CITY OF DULUTH

ST. LOUIS COUNTY

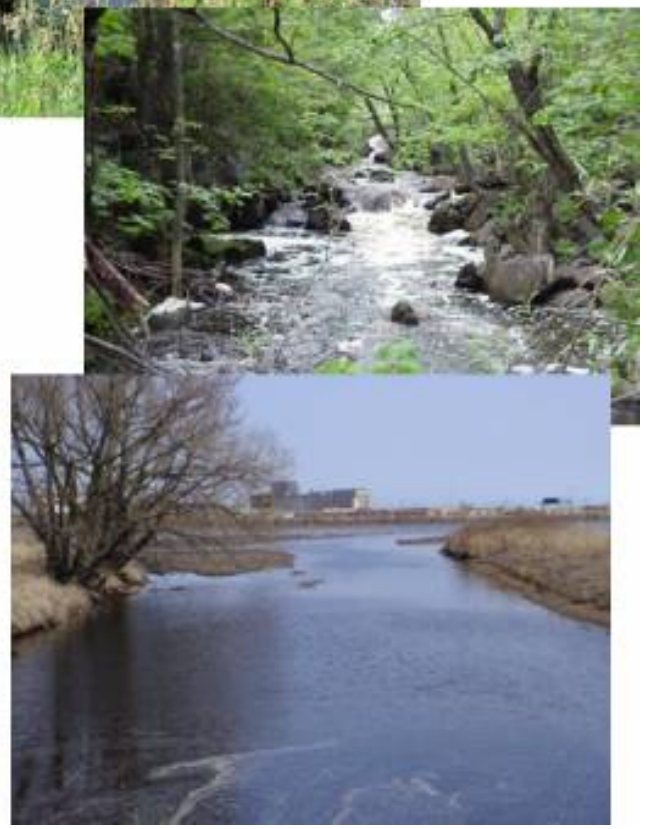
MINNESOTA DEPARTMENT OF TRANSPORTATION

CITY OF PROCTOR

LAKE SUPERIOR COLLEGE

Annual Public Stormwater Meeting

April 24, 2007

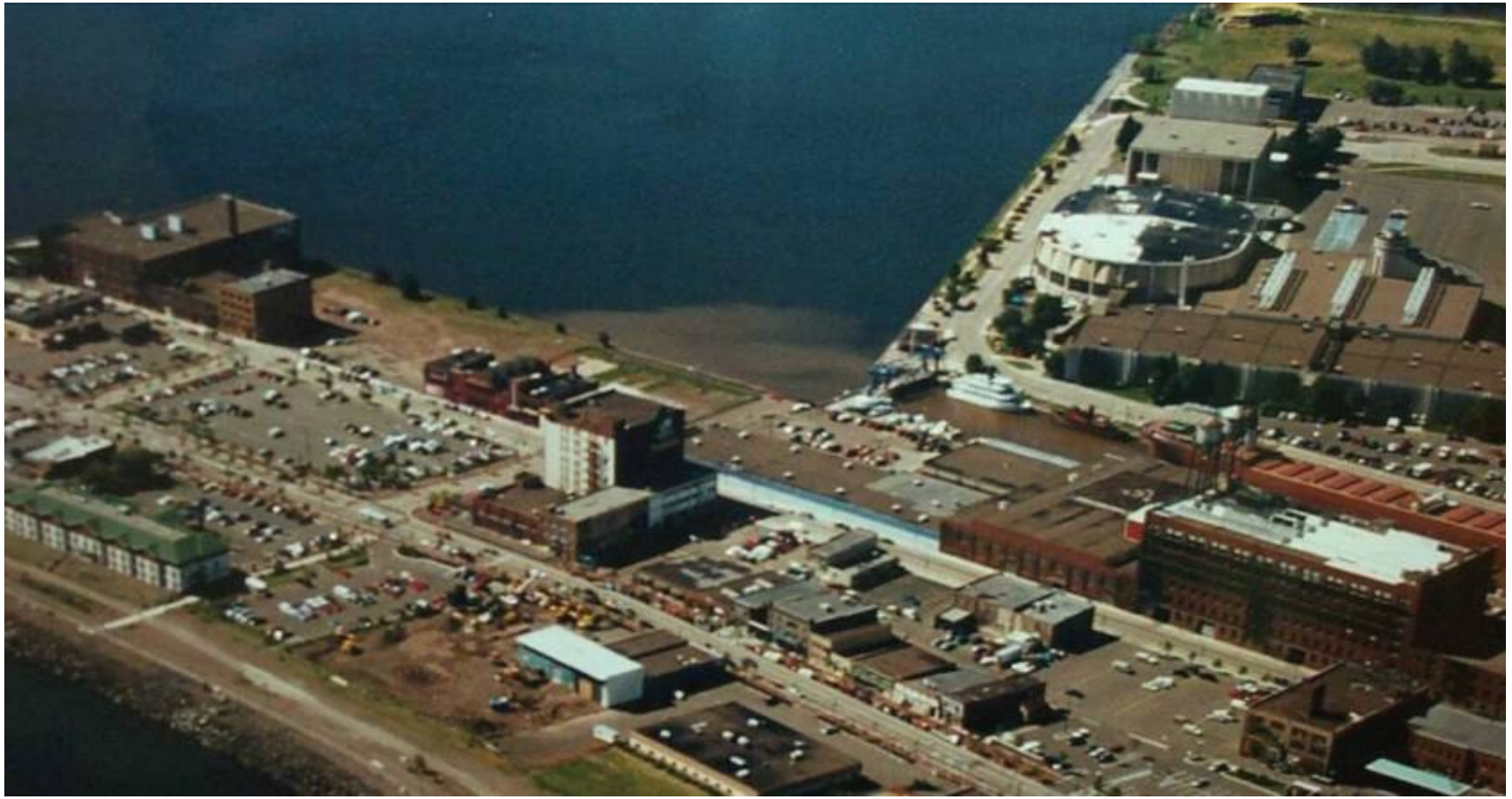


Miller Creek

Agenda

- The NPDES Phase II Stormwater Permit Requirements
- Stormwater Best Management Practices
- St. Louis County Activities
