activity now to get them developed.

Now lets talk about what these things are, and why we need to be aware of them.

-- CWA 303(d) requires that every two years, States must list waters that will not meet designated uses after implementation of Tech-based limits. States rank waters, and establish priorities for TMDL development. EPA reviews the list and the TMDL schedule.

Simple enough....but what is a TMDL???

Components of a TMDL



- Wasteload allocations (WLAs) are assigned to each point source discharge
- Load allocations (LAs) are assigned to nonpoint sources
- WLAs and LAs are established so that predicted receiving water concentrations do not exceed water quality criteria
- Reserve capacity may be included to account for new or expanded discharges and as a factor of safety

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You can think of the TMDL as a “pie” -- where the sum of all of the slices equals the maximum that can be discharged to the water body while still meeting applicable WQS. Generally speaking, there are three types of slices to our pie.

The slices assigned to point sources are called Wasteload Allocations (WLAs) -
POLL: How are WLAs implemented?? (through limits in NPDES permits)

The slices assigned to nonpoint sources are called Load Allocations (LAs). -
POLL: How are LAs implemented?? (State nonpoint programs - zoning - land use planning ---- Fed tools are very limited)

The third type of slice (allocation) is typically set aside as a reserve capacity to allow future development. This is not required, but sometimes is include so that the TMDL doesn't have to be reopened to accommodate new dischargers. Sometimes this slice is used as part of the Margin of Safety to account for data limitations or modeling, but generally the Margin of Safety is addressed through conservative assumptions in the TMDL calculations.

Basic Steps to Watershed Based Permitting

Step 1: Select a Watershed

Step 2: Identify and Engage Stakeholders

Step 3: Analyze Watershed Data

Step 4: Develop Permit Conditions

Step 5: Issue Watershed-Based NPDES Permit(s)

Step 6: Measure and Report Progress

Expected Benefits & Challenges

- **Benefits**
 - **Emphasis on environmental results**
 - **Promotes watershed monitoring plans**
 - **Encourages efficiencies and targets resources**
 - **Increases stakeholder involvement**
- **Challenges**
 - **Expands stakeholder involvement**
 - **May involve nonpoint sources**
 - **Investment of agency time and resources**

Water Quality Trading

- **Opportunity to meet water quality goals at lower cost**
 - Primarily nutrients, but other pollutants as well
 - Watershed-scale trading creates more environmental benefits and cost savings
 - Momentum evident in recent years; EPA Guidance in January 2003
- **Prerequisites highlight best opportunities**
 - Multiple sources, significantly different pollutant control costs, sufficient modeling/monitoring
 - EPA Handbook issued December 2004

Issues with Utility

- Accommodate growth
- Reduce SSO's
- Obligation to ratepayers



Several reasons behind Hallsdale-Powell rate hikes

ED MARCUM
North Notes

Bills, bills, bills. Don't you hate them? Especially when you are asked to shell out more money than usual the next time the hand comes out for a payment.

The News Sentinel's editorial page staff asked me to check out a

decades, rates were left artificially low and improvements to the system were not done. Alas, Hallsdale-Powell is among 44 utility districts in East Tennessee under an Environmental Protection Agency unfunded mandate to improve their wastewater systems, so the district is in a double bind, he said.

Hammond said that when he became CEO in 2000, the district's board of

Hammond said Smith said Hallsdale-Powell's problems are not that unusual. Utility districts across the country are facing similar challenges as pipes installed 50 years ago near the end of their life.

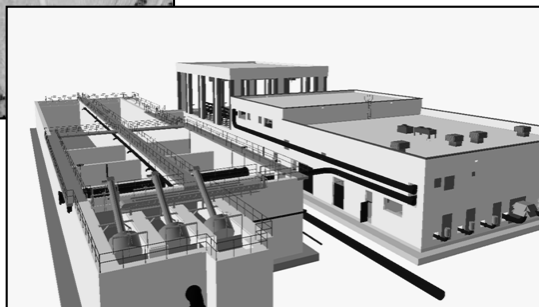
In 2002, Hallsdale-Powell hired Rathelis Financial Consultants Inc. of Charlotte, N.C., to develop a rate model that would produce the increases needed to fund the required improvements.

completion of another plant on Norris Lake, which should be in operation by September or October.

The rate model developed by Rathelis is designed to accommodate these needs, and unfortunately, it includes a spike in rates to do it, although 2008 would be the last year rate increases would reach into the double digits, Hammond said.

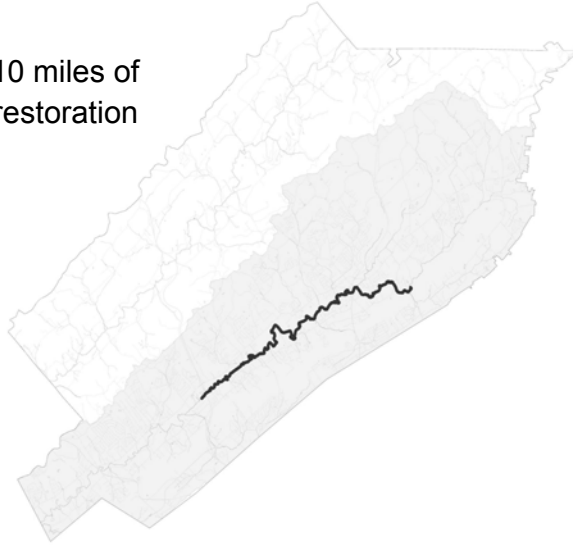
One of the findings by Rathelis was that water rates had been too low for the

Nutrient Removal Costs



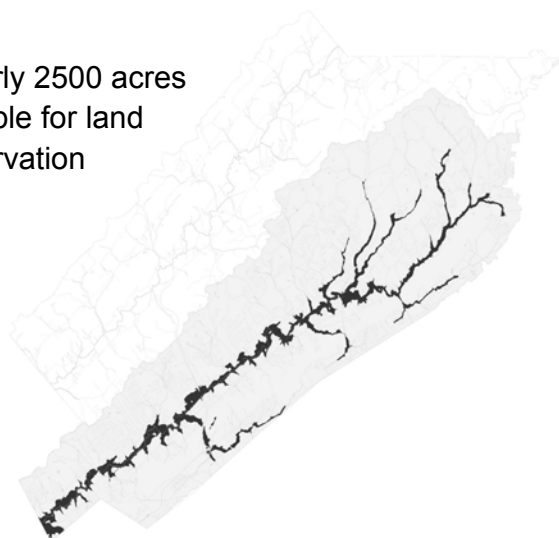
Stream Restoration

- Over 10 miles of stream restoration



Land Conservation

- Nearly 2500 acres available for land conservation



Flooding



Targeted BMP's



Targeted BMP's



Targeted BMP's



Benefits to Watershed Approach

- More 'water quality' bang for the buck
- Sustainability
- Community asset

Permit Approach

- Quantify P loading in the watershed
- Comprehensive watershed plan
- Monitoring – chemical and biological

Questions?



Stefanie Farrell, Hallsdale-Powell Utility District



Kevin Shafer, Executive Director
Milwaukee Metropolitan Sewerage District



Andy Crossland, Sustainable Infrastructure
Coordinator, U.S. EPA

Check out Additional Resources
at:

<http://www.clu-in.org/conf/tio/owwuuswa/resource.cfm>

Please give us feedback
on the Webcast at:

<http://www.clu-in.org/conf/tio/owwuuswa/feedback.cfm>