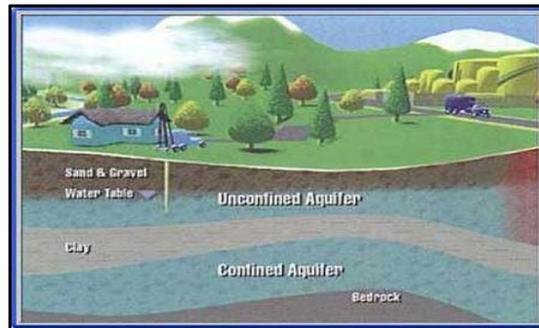


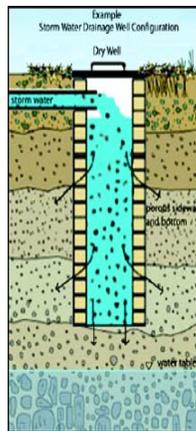
# Underground Injection Control (UIC) Program Goal

The goal of Washington's UIC Program is to protect groundwater quality by regulating discharges from UIC wells.



## What is a UIC well?

UIC wells are manmade structures deeper than the largest surface dimension or



Drywell



# WHAT IS A UIC WELL?

Or contains perforated pipe or a similarly acting structure

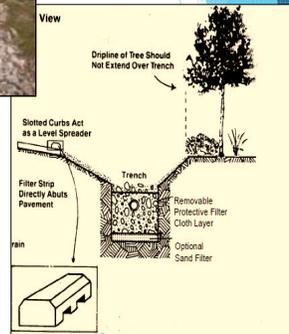


Stormchamber - temporary storage before infiltration



**Infiltration trench**

80% of wells are < 20 feet deep



# How are UIC wells used in WA



Majority used to manage stormwater from roads, parking areas, and building roofs, and other waste fluids, help cleanup groundwater and aquifer storage. Spokane, Pierce, Clark County and the Tri-Cities areas use 1000's of UIC wells for stormwater.



Over 45,000 wells registered



## UIC Program Laws & regulations



- ▶ Federal Safe Drinking Water Act
- ▶ 1984, Ecology received authority from EPA to regulate UIC wells
  - ▶ WA State Water Pollution Control Act, chapter 90.48
  - ▶ Chapter 173-218 WAC UIC Program
  - ▶ Chapter 173-200 WAC Groundwater Quality Standards (GWQS)

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## UIC Program Basics



Meet the rule requirements = rule authorization:

- ▶ Register UIC wells with Ecology
  - ▶ New wells- before use, design phase
  - ▶ Older/existing wells should be registered asap
- ▶ Groundwater protection - -discharge meets the GWQS at the top of the water table or a discharge permit is required to operate the well.
  - ▶ New wells meet the rule design standards. Older wells reviewed for high-threat to groundwater potential.

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## UIC rule requires discharges from UIC wells to protect groundwater quality.

- ▶ Meet local ordinances
- ▶ Separation between the UIC well base and the top of the groundwater table;
- ▶ Stormwater treatment and source control BMPs - review pollutant load (ADT), soils for treatment capacity (CEC, adsorption, and vadose zone thickness)
- ▶ UIC program prohibits discharges - industrial wastewater, vehicle waste fluids, other fluids that cannot meet the GWQS
- ▶ UIC registration includes questions to determine if stormwater treatment requirements are met

## UIC Registration & Wellhead Protection

- ▶ UIC registration includes questions to determine if stormwater treatment requirements are met
- ▶ UIC well within 100 feet of a drinking water well
- ▶ Located in a groundwater protection area
  - ▶ References the WA DOH's on line Source Water Assessment Mapping Application; CARA information accessed at local government level
- ▶ Notification to water purveyor if remediation project is within well head protection area
- ▶ Follow up if within WHPA or CARA
- ▶ WHPA references in Ecology's stormwater manuals

## Potential contaminants in Stormwater

- ▶ Roads and highways – oil and grease, polycyclic aromatic hydrocarbons (PAHs), lead, zinc, copper, cadmium, sediments and road salts
- ▶ Residential land use – road contaminants, herbicides and pesticides, nutrients, bacteria and viruses
- ▶ Industrial areas - heavy metals, sediment, organic pollutants, PAHs and hydrocarbons

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## WW Phase 1 NPDES communities Stormwater Characterization 2009-2013

Phase 1 NPDES permitted communities discharge stormwater to surface water - Clark, King, Pierce & Snohomish County, City of Tacoma and Seattle, and Port of Seattle and Tacoma (44,800 data records, water and sediment)

- ▶ Collected stormwater samples (prior to treatment) from different land uses over a 3-4 year period
  - ▶ Low (1-2 houses/acre), high density (4 or > houses/acre) residential, commercial (includes multi-family residential) and industrial
- ▶ Automatic samplers used, flow weighted composite sample collected (once 0.02 rainfall or flow in conduit) across a storm event (80-90% of storm)
- ▶ <http://www.ecy.wa.gov/programs/wq/stormwater/municipal/s8dswmonitring.html>

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## WW Phase 1 NPDES communities Stormwater Characterization Study 2009-2013 contaminant concentration summaries.

- ▶ Dissolved Arsenic only 16 samples collected (15 from low density residential) - 0.17 ug/l - 1.04 ug/l

### For all land uses

- ▶ Fecal Coliform -detection in 80-100 % samples
  - ▶ 90<sup>th</sup> percentile ranged from 1600 cfu (low density residential) - 12,000 cfu (industrial) - 90 % of samples were less
- ▶ Nitrite-Nitrate dissolved - 90% percentile of samples were < 0.9 mg/l. 10% were greater than 1 mg/l but only 1 over 10 mg/l (Port area), 58 mg/l.
- ▶ Ammonia detected in all samples, 90<sup>th</sup> percentile of results, <0.5 mg/l
- ▶ 11 pesticides monitored, only 2 with enough detections for statistics, pentachlorophenol (25% detected) 0.02 ug/l - 5.1 ug/l [DWS 1 ug/l], dichlobenil, no DWS

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## Summary

- ▶ UIC wells are shallow structures used to discharge fluids (passively) into the subsurface. Majority are used for stormwater management along roads, parking lots and to collect roof runoff.
- ▶ UIC program rule authorization process includes registration and review of site characteristics and pollutant load to determine if treatment is needed or is prohibitive. Includes references to well head protection.

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UIC website  
[www.ecy.wa.gov/programs/wq/grndwtr/uic/index.html](http://www.ecy.wa.gov/programs/wq/grndwtr/uic/index.html)

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