- Minnesota Department of Transportation Activities
- Lake Superior College Activities
- City of Duluth's Activities
- Proctor Activities
- Public Comment

Introduction to Stormwater Requirements



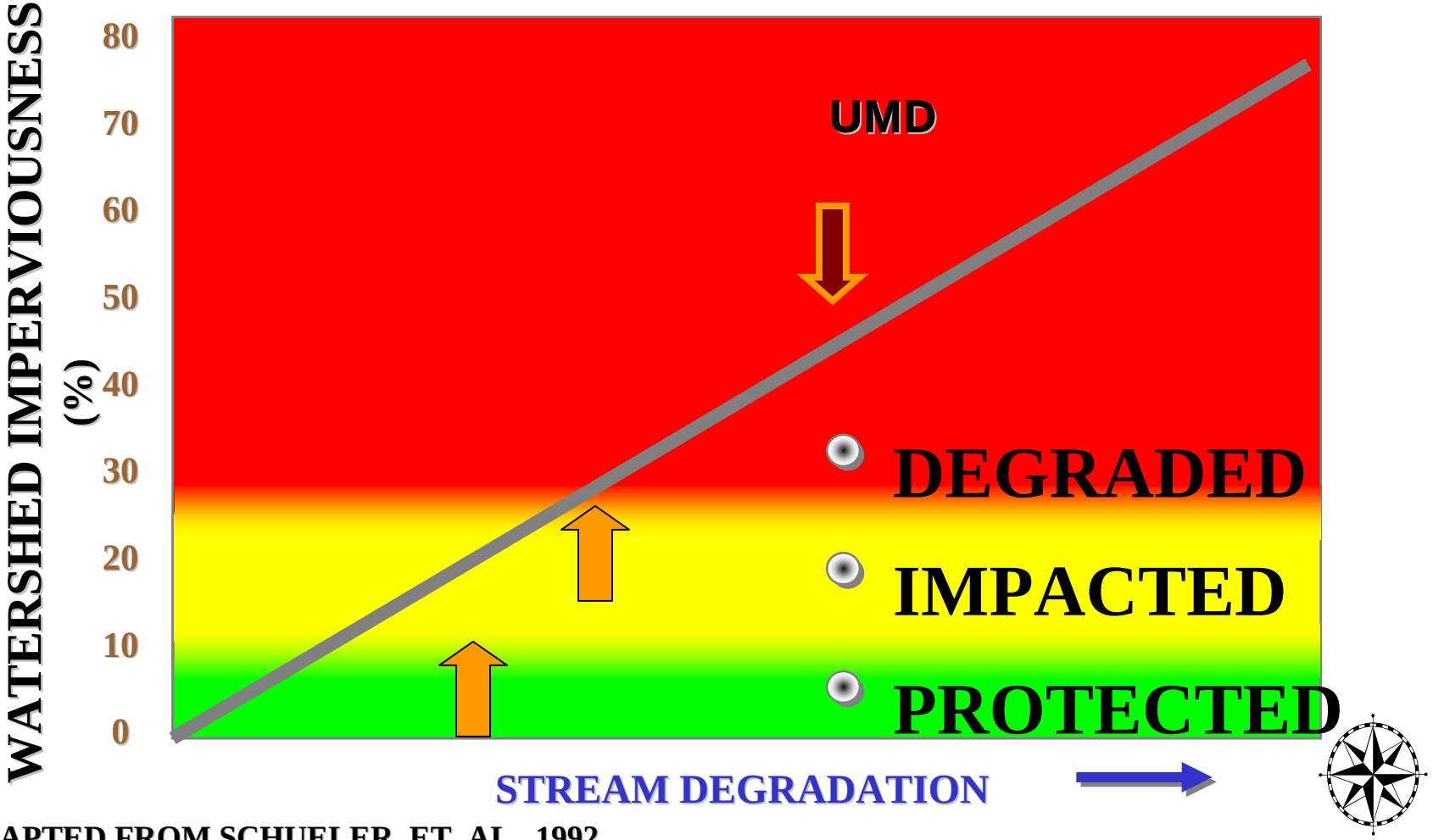
The Federal Clean Water Act established in the early 1970's initially targeted point source discharges, but by the 1990's began targeting non-point source pollution.

