



CLASS V UIC STUDY FACT SHEET *AQUACULTURE WASTE DISPOSAL WELLS*

What is an aquaculture waste disposal well?

Aquaculture waste disposal wells are Class V underground injection control (UIC) wells used to dispose of water used for the cultivation of marine and freshwater animals and plants under controlled conditions.

What types of fluids are injected into aquaculture waste disposal wells?

Aquaculture effluent that includes fecal and other excretory wastes and uneaten aquaculture food. The primary chemical and physical constituents of these wastewaters are therefore nitrogen- and phosphorus-based nutrients and suspended and dissolved solids. The effluent may also contain bacteria and chemicals, pesticides, and/or aquaculture additives.

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

Available analytical data for aquaculture effluent and injectate suggest that the concentrations of most parameters are generally below applicable drinking water standards. Contaminants that may exceed the drinking water standards under some circumstances include turbidity and possibly nitrite and nitrate. The secondary drinking water standard for chloride is also exceeded in the wastewater from some seawater-based operations, but as long as these wastes are injected to saline aquifers, they pose no threat to underground sources of drinking water.

What are the characteristics of the injection zone of an aquaculture waste disposal well?

The injection zone for aquaculture wastewater is characterized by relatively high porosity, as $\dot{\gamma}$ aquaculture wastewaters typically have significant suspended solids content. Seawater-based $\dot{\gamma}$ aquaculture operations in Hawaii inject wastewater into brackish or saline aquifers that flow $\dot{\gamma}$ seaward. Little information is available regarding other aquifers receiving aquaculture injectate.

Are there any contamination incidents associated with aquaculture waste disposal wells?

No contamination incidents related to aquaculture wastewater disposal have been reported. Information about the threat of contamination posed by these wells is also inconclusive. For example, in ID, an aquaculture well is known to inject wastewater directly into an aquifer, but the quality of the aquifer, its status as an underground source of drinking water, and the resulting impacts, are unknown.

Are aquaculture waste disposal wells vulnerable to spills or illicit discharges?

Aquaculture wells generally are not vulnerable to spills or illicit discharges. Most are located within private facilities and are not accessible to the public for unsupervised waste disposal. However, the potential exists for operators to dispose of harmful liquid wastes (e.g., waste aquaculture chemicals) via aquaculture injection wells. No such cases have been reported.

How many aquaculture waste disposal wells exist in the United States?

A total of 56 documented Class V aquaculture waste disposal wells exist in the United States. In addition to these documented wells, as many as 50 additional wells are estimated to exist in CA. Thus, the true number of aquaculture waste disposal wells in the United States is likely to approach 100. Given that the value of aquaculture production has grown by 5 to 10 percent per year over the past decade, and that the aquaculture industry remains the fastest growing segment of United States agriculture, there is some possibility that the number of these wells will increase.

Where are aquaculture waste disposal wells located within the United States?

The great majority of the documented wells are located in HI (51 wells, or 93 percent). The remaining documented wells are in WY (2), ID (1), NY (1), and MD (1).

How are aquaculture waste disposal wells regulated in states with the largest number of this type of well?

Permit by rule: ID (for wells <18 feet deep), NY
Individual permit: HI, MD, ID (for wells \geq 18 feet deep)
General permit: WY

Where can I obtain additional information on aquaculture waste disposal wells?

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 aquaculture waste disposal wells (Volume 11), can be found at <http://www.epa.gov/OGWDW/uic/cl5study.html>.