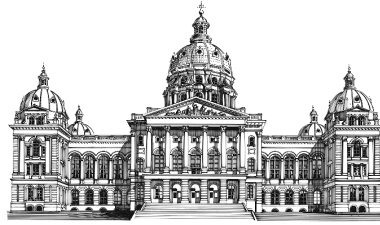

Iowa Legislative Fiscal Bureau

Dennis Prouty
(515) 281-5279
FAX 281-8451



State Capitol
Des Moines, IA 50319
January 15, 1999

I
S
S
U
E

R
E
V
I
E
W

Agricultural Drainage Wells

ISSUE

This **Issue Review** summarizes the possible impacts of agricultural drainage wells on water quality in groundwater aquifers, alternatives to agricultural drainage wells, and progress towards closing agricultural drainage wells.

AFFECTED AGENCIES

Iowa Department of Agriculture and Land Stewardship (IDALS)

CODE AUTHORITY

Chapters 159.29, 455E and 455I, Code of Iowa

BACKGROUND

Chapter 455I, Code of Iowa, defines an agricultural drainage well as “a vertical opening to an aquifer or permeable substratum . . . which is capable of intercepting or receiving surface or subsurface drainage water from land directly or by a drainage system.” Agricultural drainage wells are used as outlets for subsurface drainage systems in corn and soybean production areas and allow for groundwater contamination by agricultural chemicals and runoff.

History

Chapter 455E, Code of Iowa, known as the Iowa Groundwater Protection Act, states “Many activities of humans . . . application to land of pesticides and fertilizers . . . have resulted in groundwater contamination throughout the state.”

The Iowa Groundwater Protection Act also established the Groundwater Protection Fund. Moneys from this Fund were used by the Iowa Department of Agriculture and Land Stewardship (IDALS) to conduct research and a demonstration project concerning groundwater contamination attributed to agricultural drainage wells in cooperation with Iowa State University (ISU).

Summary of research and demonstration project

The ISU research and demonstration project found:

- Nitrate-nitrogen moves readily through the soil with water. Organic nitrogen in the soil, or applied as manure, can be converted to nitrate by mineralization and soil bacteria. Nitrogen as nitrate is the form of fertilizer most used on crops. Groundwater contaminated with nitrate-nitrogen may lead to “blue-baby syndrome” in infants and be a cancer risk to humans.
- Average nitrate-nitrogen concentrations in subsurface drainage water from study plots of continuous corn and soybean-corn crop rotations frequently exceeded the standard for public drinking water of 10 parts per million, established by the United States Environmental Protection Agency. At a single application rate of 150 pounds per acre of nitrogen fertilizer on continuous corn, the standard was exceeded in all samples taken in 1990 and 1991, but for only one out of five sample dates in 1993 and none in 1992. Similar results were found for soybean-corn crop rotation plots with a single 100 pounds per acre fertilizer application rate. Under split nitrogen fertilizer treatments, subsurface drainage water samples exceed the standard for public drinking water even more often.
- Closing agricultural drainage wells will aid in the protection of groundwater quality in aquifers. Alternative drainage systems will need to be developed to replace agricultural drainage well outlets if cropland productivity is to be maintained.

CURRENT SITUATION

Chapter 455I, Section 3, Code of Iowa, requires that “*Not later than December 31, 1999, the owner of land which is within a designated agricultural drainage well area shall close each agricultural drainage well on the land. . . . A person owning land affected by the closing of an agricultural drainage well . . . may construct an alternative drainage system as part of an established or new drainage district. . . . The alternative drainage system shall ensure that surface or subsurface water does not drain into an agricultural drainage well.*”

There are 36 agricultural drainage wells in Pocahontas County that require closing under Chapter 455I, Section 3, Code of Iowa. In Wright County, a voluntary project was initiated by landowners to close 20 to 25 agricultural drainage wells and develop an alternative drainage system. The agricultural drainage well areas in Pocahontas and Wright Counties are classified as farmed wetlands under federal wetland protection rules.

The development of alternative drainage systems in areas classified as wetlands or farmed wetlands require wetland mitigation. Wetland mitigation is the creation of new wetlands, restoration of former wetlands, or enhancement of existing wetlands to replace the loss of altered or drained wetlands. Wetland mitigation requires a Section 404 permit, under the Clean Water Act. The Section 404 Program is administered by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency.

Currently the landowners and drainage district in Pocahontas County are waiting for approval of a Section 404 permit for wetland mitigation in Dickinson County to replace the loss of wetlands that will occur by the development of an alternative drainage system. It will not be known if the Section 404 permit for wetland mitigation in Dickinson County will be approved for a few more months.

The landowners and drainage districts involved in the closure of agricultural drainage wells and the development of alternative drainage systems in Wright County are in the process of filing for a Section 404 permit for wetland mitigation. This wetland mitigation site is located within Wright County.

Currently no agricultural drainage wells have been closed in Pocahontas or Wright County.

The development of alternative drainage systems in Pocahontas and Wright Counties cannot begin until wetland mitigation occurs. If the Section 404 permits for wetland mitigation are not approved the process of finding other suitable sites will need to begin again. Finding sites with the correct hydrology for wetland creation can be difficult and time consuming.

It was estimated during the ISU research project that if the agricultural drainage wells in Pocahontas County are closed and no alternative drainage system is developed there may be a loss in the county of 20-30% of cropland due to saturated soils.

ALTERNATIVES

If an alternative drainage system cannot be developed in Pocahontas County before the required closing date December 31, 1999, there are two alternatives.

- Extend the required deadline date for agricultural drainage well closure to allow more time to perform wetland mitigation.
- Close the agricultural drainage wells in the designated area in Pocahontas County as required and allow the possible loss of cropland until wetland mitigation occurs and an alternative drainage system is developed.

BUDGET IMPACT

House File 733 (FY1998 Infrastructure Appropriation Act) appropriated \$1.5 million per year in FY1998 and FY1999 to fund the Alternative Drainage System Assistance Program. Chapter 159.29, Code of Iowa, established the Alternative Drainage System Assistance Program to provide cost-share funds, to persons closing agricultural drainage wells located within designated agricultural drainage well areas, and construction of alternative drainage systems. Funds for the Alternative Drainage System Assistance Program are not subject to reversion.

STAFF CONTACT: Sherry Weikum (Ext. 17846)