- **Required NPDES (National Pollution Discharge Elimination System) Stormwater Permits for large and medium size cities**
- **Required NPDES Stormwater Permits for Industry**
- **Required Construction Permits to protect against erosion.**
- **Required permits for smaller MS4s (municipal separate storm sewer systems)**

Why permit stormwater?
Less Obvious - Nonpoint Source Pollution
Polluted Runoff is the #1 Water Quality Problem in the U.S.*
* USEPA

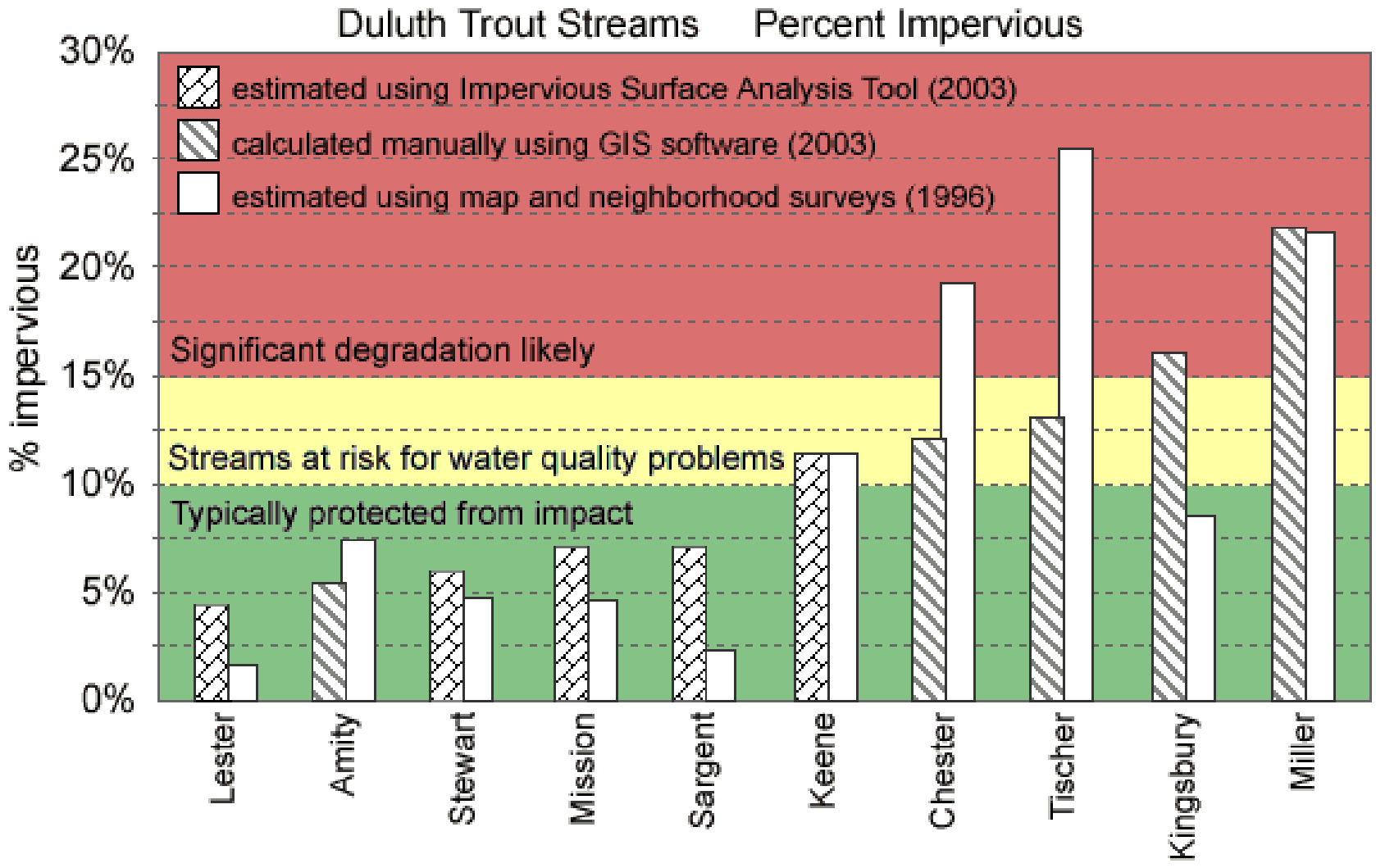
Impervious Cover Adds Up

Relationship Between % Imperviousness and Water Quality



ADAPTED FROM SCHUELER, ET. AL., 1992

Estimate of impervious area - source - duluthstreams.org



Water entering Lake Superior today will remain in the lake for 191 years (on average) !!

