

HAWAII UNDERGROUND INJECTION CONTROL (UIC) PROGRAM



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What kinds of injected wastewater are found in Hawaii?

- ☞ Rainfall runoff
- ☞ Sewage
- ☞ Cooling water for electricity producing facilities*
- ☞ Manufacturing goods or products*
- ☞ Food Processing*
- ☞ Carwash*
- ☞ Laundry*
- ☞ Reverse osmosis concentrate*
- ☞ Aquaculture
- ☞ Geothermal

Note: * under category of industrial wastewater

How does the UIC program protect the Underground Sources of Drinking Water?

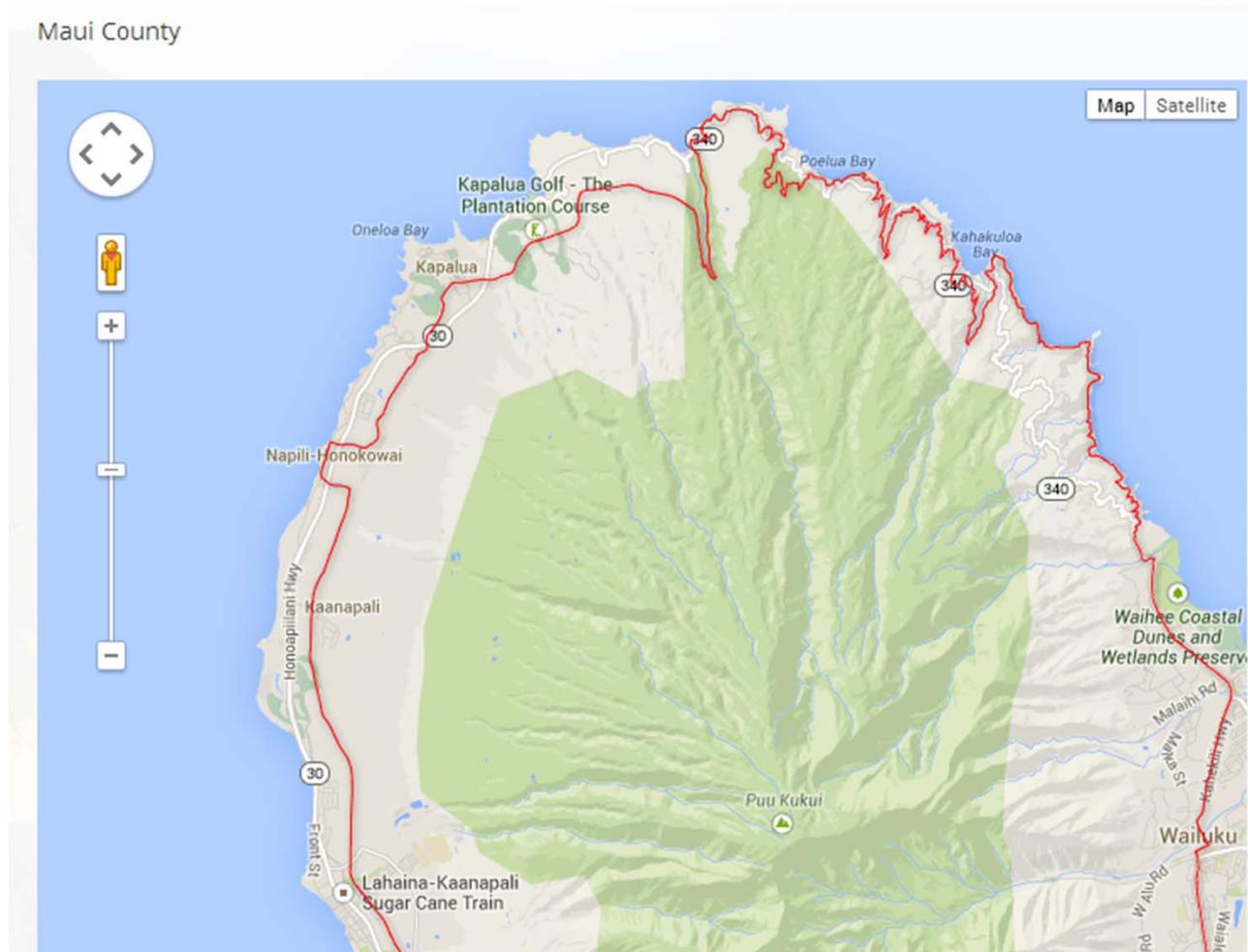
- ∞ Allows only Class V injection wells
- ∞ Delineates Underground Sources of Drinking Water (USDW) with the UIC line and prohibits sewage & industrial wastewater disposal in the overlying land areas.
- ∞ Prohibits deep injection into artesian aquifers
- ∞ Issues permits for sewage & industrial wastewaters to be injected in areas hydraulically down gradient of a USDW. These down gradient areas are often referred to as “below the UIC line”. They overlie aquifers that will not likely be developed for drinking water due to water quantity or quality issues or nearby existing land use activities present a potential risk of contamination.

