



Water Watch

A newsletter for the Maquoketa River Watershed

Project News

Waterway filter strips protect soil and water

by John Rodecap, ISU Extension project coordinator, MWP

Grasses or other permanent vegetation planted along waterways help to contain soil, pesticides and nutrients that might reach a body of water.

Filter strips and buffers are not new conservation practices, but were revived in the 1996 Farm Bill with attractive financial incentives.

Because the strips act as barriers and filters to help control surface water runoff, fish and aquatic life in and around ponds, streams and rivers are protected from potential contaminants.

Iowa State University research shows a native grass strip just 10 feet wide captures 60 percent of the sediment. A 20-foot strip retains 80 percent of the sediment. Nitrate moving from field edge to stream edge through the buffer is reduced by more than 90 percent.

The 1996 Farm Bill provided for year-round Conservation Reserve Program (CRP) sign-up to help landowners use buffer practices to achieve conservation goals on non-highly-erodible bottomland.

The illustration below shows how the filter-strip continuous CRP program works and the related financial incentives.

Land can be enrolled at any time without having to go through the process of submitting a competitive bid offer.

If the land and filter strip practice requirements are met, they will be accepted at the maximum rental for comparable land in the county. The better the offered land, the bigger the payment.

The rent is based on the land's corn suitability rating. The annual rental

payments for 10 to 15 years are made by the U.S. Department of Agriculture directly to the landowner soon after Oct. 1 each year. Up to 50 percent cost sharing is available for planting permanent vegetation.

Like any government program, signup takes some paperwork. The process is relatively simple and painless, and may be assisted by the renter of the land.

Filter strips add to the beauty of the countryside, showcase your commitment to protecting soil and water, and provide habitat for

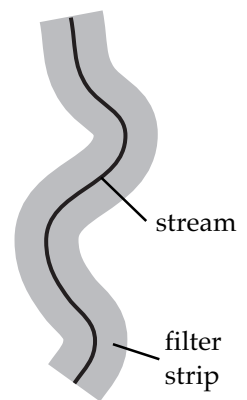
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Examples of typical bottomland soils and comparable county rental rates

Volney (196)	\$75/acre
Dorchester (158)	\$155/acre

Continuous CRP filter strip soil rental rates (per acre)

	<u>Volney</u>	<u>Dorchester</u>
Rental rate	\$75	\$155
20% incentive	15	31
Maintenance	<u>5</u>	<u>5</u>
Total annual rent	\$95	\$191



Filter strips cont.

nesting birds and many species of wildlife.

Similar conservation practices to protect fragile soil and water resources include contour buffer

strips, riparian forest buffers, field borders, windbreaks and new grassed waterways. Where flooding has occurred, the scour erosion program or easements have been used to remove parcels of land from row crop production.

For more information on these practices and for rental rates for land on your farm, contact your county Natural Resources Conservation Service or Farm Service Agency office.

Excess phosphorus is detrimental to quality water

by John Rodecap, ISU Extension project coordinator, MWP

Phosphorus is an essential nutrient for the growth of plants, including algae in water. As the amount of PHOSPHORUS increases, the production of algae increases, affecting the aesthetics, fish populations, recreation and drinking water of lakes and streams.

Algae, which eventually dies and consumes oxygen (O₂) during decomposition, decreases the dissolved O₂ in water. When the dissolved oxygen level gets too low, fish and aquatic life are displaced from some waters.

The concentration of phosphorus associated with algae growth is very low, 0.01 to 0.03 parts per million (ppm). The Environmental Protection Agency set a phosphorus concentration standard in the 1970s and agricultural groups are currently debating what the current standard should be.

Algae problems develop in standing water at phosphorus concentrations lower than those in flowing water. The current goal is 0.05 ppm for flowing water at the point where it enters a lake and 0.025 for standing water in a lake.

Monitoring of the Maquoketa River Headwaters before it enters Backbone Lake, funded by the state legislature and led by Iowa State University, has

shown the following average phosphorus concentrations:

- 1999 spring snowmelt, 0.154 ppm;
- base flow (April-June, significant field tile drainage), 0.09 ppm;
- peak flow (April-June), 0.156 ppm.

In recent years there has been a change to more intensive agricultural production, especially animal production. This change has resulted in a buildup of soil phosphorus to levels rarely encountered in the past. As a result there is increased potential for phosphorus losses and risk to surface water.

When absorption sites for phosphorus in the soil become saturated, phosphorus is potentially more available for runoff and leaching losses. Surface waters receive phosphorus dissolved in runoff water, attached to eroded soil particles and contained in tile drainage.

Rainfall affects the soil surface mixing zone, the top two-inch layer. There is a positive relationship between soil test phosphorus levels and concentrations of dissolved phosphorus in runoff water.

Eroded sediment tends to have a higher phosphorus concentration than the soil from which it eroded. Potential losses into surface waters can be reduced with appropriate tillage and soil conservation practices.

The relationship between soil

phosphorus and loss of phosphorus in runoff and erosion is an environmental concern when very high phosphorus soil test levels are maintained. Data from Iowa State University obtained from a corn-soybean rotation show that it may take a decade or more to reduce a very high soil phosphorus test to the optimum soil test range. The economic returns are negative for maintaining very high phosphorus soil test values.