What happens today will affect your great-great grandchildren.

In 2006 and 2007 the MS4s, submitted a notice of intent to participate in the State of Minnesota General Application for a NPDES Phase II Stormwater permit.

The submission consisted of

- **an application**
- **a summary sheet of plans**
- **a list of BMPs (Best Management Practices designed to address permit requirements). (SWPPP)**

Keene Creek

The application addresses 6 minimum measures specified by the Federal Government and expanded and defined by the state. They are:

- **PUBLIC EDUCATION**
- **PUBLIC INVOLVEMENT**
- **ILLICIT DISCHARGES**
- **CONSTRUCTION SITE CONTROLS**
- **POST CONSTRUCTION CONTROLS**
- **GOOD HOUSEKEEPING MEASURES**

I. Public Education and Outreach:

- **Distribute educational materials to community about impact of stormwater discharges and steps to reduce pollution.**
- **Develop an education program for six minimum control measures.**

Describe how your program makes use of other education efforts in the area.

Hold one public meeting annually prior to submitting your annual report (can be joint meeting).

- **In a convenient location**
- **With public notice**
- **Wide distribution of the notice**

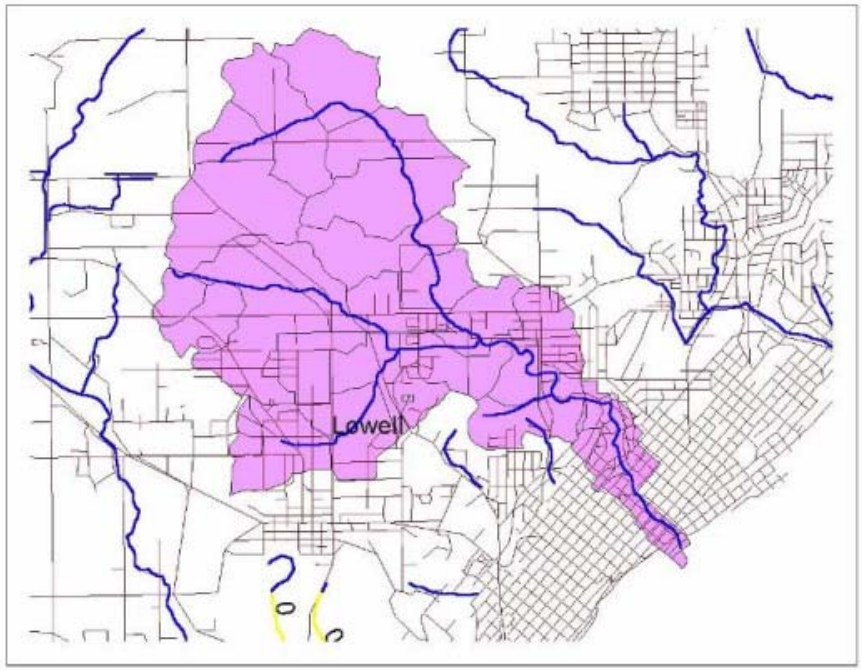
II. Public participation and Involvement

Comply with public notice requirements

- **Get public input and opinion on SWPPP**
  - **-Allow reasonable opportunity to speak or provide written material**
  - **-Set up procedures for communication to give people opportunity for spoken or written input**
- **Consider comments**
- **Encourage public involvement with maintaining water quality.**

III. Illicit discharge detection and elimination

- Develop a storm sewer map including ponds, lakes, streams in system, structural devices, pipes and conveyances
- Prohibit non stormwater discharges to system.
- Develop a program to detect illegal discharges.
- Inform all groups about hazards of illegal discharges.



IV Construction site stormwater runoff control

- a program to reduce pollutants in runoff from construction runoff in the MS4 for land disturbances of greater than one acre or less than one acre if part of a common plan of development.

- This includes setting up BMPS for

a. Ordinance requiring erosion or sediment controls and sanctions.

b. Requirement for construction site operators to implement erosion and sediment BMPS.

c. Requirements for construction site operators to control waste (truck wash out, chemicals, litter etc.)

d. Site plan review procedures - looking at water quality impacts.

e. Procedures for considering public reports of non-compliance.

f. Procedures for site inspections.

