

UIC Stormwater Wells and Vulnerable Drinking Water Supplies

Background:

The Safe Drinking Water Act of 1974 created the Underground Injection Control (UIC) Program to protect drinking water sources from contamination. UIC wells are dedicated wells used to discharge fluids (ranging from potable water, stormwater, and various forms of treated wastewater) into the subsurface. In Washington, Ecology has delegated authority from U.S. Environmental Protection Agency (EPA) to administer this program under Chapter 173-218 WAC.

The UIC Program's goal is to prevent groundwater contamination by regulating the discharge of fluids into underground injection control (UIC) wells. UIC wells are classified based on the nature of the fluids to be released and the level of regulation and management required to protect groundwater. The majority of UIC wells in Washington are "Class 5 wells" used to inject non-hazardous fluids underground. The most common use of a Class 5 well is to help manage stormwater. Most are shallow and rely on gravity to move excess stormwater to the subsurface. Not only must the use of UIC well meet federal standards for the protection of drinking water, but in Washington, the use of UIC well must also comply with the Washington State Groundwater Quality Standards (GWQS), Chapter 173-200 WAC.

Current Processes:

The UIC Program is part of the Department of Ecology's Water Quality Program. Design and treatment standards for UIC stormwater wells are found in Ecology's "Guidance for UIC Wells that Manage Stormwater" (05-10-067) and the agency's Eastern and Western Stormwater Management Manuals. The guidance and manuals establish standards for design and best management practices (BMPs) for siting and use of stormwater UIC wells. Wells sited and constructed according to those standards and BMPs are considered *rule-authorized*. Rule authorization means the discharge from the well is assumed to comply with the GWQS at the point of contact with the groundwater table. In the case where a well does not meet the criteria for rule authorization, it can be permitted under Ecology's state waste discharge permit program, Chapter 173-246 WAC.

All UIC wells must be registered with Ecology either at permitting or at the time of completion. Stormwater UIC wells can be authorized and permitted in two ways.

1. When Ecology directly approves and authorizes a well. Registration usually occurs during the design phase and before the well is used.
2. At the local level authorization may fall under the prevue of a local stormwater management entity or be handled by local government as part of a building permit process. In these cases, the local authority reviews and approves the siting, design, and treatment requirements. Registration occurs after the permit is granted.

Ecology staff does not review UIC registrations authorized by a local entity, except at facilities such as industrial sites.

Currently over 100 Washington cities, 15 counties, and more than 45 secondary permitted entities (such as ports, universities, and parks) can rule-authorize UIC wells within their jurisdiction under the National Pollutant Discharge Elimination System (NPDES) Program. The NPDES Program is intended to provide a comprehensive approach to stormwater management and includes more than just the use of UIC wells. The use of UIC stormwater wells is one of many tools used to regulate and control stormwater flows, while protecting both surface water and groundwater quality.

Within counties and cities that do not have a locally adopted stormwater ordinance (under an NPDES permit), GWQS and the use of UIC stormwater wells are reviewed and permitted on an individual project level. The use of UIC wells on large construction projects requiring SEPA are generally subject to Ecology (and UIC Program) review. Small-scale projects are not.

Concerns:

The basic assumption of Ecology’s UIC Program is that stormwater wells constructed using the standards and BMPs will protect groundwater and therefore drinking water sources. However, current processes and guidance documents do not require site specific monitoring, nor do they consider the vulnerability of a specific water supply well. As a result, some drinking water sources may be at risk and the utilities who manage those supplies have very limited opportunities to intervene and effectively protect their resources.

UIC well registration is reactive—it provides a picture of where wells are already located, or are already approved, but does not indicate where wells are proposed. Public water supplies with vulnerable sources need proactive tools to effectively keep their supplies safe. The current system does not offer a standardized process that includes utilities in siting or design decisions for UIC stormwater wells near their vulnerable supply wells.

This issue was brought to the attention of the Department of Health (DOH) by members of the Washington Association of Sewer and Water Districts. They identified a case in which a utility had expressed concerns over the siting of a UIC stormwater well near one of their vulnerable drinking water sources. They presented their concerns and justification to the local stormwater management agency. The utility was told the UIC well met Ecology’s BMPs, was in compliance, and no further action was needed. The utility remained concerned, but had no recourse.