UIC line

- ☞ UIC Line delineates, in plan view, the extent of underground sources of drinking water
- ☞ A line is plotted for each of the major island on USGS topographic maps
- ☞ The lines encircle the islands and, in many places, are drawn at the shoreline or follow roadways or elevation contour lines to facilitate line location
- ☞ Areas below (makai of) the UIC line are where most of the sewage and industrial injection wells exist
- ☞ Areas above (mauka of) the UIC line are where most of the drinking water wells exist and aquifer recharge occurs

UIC Line On-line

<http://health.hawaii.gov/sdwb/underground-injection-control-program/>



What kinds of injected wastewater are prohibited?

- ☞ Hazardous waste or wastes that exhibit the characteristics of a hazardous waste
- ☞ Sewage and industrial wastewaters above the UIC line, unless “grandfathered”
- ☞ Any kind of wastewater, excluding potable water, within 1/4 mile of a drinking water source
- ☞ Unauthorized discharges that the UIC permit does not describe or recognize

UIC Permits

- ☞ UIC permits limit injection activity by flow quantity and by wastewater quality.
- ☞ Flow quantity is typically limited to an average or maximum gallons per day. Wastewater quality can be limited by description or by laboratory analyses or both.
- ☞ UIC permits list both general and specific conditions and requirements for particular injection activities. Typical specific conditions include flow recording, periodic inspections, periodic well performance evaluations, periodic injectant laboratory analyses, and posting of informational bulletins.

UIC Permits (continued)

- ☞ Permits need to be renewed. Permit durations are 5 years max.
- ☞ Besides individual permits, we can issue for stormwater drainage injection well facilities only a permit exemption.
- ☞ Permit exemptions act like general permits. Permit exemptions remove the need for permit renewal if operating conditions have not changed. The information gathered during the application process that leads to the permit exemption or to the permit issuance is the same.

UIC Permits (continued)

Permits applications are available on-line at the e-Permitting Portal

Department of Health
Healthy People • Healthy Communities • Healthy Islands

DOH Home

Home Finder Help Sign In Register

Permit Application

[Submit on-line application](#)

[Download mail-in application](#)

Frequently Asked Questions

- Does DOH offer additional assistance for applicants?
- What is the filing fee associated with a UIC General Permit application?
- Can I submit a paper UIC application form?

[view more faq's](#)

General Application for a UIC Permit to Operate

Welcome to the Underground Injection Control (UIC) Program.

The general application is used for a new injection well, or to modify an injection well in use or to revise an existing UIC permit condition.

Do not use the general application to file for change of owner/operator, or existing injection well registration. Instead, obtain the appropriate application for these actions.

All items must be accurately and completely answered. An inaccurate or incomplete application is not acceptable. If an item does not apply, please enter "Not Applicable" to show that the item was given consideration.

The services of a professional consultant are typically necessary to complete and service the application throughout the permitting process. Professional services enhance efficient processing.

The general application to construct a new injection well must be submitted under the signature of a geologist or professional engineer. The general application to modify an injection well, or to revise an existing UIC permit condition, need not have this requirement, however, the services of a qualified environmental consultant, such as an engineer or geologist, to complete and service the application are recommended. Such services will generally result in efficient application processing.

The general application should be submitted six months before the anticipated date of injection well construction. Six months accommodate evaluation, corrections, public notice, and inspection. An approval to construct and test the injection well is issued by departmental letter after the application is satisfactorily processed.

Construction of an injection well is followed by injection testing. Injection test results, geologic logs, and other information as requested must be submitted collectively as a final engineer/geologist report. A UIC permit to operate the injection well is issued after the final report is satisfactorily completed. (The UIC permit contains monitoring and reporting requirements and permit conditions.)

<https://eha-cloud.doh.hawaii.gov/epermit/View/default.aspx>

Typical designs of Hawaii's injection wells

- ∞ Large diameter [typically 5 to 8 feet]
 - Can handle large volume discharges over a short period
 - Unpressurized, gravity fed
 - Less sensitive to plugging from suspended solids
 - Shallow depths make injection wells easier to maintain
 - Used for drainage wells, cesspools, seepage pits
- ∞ Small diameter [typically 4 to 6 inches]
 - Does not require too much space
 - Commonly gravity fed with a few that are pressure fed
 - Can be drilled to depths which bypass poorly draining surface soils to find sufficient drainage
 - Used with package sewage treatment plants

Large diameter injection well used for drainage wells, seepage pits, cesspools



Small diameter injection well



Most common types of UIC permitted injection wells to be encountered in a watershed

- ☞ Drainage injection wells to dispose of stormwater runoff along paved areas.
- ☞ Sewage injection wells are commonly found in areas not served by a municipal sewer system.
- ☞ Industrial injection wells are less likely to be encountered in residential zoned areas. However, there can be industrial injection wells in mixed land-use zoned areas.