V. Post construction stormwater management in new development and redevelopment.

A program to address stormwater management in projects that disturb greater than one acre or are part of a common plan for greater than one acre (this could be an industrial park or a housing development)

- **Strategies including structural and non-structural BMPS**
- **Use of an ordinance to address runoff**
- **Ensure long term operation and maintenance of BMPs (can't dig 'em and leave 'em)**

VI Pollution prevention and good housekeeping

Implement a program of BMPS within the operations including appropriate training:

- **Operate and maintain system**
- **Inspect annually all structural pollution controls**
- **Inspect 20% of outfalls yearly**
- **Respond to inspection results**
- **Summarize results in annual report with dates of inspections and dates of actions**
- **Keep records and adjust program accordingly**

To Summarize ….

- The NPDES SWPPP requires MS4s to reduce discharge of pollutants to the MEP, through development of BMPs and, most importantly, the WCMBI because with NPS, EIPOFP.

NPDES = National Pollutant Discharge Elimination System

SWPPP = Stormwater Pollutant Prevention Program

MS4s = Municipal Separate Storm Sewer Systems

MEP = Maximum Extent Practicable

BMPs = Best Management Practices

WCMBI = whole community must be involved

NPS = nonpoint source pollution

EIPOFP = everyone is part of the problem

Examples of Best Management Practices

- **Sediment Traps**

Examples of Best Management Practices

- **Rain gardens**

Types:

Simple home gardens

Treatment of parking lots

School gardens

Examples of Best Management Practices

- **Biofilters**

RAIN GARDENS

Cultivating Clean Water

University of Minnesota Duluth campus

What is a rain garden?

Rain gardens, or filtration basins, are shallow depressions that are strategically placed to catch runoff from roads, parking lots, driveways, and roofs. Deep-rooted vegetation is planted to facilitate evaporation, filter pollutants, and create bird and butterfly habitat.

Constructed in 2005, this sophisticated filtration basin captures water from 3.5 acres and holds approximately 60,500 gallons of water.

Why create a rain garden?

A rain garden protects natural water bodies by:

- *Slowing water*—Surges of runoff impact creeks and lakes by eroding banks and scouring bottoms
- *Filtering water*—Stormwater can carry oil and grease from cars, heavy metals (such as copper from brake linings), and phosphorus from windblown soil and organic debris (such as leaves and grass)
- *Cooling water*—Rainwater is often heated by pavement and roofs. This warm water can be harmful to the fish that live in creeks and lakes

College Street Storm-Sewer Outlet to Oregon Creek

Normal flow from storm sewer

Tremendous flush of storm water after a heavy rain storm

Problem: When snow melts or rain falls, surges of runoff from paved surfaces can damage Oregon Creek by eroding the creek's banks and bottom, increasing its temperature, and carrying pollutants.

Solution: A rain garden slows, cools, and cleans stormwater runoff before it enters Oregon Creek and, eventually, Lake Superior.

Before the rain garden, high volumes of stormwater runoff from this parking lot ran directly to Oregon Creek via the storm sewer drain in the middle of the puddle.

After installation of the garden, water filters through the rain garden before reaching Oregon Creek

How does this rain garden work?

1. Stormwater from the parking lot is directed to the settling basin where sand and debris sink to the bottom. As the settling basin fills, water overflows or seeps from the basin to the rain garden. Standing water remains in the basin for no more than three days—less time than it takes for mosquito eggs to hatch.
2. Once in the garden, water soaks through the ground. Some of the water is used by plants, evaporates, or remains in the soil, never reaching Oregon Creek.
3. Excess water slowly filters down through the vegetation and soil before leaving the bottom of the garden through the drain tile and entering the storm-sewer system and, ultimately, Oregon Creek.

A drain tile system was placed under the rain garden because of the heavy clay soil and large volumes of water being treated. If the soil were sandy, no drain tile would be necessary because the water would have readily sunk into the ground.

This rain garden was constructed by the University of Minnesota Duluth. To learn more about this project, visit www.d.umn.edu/sustainability/stormwater

For information about building a rain garden in your yard, visit the home and garden section of www.lakesuperiorstormwater.org

Protecting Oregon Creek and Lake Superior

Rain garden design and interpretive signs by Barr Engineering Company

RAIN GARDENS

Cultivating Clean Water

What role do plants play in a rain garden?

This filtration basin, or rain garden, functions much like the natural wetlands found throughout Minnesota. Just like in a wetland, plants and soil in this rain garden play an important role in improving water quality, providing bird and butterfly habitat, and reducing flow velocity.

What types of plants are in this rain garden?

How do plants clean water?

This rain garden was constructed by the University of Minnesota Duluth. To learn more about this project, visit www.d.umn.edu/cfans/outreach/stormwater

For information about building a rain garden in your yard, visit the home and garden section of www.lakesuperiorstreams.org

Protecting Oregon Creek and Lake Superior

Rain garden design and construction assistance by Bar Engineering Company

Examples of Best Management Practices

- **Green roofs**

Examples of Best Management Practices

- **Erosion controls**

Examples of Best Management Practices

- **Pet waste controls**

Examples of Best Management Practices

- **Pervious pavements**

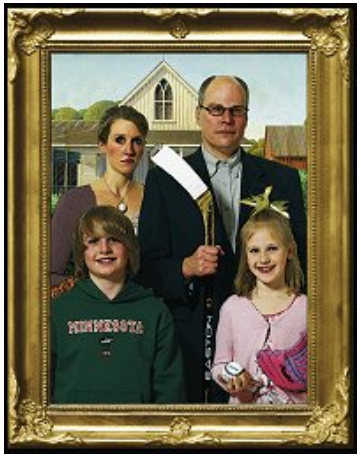
Examples of Best Management Practices

- **General good housekeeping**

WHAT ARE THE MS4'S DOING?

