

RAINSCAPE YOUR WATERSHED



LANDSCAPE MODIFICATIONS

Prior to European settlement, Iowa's native prairies and savannas maintained soils with high organic matter content and lots of pore space. This allowed the landscape to absorb rainfall, while shedding little runoff. Most rainfall infiltrated into the soil, where it recharged groundwater flow. Clear flows of groundwater fed and maintained Iowa's surface waters.

Iowa's soil resources have been significantly altered by tillage-based agricultural practices and land development in urban areas. Consequently, less rainfall infiltrates into the landscape and more surface runoff occurs today.

Urban landscapes are dominated by impervious surfaces such as roadways, parking lots and rooftops. Urban green spaces often feature turf grass with short roots over compacted soils. Such impervious and compacted surfaces decrease the amount of storm water that can infiltrate into the soil, resulting in higher volumes of storm water runoff. Storm water carries pollutants into storm drains, which discharge directly into local streams and lakes. Urban runoff causes flashy flows that erode stream corridors and compound local flooding problems.



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WATERSHED CONCERNS:

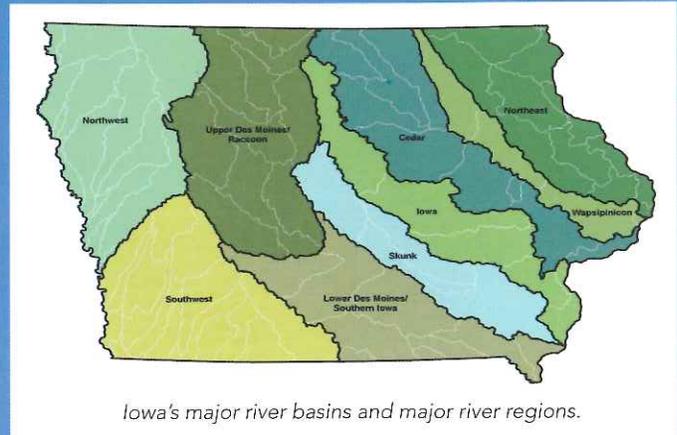
Quantity and Quality

Runoff Volume

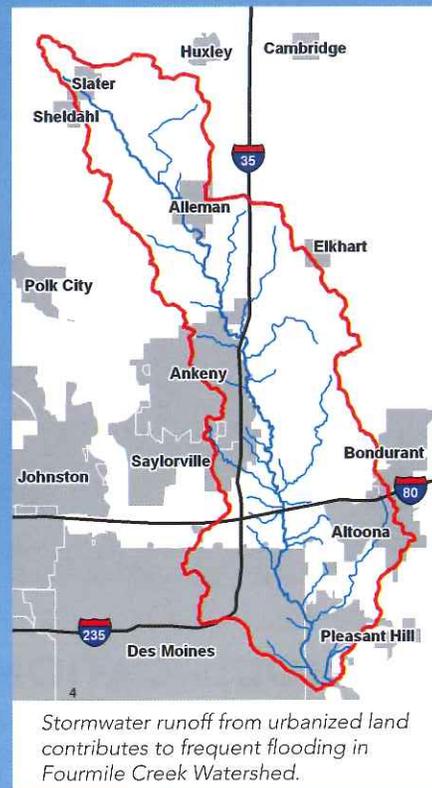
Iowa has six major river basins. River basins are comprised of smaller watersheds—expanses of land drained by smaller streams, rivers, lakes or wetlands. The majority of land within these watersheds is used for agricultural purposes. In general, land devoted to row crop agriculture sheds runoff after 1.25 inches of rain. Urban areas located downstream of large watersheds in Iowa are heavily affected by this agricultural runoff.

In 2008, more than 90 percent of the 3.6 million acres in the Cedar River Watershed above Cedar Rapids was comprised of rural land, primarily used for the planting of corn and soybeans. Consequently, the runoff from these agricultural fields was the primary contributor to the record flood flows that devastated Waverly, Cedar Falls and Cedar Rapids. It is in the best interest of cities to partner with agriculture to restore the landscape's ability to absorb more rainfall and shed less runoff.