Drainage injection wellhead



Drainage injection wells by County

- ☞ Hawaii Island has 3917 drainage wells
- ☞ Oahu has 544 drainage wells
- ☞ Kauai has 90 drainage wells
- ☞ Maui has 70 drainage wells

Typical drainage injection well permit requirements

- ∞ Periodic recorded inspections

Uncased drainage injection well



Hollow-tile cased drainage injection well



Deep hollow tile-cased large diameter injection well

Hand stacking
tiles from the
bottom, scary!



Slotted precast concrete ringed large diameter injection well



Sediments affect drainage well performance



Drainage injection well in foreground



Flooding of same drainage injection well



Sewage injection wells



Sewage injection wells by County

- ☞ Hawaii Island has 613 injection wells
- ☞ Oahu has 397 injection wells
- ☞ Kauai has 215 injection wells
- ☞ Maui has 155 injection wells

Typical treated-sewage injection well permit requirements

- ∞ Daily flow recordation
- ∞ Periodic recorded inspections
- ∞ Wastewater quality sampling and analyses
- ∞ Injection Well Status Reports
- ∞ Posting & distribution of Environmental Notice

Lahaina WWRF Injection well



Sewage Injection wellhead



Typical large diameter sewage injection wellhead



Large diameter sewage injection well with precast concrete rings w/draining holes



Small diameter injection wellhead



Small diameter sewage injection well



Small diameter sewage injection well



Industrial injection wells



Industrial injection wells by County

- ☞ Oahu has 47 injection wells
- ☞ Hawaii Island has 36 injection wells
- ☞ Maui has 18 injection wells
- ☞ Kauai has 4 injection wells

Industrial permit typical requirements

- ∞ Daily flow recordation
- ∞ Periodic recorded inspections
- ∞ Wastewater quality sampling and analyses
- ∞ Injection Well Status Reports

Inventory of injection wells by County

| INJECTION WELLS | Files Total (A) | Files Opened (B) | Files Closed (C) | Permit Processed (D) | Permit Active (E) | Permit Expired (F) | Permit Pending (G) | No. of Permitted I.W.s |
|------------------------|------------------------|-------------------------|-------------------------|-----------------------------|--------------------------|---------------------------|---------------------------|-------------------------------|
| HAWAII | 391 | 268 | 123 | 146 | 117 | 29 | 122 | 649 |
| KAUAI | 122 | 66 | 56 | 53 | 41 | 12 | 13 | 219 |
| MAUI | 139 | 68 | 71 | 40 | 31 | 9 | 28 | 154 |
| MOLOKAI | 25 | 13 | 12 | 9 | 6 | 3 | 4 | 19 |
| OAHU | 272 | 140 | 132 | 87 | 68 | 19 | 53 | 444 |
| STATE | 949 | 555 | 394 | 335 | 263 | 72 | 220 | 1,485 |

| DRYWELLS | Files Total (A) | Files Opened (B) | Files Closed (C) | Permit Processed (D) | Permit Active (E) | Permit Expired (F) | Permit Pending (G) | No. of Permitted D.W.s |
|-----------------|------------------------|-------------------------|-------------------------|-----------------------------|--------------------------|---------------------------|---------------------------|-------------------------------|
| HAWAII | 737 | 720 | 17 | 535 | 279 | 256 | 185 | 3,917 |
| KAUAI | 11 | 9 | 2 | 6 | 3 | 3 | 3 | 90 |
| MAUI | 26 | 25 | 1 | 20 | 4 | 16 | 5 | 65 |
| MOLOKAI | 3 | 3 | 0 | 2 | 1 | 1 | 1 | 5 |
| OAHU | 55 | 38 | 17 | 29 | 12 | 17 | 9 | 544 |
| STATE | 832 | 795 | 37 | 592 | 299 | 293 | 203 | 4,621 |

Hawaii Island's Injection Well Facilities

- ☞ 535 Drainage Well Facilities
- ☞ 3917 Drainage wells

- ☞ 182 Sewage Facilities
- ☞ 613 Sewage injection wells

- ☞ 19 Industrial Facilities
- ☞ 36 Industrial injection wells

Oahu's Injection Well Facilities

- ☞ 29 Drainage Well Facilities

- ☞ 544 Drainage wells

- ☞ 78 Sewage Facilities

- ☞ 397 Sewage injection wells

- ☞ 32 Industrial Facilities

- ☞ 47 Industrial injection wells

Kauai's Injection Well Facilities

- ☞ 6 Drainage Well Facilities
- ☞ 90 Drainage wells

- ☞ 57 Sewage Facilities
- ☞ 215 Sewage injection wells

- ☞ 3 Industrial Facilities
- ☞ 4 Industrial injection wells

Maui's Injection Well Facilities

- ☞ 22 Drainage Well Facilities
- ☞ 70 Drainage wells

- ☞ 49 Sewage Facilities
- ☞ 155 Sewage injection wells

- ☞ 9 Industrial Facilities
- ☞ 18 Industrial injection wells

UIC Program

∞ Questions?

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