St. Louis County

SAINT LOUIS COUNTY
MINNESOTA



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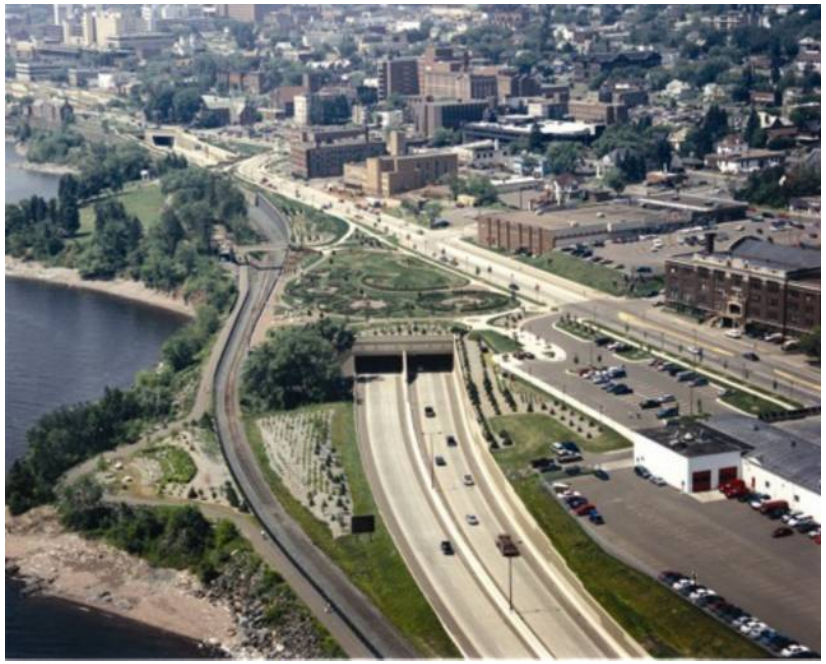


Minnesota Department of Transportation

Lake Superior College

THE CITY OF DULUTH'S
Storm Water Pollution
Prevention Plan
D·U·L·U·T·H

How is Duluth is addressing the Permit?

1. Formed a Stormwater Utility to fund the permit
2. Adopted Surface Water Management Goals & Policies
3. Updated the storm sewer map
4. Held public meetings to learn about concerns
5. Submitted original permit and updated permit

Merritt Creek

SPECIFIC CITY RESPONSIBILITIES INCLUDE:

Control Erosion

Identify and eliminate illicit discharges

Develop practices that prevent pollution (BMPs)

Set an example for the public

The City developed a book of Best Management Practices that the City agrees will be maintained.

The City's permit has 61 BMPs in its Storm Water Pollution Prevention Plan.

City of Duluth BMP 101

MS4 Name: CITY OF DULUTH
Minimum Control Measure: 1-PUBLIC EDUCATION AND OUTREACH
Unique BMP Identification Number: 1F- BMP 101 adapted from 2003 permit

***BMP Title:** Development of a Regional Surface Water Education Program

BMP Description

Target Audience: General Public -Regional
Participate in a program of regional educational effort with other government groups. Provide education outreach and information that addresses specific regional issues through local media as a cooperative effort. Incorporate existing regional environmental education programming. Extent of actual program depends on grant funding success. Program to address watershed issues – link streams to lake.
The identified coordinating regional body is the Regional Stormwater Protection Team founded in 2003. The RSPT sponsors advertising, brochures and events and provides a net work for coordination

***Measurable Goals:**

- Sit on Board of Regional Stormwater Protection Team
- Form partnerships with Regional groups including the University, neighboring communities and agencies
- Participate in regional fairs, watershed festivals
- Seek and apply for funding and act as fiscal agent for the organization as required.
- Produce and distribute public Services Advertisements
- Participate in construction workshops

***Timeline/Implementation Schedule:**

- RSPT – **on-going** (6 to ten meetings yearly)
- Airing of PSAs – at least **once yearly** depending on funding (spring or fall)
- Watershed Festival – **every other year** – next 2007
- Apply for funding – **annually**
- Partnerships with other groups – **on-going** as projects are identified.
- Workshops **as scheduled** (funding dependent)

Specific Components and Notes:

