

## **Decorah Shale Edge**

The Decorah shale, a thin, rather impermeable layer, appears along this watercourse. Groundwater percolating downward through the soil and rock moves laterally when it reaches this layer. Numerous springs in the adjacent valley appear at the same elevation. Just below the Decorah outcrops, the same streams often lose water to percolation back into soil or porous bedrock. One section of the trail is in the area between where Decorah shale is exposed and where the water filters back into the ground.



Decorah Shale Layer

### **MORE RESOURCES:**

Northeast Iowa Resource Conservation and Development, Upper Iowa River Watershed Project

<http://northeastiowarcd.org/uirw/about.htm>

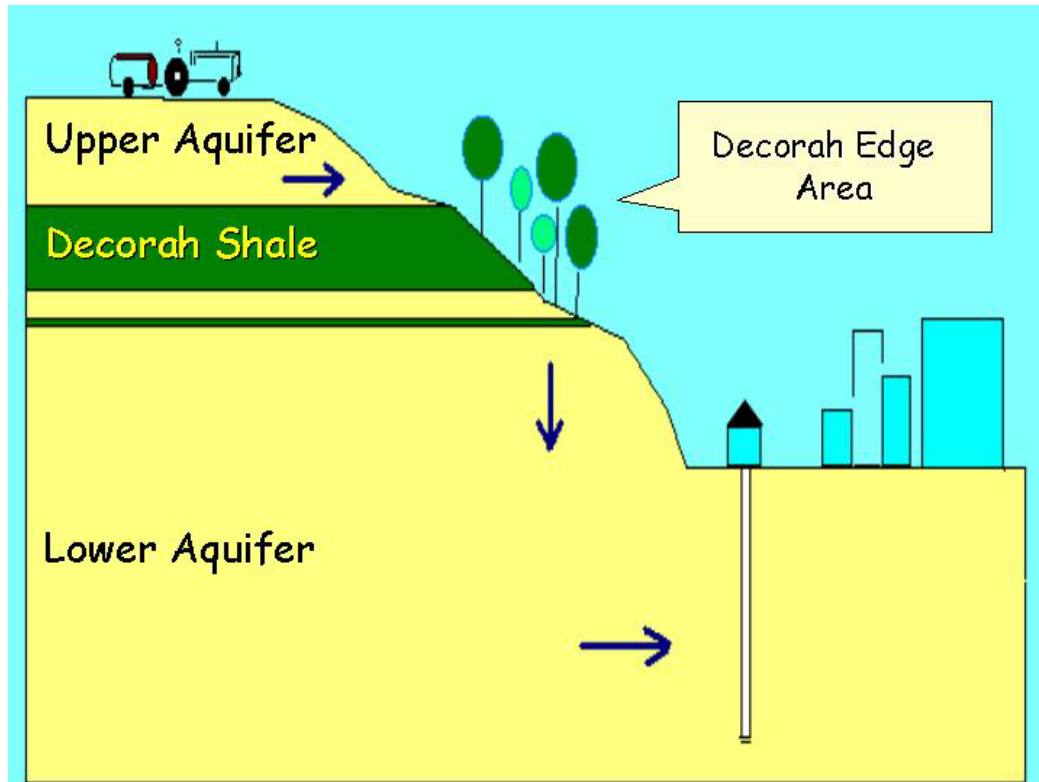
Fillmore Soil and Water Conservation District

<http://www.fillmoreswcd.org/decorah.html>

# PROTECTING A VALUABLE ECOSYSTEM: THE DECORAH EDGE

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*Beneath the hills of southeastern Minnesota is a subterranean “waterfall” that goes largely unnoticed. The slow flowing water that spills from one bedrock layer to the next sustains a biologically diverse ecosystem that naturally filters the groundwater used by cities and farms for drinking and other water needs.*



These flowing waters are most evident during wet periods when seeps and springs discharge along hillsides, but can also be seen in excavations and in the basements of ill-placed homes.

These flows result from groundwater flowing over the 40-foot thick Decorah shale bed. Water flowing just beneath the land surface sustains the unique woodland/wetland ecosystem known as the Decorah Edge.

The Decorah Edge ecosystem lies in the transition zone between eastern deciduous forest and western prairie. The wet slopes provide a refuge for woodland, wetland, and prairie species that have survived historic droughts, European settlement, and 150 years of intense land use resulting in some of the most biologically diverse areas in the state.

Many parks in Southeastern Minnesota are located in this rich biological setting, and many of the unique forest areas are included in the Richard J. Dorer Memorial Hardwood Forest.

## OUR DRINKING WATER

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The Decorah Edge is a critical groundwater recharge area for 16 cities in southeastern Minnesota. Byron, Cannon Falls, Chatfield, Denniston, Dover, Goodhue, Kenyon, Lanesboro, Mabel, Pine Island, Preston, Rochester, St. Charles, Viola, Wanamingo, and Zumbrota all rely on water that has been filtered at the Decorah Edge. Extensive studies in the Rochester area found that about half of the City's drinking water is replenished at the Decorah Edge.

