United States
Environmental Protection Agency

Office of
Ground Water and
Drinking Water

CLASS V UIC STUDY FACT SHEET
AGRICULTURAL DRAINAGE WELLS

What is an agricultural drainage well (ADW)?	ADWs are Class V underground injection control (UIC) wells that receive agricultural drainage. This includes improved sinkholes, abandoned drinking water wells, and underground drain tiles and cisterns.
What types of fluids are injected into ADWs?	Excess surface and subsurface water from agricultural fields, including irrigation tailwaters and natural drainage resulting from precipitation, snowmelt, floodwaters, etc. ADWs may also receive animal yard runoff, feedlot runoff, dairy runoff, or runoff from any other agricultural operation.
Do injectate constituents exceed drinking water standards at the point of injection?	Available sampling data show that the primary constituent in ADW injectate that is likely to exceed health-based standards is nitrate. The data also indicate that boron, sulfate, coliforms, and certain pesticides (cyanazine, atrazine, alachlor, aldicarb, carbofuran, 1,2-dichloropropane, and dibromochloropropane) in agricultural drainage have exceeded primary drinking water standards or health advisory levels. Total dissolved solids (TDS) and chloride in some ADWs also have been measured above secondary drinking water standards.
What are the characteristics of the injection zone of an ADW?	Suitable subsurface geologic formations for ADWs often include areas with shallow, fractured bedrock formations, or limestone bedrock, particularly where affected by karst that provides solution channels and sinkholes that allow rapid transmission of water.
Are there any contamination incidents associated with ADWs?	A number of studies and incidents have shown that ADWs have in fact contributed to or caused ground water contamination. In particular, ten studies reviewed for The Class V UIC Study document nitrate contamination of ground water in agricultural areas; six of these studies clearly link the contamination to ADW use. In addition, there are two known contamination incidents in IA involving direct discharges from septic tanks to ADWs. Other contamination incidents include ground water and drinking water contamination linked to 15 drainage wells in Minidoka County, ID and a community supply well in Dane, WI.
Are ADWs vulnerable to spills or illicit discharges?	ADWs may be vulnerable to spills from manure lagoons, direct discharges from septic tanks, and accidental releases of materials used in farming operations (e.g., motor oils, pesticides).
How many ADWs exist in the United States?	There are at least 1,069 documented ADWs and more than 2,842 ADWs estimated to exist in the United States.
Where are ADWs located within the United States?	Although believed to exist in at least 21 states, more than 95 percent of the documented wells are in just five states: ID (303), IA (290), OH (>200), TX (135), and MN (92).
How are ADWs regulated in states with the largest number of this type of well?	*Individual permit*: ID (for wells ≥18 deep) and TX *Permit by rule*: OH, ID (for wells <18 feet deep) *Ban*: MN (for "wells" that reach ground water) *IA*: all wells that existed before 2/18/98 must close or get a permit by 12/31/01; new wells prohibited but may be permitted under strict conditions (unlikely to be permitted)
Where can I obtain additional information on ADWs?	For general information, contact the Safe Drinking Water Hotline, toll-free 800-426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Standard Time. For technical inquiries, contact Amber Moreen, Underground Injection Control Program, Office of Ground Water and Drinking Water (mail code 4606), EPA, 401 M Street, SW, Washington, D.C., 20460. Phone: 202-260-4891. E-mail: moreen.amber@epa.gov. The complete Class V UIC Study (EPA/816-R-99-014, September 1999), which includes a volume addressing ADWs (Volume 2), can be found at http://www.epa.gov/OGWDW/uic/cl5study.html.