- Minutes of meetings of the RSPT including but not limited to,
  - City of Duluth, Hermantown, Proctor, Cloquet, City of Superior, Duluth Township,
  - St. Louis County, Rice Lake Township, Midway Township University of Minnesota
  - Duluth, MN Department of Transportation, ST. Louis County, Fond du Lac Reservation,
- Grants written to MN's Lake Superior Coastal Program and other identified funding sources.
- Design of educational campaign
- Public information spot design and airing (track times aired)
- Logo design
- www.lakesuperiorstreams.org/www.duluthstreams.org
- Regional workshops

***Responsible Party for this BMP:**

Name: Marnie Lonsdale
Department: Utility Operations , Public Works and Utilities
Phone: 218-730-4063

wq-strm4-50b

Areas covered by Best Management Practices

- vehicle inspection
- hazardous materials management
- hazardous materials training
- construction site erosion control
- control of dumping to creeks and streams
- Vehicle washing
- hazardous spill response
- storm sewer cleaning
- Vehicle maintenance & cleaning
- deicing material storage
- stream cleaning
- removal of icing problems
- sediment disposal
- outfall inspection
- inspection of control devices
- use of fertilizers
- training in fertilizer & pesticides
- landscape maintenance
- pet waste control
- street cleaning
- patching
- illicit discharge detection
- dumping

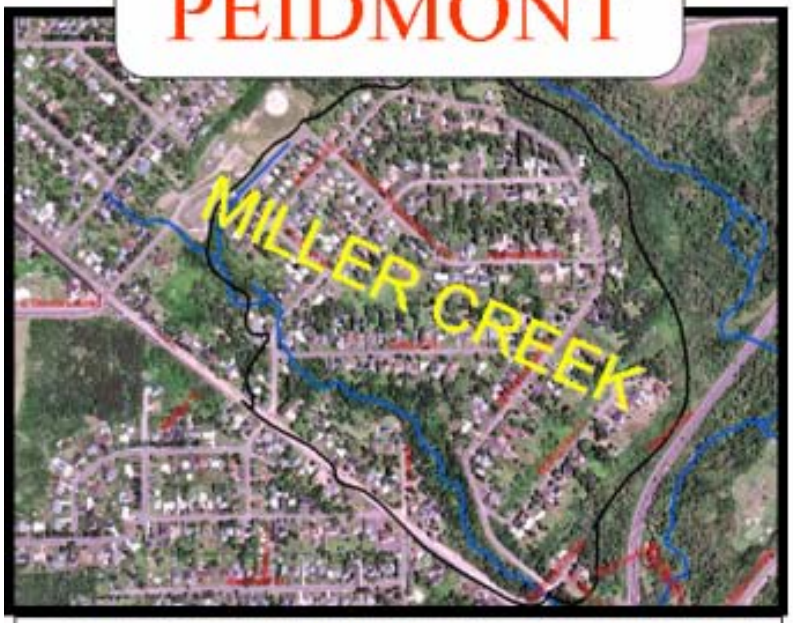
Sand Sweep-Up: Pilot Project

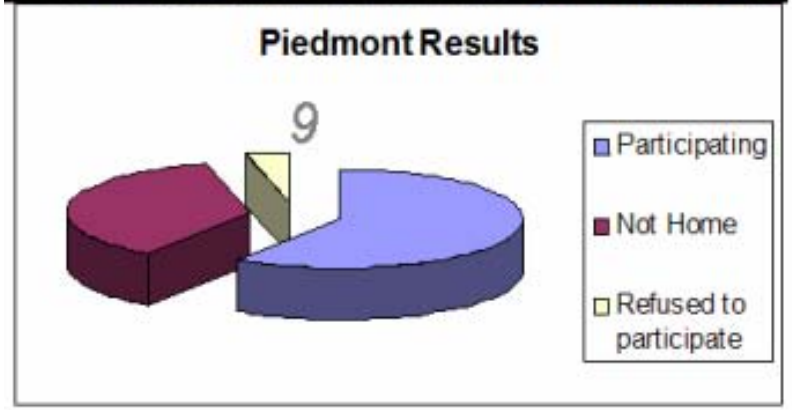
- City of Duluth & South St Louis Soil & Water Conservation District

How do we convince homeowners to stop sweeping sand into streets?

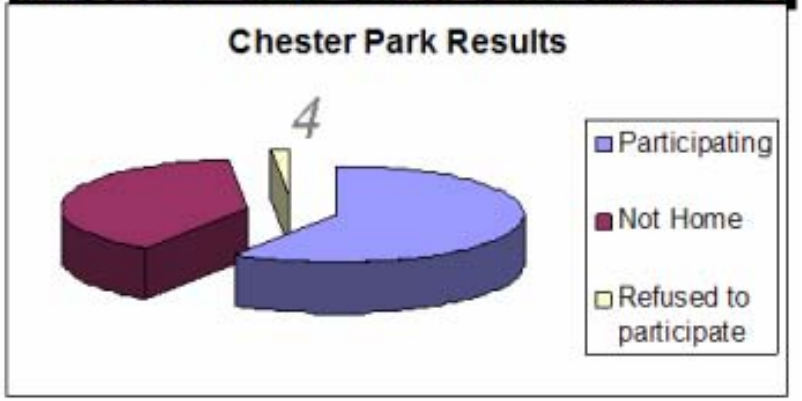
The City is working with residents to change practices!