In smaller watersheds, storm water runoff has a significant impact on the flash flooding of local streams in areas of urban development. Fourmile Creek Watershed in central Iowa measures almost 77,000 acres, and 36 percent of this watershed is urban land. Urban runoff in this area contributes to downstream flooding.



Iowa's major river basins and major river regions.



Stormwater runoff from urbanized land contributes to frequent flooding in Fourmile Creek Watershed.

Water Quality

Runoff from both urban and agricultural areas has a direct effect on water quality. Most water quality efforts have been directed at the agricultural sector in the past. Now, urban runoff is being recognized as a significant contributor to water quality degradation, especially in smaller watersheds. Major pollutants in stormwater include sediment from inadequately protected construction sites and eroding urban streams, nutrients from excess fertilizer applied to lawns, bacteria from pet wastes, oil, grease, heavy metals from vehicles and chlorides from road salt applications. In some communities, overflows of combined sanitary and storm sewer flows discharge pollutants into receiving streams.



Stream bank erosion threatens these homes in a small urban watershed.

Strategies for Watershed Protection in Urban Areas

Policy

- Stop developing in floodways. Instead, use these areas as greenways.
- Collaborate with agricultural interests to develop watershed management plans that benefit stakeholders throughout the watershed and reduce downstream flood potential.

Practices

- Require buffers along streams and utilize natural drainage ways as green infrastructure.
- Require constructed wetlands and retention ponds for flood control in areas of new development.
- Require the use of rainscaping strategies to protect water quality and reduce runoff. Manage smaller rains through infiltration-based practices, including protection and restoration of soil quality, bioretention, permeable pavement, native landscaping, rainwater harvesting and green roofs.



Secretary of Agriculture Bill Northey (left) and WHO broadcasters Bob Quinn (center) and Mark Pearson promoted rainscaping on their radio show.

Education and Outreach

- Expand educational efforts to help people understand their hydrologic footprints and ways they can contribute to water quality protection. For instance:
 - Use phosphorus-free fertilizers.
 - Don't dump or discharge pollutants into storm sewers or leave grass clippings on the landscape.
 - Prevent pollution from oil and grease by keeping vehicles in good working order.

Funding Mechanisms

- Support state and federal funding for conservation programs that provide financial assistance for the adoption of practices that hold more water in the uplands.
- Create 28E agreements that help fund the installation of practices in watersheds above cities that provide downstream flood protection and improve water quality.
- Create storm water utilities and utilize part of the new revenue stream for local cost-share programs that help reduce flooding and protect water quality.
- Encourage the use of the State Revolving Loan program for stormwater management practices.



Tours and training sessions are offered frequently by the Rainscaping Iowa program.

Strategies for Watershed Protection on Agricultural Lands

Policy

- Work with cities to develop watershed management plans that benefit stakeholders throughout the watershed and reduce downstream flood potentials.

Practices

- Use no-till farming to improve soil quality and increase the landscape's ability to absorb more rain.
- Install contour buffer strips to help absorb runoff.
- Retire highly erodible land with low productivity and low profitability through the Conservation Reserve Program. Reconstruct a prairie area to improve soil quality.
- Construct ponds and wetlands that hold and slowly release water to reduce downstream peak flows.

Funding Mechanisms

- Utilize federal and state cost-share programs to comprehensively install conservation systems on critical lands throughout the watershed.
- Utilize low-interest loans through the State Revolving Fund to help install conservation practices on agricultural land.

No-till farming leaves crop residue to protect the soil surface from erosion. Eliminating tillage restores soil quality to help the landscape absorb more rain and shed less runoff.



Constructing wetlands at strategic locations in rural areas can slow runoff and reduce nitrate concentration while providing wildlife habitat.



Low-interest loans available for rainscaping.

The State Revolving Fund provides low-interest loans for implementing sustainable storm water management strategies. Eligible practices include soil quality restoration, bioretention cells, rain gardens, pervious paving systems and more. Loans with an interest rate of three percent can be made to developers, municipalities, businesses and homeowners.



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