## A VULNERABLE LANDSCAPE

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Intense agriculture dominates much of the upland area that drains to the Decorah Edge. This upland area is characterized as a Karst landscape -- a landform of shallow soils, sinkholes, and caves underlain by fractured limestone bedrock. Karst terrains are very susceptible to groundwater pollution. Pollution entering groundwater in this setting can flow through cracks and crevices in the limestone bedrock at rates of miles per day. Water testing has found widespread contamination by fertilizers, pesticides, manure and sewage in the uppermost groundwater layers. Extensive testing in groundwater below the Decorah Edge has found little or no pollution.

## NATURE'S FILTER

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The Decorah Edge works as a natural filter by removing pollutants from water as it flows through the soils and vegetation that overlie the clay-rich shale bed. This filtration is a valuable economic asset for the region. For example, a study done by the University of Minnesota found that replacing this natural filtration in the Rochester area would cost as much as \$5 million per year.

Filtration processes at the Decorah Edge also remove pollutants from water discharging in seeps and springs that form the headwaters of the Cannon, Root, Whitewater, and Zumbro Rivers. The impact of filtration at the Decorah Edge is sufficient to influence water quality in the Mississippi River.

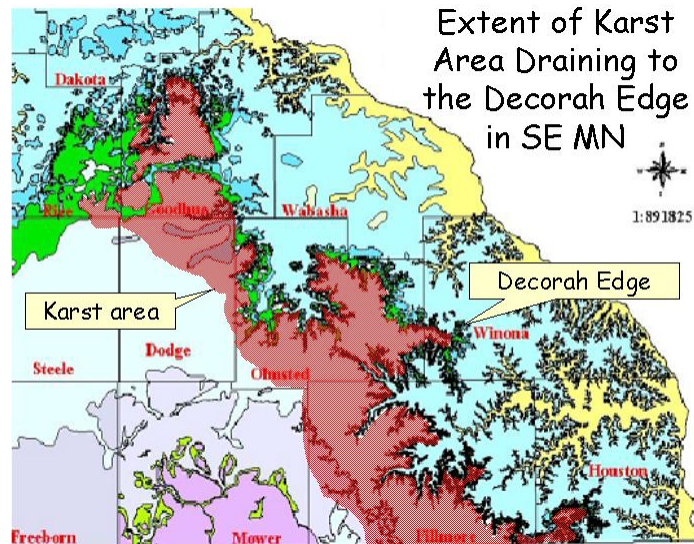
## DEVELOPMENT PRESSURE

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In urbanizing areas, the Decorah Edge is under intense development pressure. In the Rochester area, nearly all of the Decorah Edge is planned to be fully developed by 2045 under the current Land Use Plan. Development pressure also exists in smaller communities and rural areas. While the benefits of these unique areas are well understood, the full impact of losing them is not. In addition to the environmental impacts, ill-placed buildings and infrastructure can suffer extensive damage from the large volumes of water flowing at the Decorah Edge creating economic hardship for homeowners and additional costs to taxpayers for infrastructure repairs.

## EXTENT

The Decorah Edge extends from Rice County through Goodhue, Olmsted, Winona, Fillmore, and Houston Counties into northeastern Iowa. It continues through northeastern Iowa through its namesake city and ends in Dubuque. Its total length is close to 200 miles and, if stretched straight, it would cover nearly 1,000 miles.



From: MN DNR

## RECOMMENDED ACTIONS

There currently is no special recognition or protection of this unique woodland/wetland ecosystem. Without this, the only protection afforded this ecosystem is the minimal protection of state and federal wetland laws.

Landowners and communities have options for providing additional protection of these important areas.

### What can landowners do?

- **Cropland** - enroll in the federal Conservation Reserve Program. These areas are given a high priority in sign-ups.
- **Wetlands** - enroll in the Reinvest in Minnesota (RIM) Program, which pays landowners to protect and restore wetlands
- **Woodlands & Prairie** – contact the DNR to get help in developing a management plan.

### What can communities do?

- **Land Development Controls** – adopt zoning regulations that guide development in these areas.
- **Land Purchases** – target these areas for park and open space acquisitions.

### What can the State do?

- **Recognition and Regulation** – this unique ecosystem should be recognized in state statute and rules.

### What else can be done?

- **Designation** - Request that the federal government designate the Decorah Edge as a Ramsar wetland of international significance.

FOR MORE INFORMATION:

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**Fillmore County Zoning Office**

P.O. Box 655  
Preston, MN 55965  
(507) 765-3325

**Fillmore County Soil & Water Conservation District**

900 Washington St. NW  
Preston, MN 55965  
(507) 765-3878, ext. 3

**SE Minnesota Water Resources Board**

Winona State University PO Box 5838 Winona, MN 55987  
(507) 457-5223

**Minnesota Dept. of Natural Resources**

Division of Waters  
2300 Silver Creek Road NE  
Rochester, MN 55906  
(507) 285-7429

**Minnesota Geological Survey**

2642 University Avenue  
St. Paul, MN 55114-1057  
(612) 627-4780 ext. 222

**US Geological Survey**

2280 Woodale Drive  
Mounds View, MN 55112-0049  
(763) 783-3231

*See Rochester's Groundwater Guardian, a 15-minute video on the Decorah Edge available at the Fillmore SWCD.*