PEIDMONT





CHESTER PARK



Lessons Learned

1. Link action to water
2. Keep it Simple
3. Keep it Fun

HOW DO I PARTICIPATE?

1. Get a free bucket
2. Sweep
3. Recycle

Rake for the Lake : Pilot Project

- **City of Duluth & South St Louis Soil & Water Conservation District**

How do we convince homeowners to adopt their local storm drain?

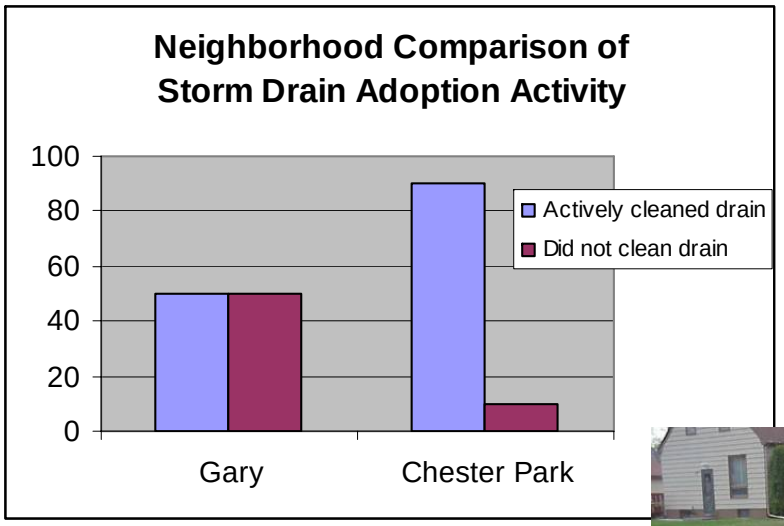
Lessons learned

- **People see storm drains as a “public” thing**
  - **City’s problem**
  - ***But:* they understand flooding problems**
- **What did people respond to?**
  - ***9,500 storm drains in Duluth***
  - ***City Crews can’t do it alone - need help***
  - ***Keep Creeks clean = Keep streets safe***

Gary New Duluth
W Dickson St
W Dickson St
E Dickson St
E Reis St
W Gary St
E Gary St
W Mc Gonagle St
E Mc Gonagle St
W Mc Gonagle St
106th Ave W
105th Ave W
104th Ave W
103rd Ave W
102nd Ave W
101st Ave W
99th Ave W
98th Ave W
97th Ave W
96th Ave W

Lessons Learned

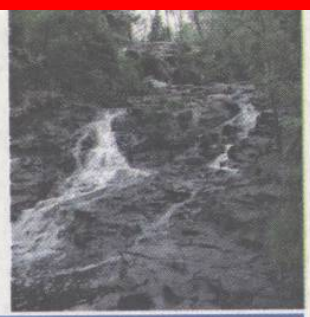
1. Link action to water
2. Stencils raise awareness
3. Neighborhoods differ



Link actions and their results to water

Our Creeks Thank You!

On behalf of Duluth Creeks (and Lake Superior), we offer a big **THANK YOU** to all the neighborhood residents who took part in the Adopt-a-Storm-Drain and Winter Sand Sweep-Up stream protection projects.



Your actions made a difference!

- You prevented 2 and ½ Dump Truck loads of sand from getting into local creeks!
- You adopted over 300 of Duluth's 9,500 Storm Drains, preventing leaves, trash, and debris from flowing into our creeks and Lake Superior

Just think what we can do next year!

Last spring, so many Duluth residents swept up leftover winter road sand from their sidewalks, boulevards, and yards that we will establish more collection sites again next year. Watch for information on sand collection sites after the snow melts next Spring!

Lonely storm drains still need adoption

This Fall, 143 residents in the Gary New Duluth and Chester Park neighborhoods pledged to adopt storm drains near their homes, preventing trash, leaves, and other debris from entering local streams. Another 58 residents throughout the City adopted storm drains, along with the Woodland Middle School FOCUS group and an after-school class Together, over 300 storm drains were adopted. If there eighborhood that needs attention, you can call the City nd receive a free storm drain rake!)

cial thanks to the Minnesota Conservation Corps, Duluth Crew, for their hard work and enthusiastic dedication to stream protection.

d protection projects were brought to you by the d the South St Louis Soil & Water Conservation h funding from the **Great Lakes Commission.**

D·U·L·U·T·H

With additional support from **HOME DEPOT**

BS5094 12.25•

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PROCTOR

QUESTIONS?