

## CLASS V FACT SHEET\*

### AQUIFER RECHARGE AND AQUIFER STORAGE AND RECOVERY WELLS

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#### What are aquifer recharge (AR) and aquifer storage and recovery (ASR) wells?

AR and ASR wells are used to replenish the water in an aquifer. AR wells have been utilized to deter salt water intrusion into freshwater aquifers and to control land subsidence. While an aquifer recharge well is used only to increase the water supply in an aquifer, ASR wells are used to achieve two objectives: (1) storing water in the ground; and (2) recovering the stored water either using the same well or by pairing injection wells with recovery wells located on the same wellfield. ASR wells have been used to store and recover water for drinking supplies, irrigation, and ecosystem restoration projects. **Although the process of ASR includes production of the injected water, the UIC program regulates the injection of fluids, not separate production or recovery activities.**

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#### What types of fluid are injected into AR and ASR wells?

Water injected into AR and ASR wells ranges from potable drinking water and recycled water treated at a public water system to meet primary drinking water standards to untreated ground water and surface water.

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#### Do injectate constituents exceed drinking water standards at the point of injection?

Water injected into AR and ASR wells is typically treated to meet primary and secondary water standards. However, it should be noted that, in some instances, constituents have been measured at concentrations above drinking water standards at the point of injection.

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#### What are the characteristics of the injection zone of AR and ASR wells?

AR and ASR wells are drilled to various depths depending on the depth of the receiving aquifer. Aquifers used for AR and ASR activities may be confined, semi-confined or unconfined.

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#### Are there any contamination incidents associated with AR and ASR wells?

Exceedances of primary drinking water standards for arsenic and disinfection by-products in recovered water and within the injection zone of the aquifer have occurred. Secondary drinking water standard exceedances for iron and manganese have also been reported to EPA. Radionuclides continue to be a concern for AR and ASR operations although contamination incidents have not been reported.

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#### Are AR and ASR wells vulnerable to spills or illicit discharges?

Spills and discharges that would risk human health and the environment are unlikely to occur with operation of AR and ASR wells. Water used in AR and ASR injection activities is typically high quality and potable.

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#### How many AR and ASR wells exist in the United States?

EPA is aware of 1203 AR and ASR wells operating or capable of operation in the U.S. Of the 1203 known wells, 661 are used for AR and 542 are dedicated to ASR. The number of ASR wells has quadrupled since the Class V Study was published in 1999.

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#### Where are AR and ASR wells located within the United States?

The Southeast, Southwest, and Pacific Northwest have the greatest numbers of AR and ASR wells. Only one EPA region – including Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, and Connecticut -- does not have AR or ASR wells.

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#### Where can I obtain additional information on AR and ASR wells?

For general information, contact the Safe Drinking Water Hotline toll-free at 1-800-426-4791. The Hotline accepts calls Monday through Friday, 9:00 am to 5:30 pm Eastern Standard Time, excluding Federal holidays. For technical inquiries, contact Jill Dean, Office of Ground Water and Drinking Water, EPA East, 1200 Pennsylvania Ave. NW, Mailcode 4606M, Washington, DC 20460; phone 202-564-8241; email dean.jill@epa.gov. The UIC website includes AR and ASR information at <address> and Volume 21 of the Class V UIC Study (EPA/816-R-99-014, Sept 1999) addressing AR and ASR wells may be found at [http://www.epa.gov/safewater/uic/class5/classv\\_study.html](http://www.epa.gov/safewater/uic/class5/classv_study.html).

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\* This fact sheet revises the information on Aquifer Recharge and Aquifer Storage and Recovery wells published in the Class V Study (1999). Information in this fact sheet was updated based on EPA Regional Office data.