Much of the phosphorus in corn grain is in the form of phytic acid, which is not available to swine and chickens. Most grain phosphorus is excreted in manure. Phytase enzymes, added to swine rations, increase the availability of phosphorus in corn grain and reduce the amount of phosphorus excreted.

Practices that affect phosphorus concentrations include the rate, method and timing of fertilizer phosphorus and/or manure applications. If the fertilizer or manure is incorporated to place it below the soil surface/rainfall mixing zone, the soluble phosphorus concentrations were lower than one-fourth those for plots receiving surface phosphorus application in ISU studies.

Crop producers can minimize phosphorus loss by recognizing that manure is a valuable source of phosphorus and that phosphorus rates that optimize crop yields and profits are unlikely to cause environmental problems.

Tom Hayes elected watershed council chair

Tom Hayes, Lamont, was elected as the spokesperson for the Maquoketa River headwaters watershed council at its January meeting.

A resident of the 40,000-acre watershed (a triangle from Arlington to Strawberry Point and flowing into Backbone Lake) Hayes has been active the past 18 months encouraging practices and programs to protect Backbone Lake and state park as a recreational resource for the region.

The informal watershed council, consisting of 28 people, primarily residents of the watershed, has been meeting since April.

The council has been receiving results of water quality monitoring that has been in place since November 1998 at four locations within the watershed. The monitoring has shown sediment, nitrate and phosphorus delivery in the surface waters to exceed desirable health and environmental levels.

The results have been similar to other water monitoring across northern Iowa, according to Iowa State University Ag engineering

staff who have responsibilities for monitoring research in the watershed.

Aided by environmental and economic computer modeling data, the watershed council established a goal of reducing by 50 percent the amount of sediment, nitrates and phosphorus leaving the watershed and entering Backbone Lake. Scientists from the Texas Institute for Applied Environmental Research, who provided the computer modeling assistance, told the group these goals are realistic.

The sources of watershed contaminants include runoff from agricultural land, residential areas, city streets and woodlands, as well as contaminants settling out of the air.

The council has identified as highest priority the expanded use of grassed waterways, filter strips along streams, improved nutrient management, including manure nutrient crediting, and refined commercial phosphorus and nitrogen management.

Tillage timing, contour farming and crop residue management to reduce erosion potential are identified as critical to water

quality improvement.

Increased use of Conservation Reserve Program (CRP), riparian tree buffers or grass filter strips along streams, wetlands, streambank stabilization, woodland improvement and improved grazing practices are site-specific practices for critical areas in the watershed.

The heart of the local watershed council plan is the watershed approach, where all citizens are asked to participate in some way so collectively there will be significant and sustainable changes in the quality of water entering Backbone Lake.

The council is seeking financial assistance and conservation practices tailored to the Maquoketa headwaters watershed, as the "one size fits all" approach is not the most effective way to address water resource issues.

Citizens interested in this watershed approach are invited to monthly meetings to express concerns, offer assistance or show support for the process that is intended to enhance the economic and environmental development of the watershed.

New nutrient, pest management workshops available

A nutrient and pest management (NPM) program is being offered to Maquoketa Watershed area farmers for crop year 2000 by the Maquoketa Watershed Project staff.

This program will have a workshop format, meeting monthly in January, February, and March, with a follow-up session in December.

Participants in the program will

also receive a newsletter during the 2000 growing season. The program is free to participants.

During the workshops each producer will develop a nutrient and pest management plan for their own operation.

With such a plan, producers will more effectively use on-farm manure and legume resources and refine the use of commercial nitrogen and phosphorus to

increase the profitability of their farming operation and still attain yield goals.

It is not too late to join the workshop series. If you are interested in increasing farm profitability and improving the quality of water entering Backbone Lake and park, contact Chad Ingels at the Maquoketa Watershed Project, 201 E. Clark, Box 487, Fayette, IA 52142 or call (319) 425-3233.

Chad Ingels is project nutrient, manure specialist

Chad Ingels, Randalia, has been named manure and nutrient management specialist for the Maquoketa Watershed Project.



Chad Ingels

His emphasis in the project area will center on efficient nutrient management, without yield reduction. Increasing awareness of manure nutrient credits will be a top priority.

He will coordinate on-farm nutrient demonstrations with cooperating watershed producers to show the environmental and economic potential of refining nitrogen and phosphorus input in area farming operations. Chad will also direct a nutrient and pest management program designed to give producers control over the nutrient management decisions for their operations.

“I am looking forward to making contacts with the crop and livestock producers of the Maquoketa Watershed,” said Chad. “I hope to help them increase the profits of their operations while increasing the quality of their water and water entering Backbone park.”

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Maquoketa River projects update

Beginning with this issue of *Water Watch*, we will bring you updates on existing and proposed sub-watershed projects within the Maquoketa River watershed.

Maquoketa headwaters project, Clayton SWCD in cooperation with Fayette, Buchanan and Delaware SWCDs is writing a

detailed plan of operations and budget to be submitted for state and federal water quality funding.

Mineral Creek project, Jones County: there will be a watershed community meeting on Thursday, Feb. 24, at 7 p.m. in the Onslow community center.

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