Stormwater BMPs and Drinking Water:

The existing stormwater BMPs include some elements intended to protect water supply wells and groundwater in general. However, they are limited and do not correlate well with the SDWA’s source water protections programs, such as sanitary control areas, wellhead protection areas, or source susceptibility ratings.

The 100 foot setback in the “Guidance for UIC Wells that Manage Stormwater” and in stormwater manuals is consistent with well construction standards established in WAC 173-160-171(3). That establishes set back distances from potential sources of contamination. However, that setback is not the same as Sanitary Control Areas (WAC 246-290-135(2)) or Wellhead Protection Areas (WAC 246-290-135(3)(b)) established under Chapter 246-290 WAC or Chapter 246-291 WAC.

Sanitary Control Areas (SCA) are protective areas around water supplies that the utility must control through ownership, title, or convenient. For wells and springs, the minimum SCA is 100 feet and 200 feet respectively, and can be larger if the source is determined by DOH to have a high contamination risk. Wellhead Protection Areas (WHPAs) are “risk assessment” zones reflecting contribution zones based on potential groundwater travel times. WHPAs vary in size and can easily exceed the 100-foot UIC setback. WHPAs often extend beyond the area owned and directly controlled by the water system operator.

A UIC well could be located more than 100 feet from a public drinking water source, meeting UIC well construction BMP but still fall within in either an SCA or the 3-6 month WHPA zone. For a vulnerable water source, this may create risks that the utility is unaware of and unable to manage effectively.

Desired State:

In response to these issues and conversations with Ecology and some of the drinking water stakeholders, this paper has tried to identify a “desired state” where the interests of utility managers and stormwater managers can be met.

Drinking Water Sources are Not Impacted by UIC Stormwater Wells

1. Vulnerable sources have adequate and appropriate BMPs.
2. Utilities with vulnerable supplies are informed and consulted when stormwater projects using UIC wells are developed in critical wellhead areas.
3. No UIC wells are sited in SCAs without water utility approval

There are a number of ways to move towards the desired state. The following options span a range of responses and are offered for discussion.

Option 1: Status Quo: No changes to the current requirements

Use existing local authority to develop prohibitions and additional restriction for siting stormwater UIC wells near drinking water supplies. The current BMPs specifically require compliance with local ordinances that specify land use practices in critical aquifer recharge areas (CARAs) or WHPAs. Water utilities would work with local land use managers to update and improve these regulatory tools to provide higher levels of protection for vulnerable supply wells.

Option 2: Non-regulatory Improvements (passive)

Expand access to non-regulatory tools that support better coordination and consultation between Utilities and stormwater managers and UIC wells owners. This could include:

- Update DOH’s source water protection map with the inclusion of source susceptibility ratings to help identify potentially vulnerable sources.
- Update UIC BMPS and guidance to expand understanding and options to design for vulnerable water supply wells when siting UIC wells.
- Encourage consultation between vulnerable utilities and project reviewers.

Option 3: Non-regulatory Improvements (directed)

- Update BMPs and Guidance to:
 - *Require* consultation with a vulnerable utility potentially impacted by a stormwater UIC well.
 - Identify additional BMPs for vulnerable water supply wells.
- Update DOH’s source water protection map with the inclusion of stormwater based vulnerability rating based on utility self-assessments and DOH susceptibility ratings.

Option 4: Statutory and Regulatory Changes

- Require coordination and concurrence with utilities when siting UIC stormwater wells near vulnerable water supply wells.
- Approaches may include:
 - Prohibit UICs wells within a specific time of travel WHPA zone (without utility approval?).
 - Require site specific monitoring at UIC site near vulnerable water supply wells.
 - Require SEPA review and/or State Waste Discharge Permits for UIC wells located within the one-year time of travel WHPA.

The UIC Program has been designed to uphold the GWQS and safely manage stormwater runoff. However, the vulnerability of some public drinking water sources necessitates a careful consideration of current processes and practices. Collaborating to reach the desired state is beneficial to all parties involved. It will:

- Protect public water supplies.
- Support efficient and cost effective management of stormwater.
- Encourage effective communication and coordination between water supply operators and stormwater managers at whatever scale they operate.