

# MINNESOTA IS GETTING WETTER

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*More frequent heavy rain events are expected to continue.*

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PHOTO CREDITS, LEFT TO RIGHT: CLIFF BENTLEY, MINNESOTA DEPARTMENT OF NATURAL RESOURCES; JOAN FARNAM, CITY OF GRAND MARAIS; AND JESSE SCHOMBERG, MINNESOTA SEA GRANT

## Heavy Precipitation

**Grand Marais, Cook County, Minnesota.** The past 30 years have been the wettest on record for much of Minnesota since the year 1890. Multiple precipitation events in recent years have resulted in significant flooding and erosion. During one heavy rain event on June 6, 2008, Grand Marais received nearly five inches of rain on already saturated soils. Roads and driveways were washed out, basements were flooded, and streams and rivers surged.

Higher flows during heavy rain can scour out and erode stream banks. Runoff from heavy precipitation washes sediments, minerals, and contaminants into area lakes and streams, which affect water quality as well as the quality and the quantity of fish habitats.

The Midwest region is expected to experience continued increases in the heaviest downpours. Heavy downpours that are now roughly every 1 out of 20 years are projected to occur approximately every 4 to 15 years by the end of this century. Spring rains, even average amounts, can cause some of the biggest flooding and erosion problems when combined with snowmelt.

## The Response

The Cook County Soil and Water Conservation District has implemented a number of programs and projects as a result of the June 2008 flood. Technical and financial assistance were provided enabling landowners to employ state-approved conservation practices in order to repair storm damage, encourage conservation, and better prepare for future flooding.

Projects include grading and stabilizing stream banks, installing grassy waterways to repair gullies, installing sediment basins to control soil erosion, establishing native vegetation for water quality and wildlife habitat, and restoring a trout stream. In addition, a rain garden at the Cook County Courthouse will help filter runoff, minimize future flooding, and contain stormwater. Funding was provided by a variety of state conservation cost-share programs and the Minnesota Lake Superior Coastal Program.



*Erosion site before and after stream bank stabilization.*

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## *Heavy rain and flooding have been more prevalent in the last couple of years.*

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### **Additional Strategies**

While there is no one ideal solution to prepare for future heavy precipitation events, a combination of strategies can help lessen stormwater impacts and damage to the natural environment:

- Implement a community self-assessment program such as the Blue Star Award in Minnesota to encourage stormwater management excellence
- Establish a community conservation design overlay district to support natural resources, stormwater management, and the preservation of rural landscapes
- Increase use of pervious pavement to filter pollutants, recharge aquifers, and reduce stormwater volume entering the storm drain system
- Implement a flood management program such as the Milwaukee Metropolitan Sewerage District's Greenseams, which preserves undeveloped lands for flood control
- Improve management of stormwater ponds and rain gardens to filter pollutants, reduce flooding and erosion, and recharge groundwater
- Combine green infrastructure practices with gray infrastructure changes (larger culverts and pipes) for more cost-effective stormwater management
- Incorporate climate change considerations into transportation and stormwater infrastructure (roadways, culverts, bridges) planning and design
- Use appropriate low-salt techniques on road surfaces and periodically calibrate equipment to minimize chloride runoff



*Rain garden at the Cook County Courthouse in Grand Marais.*