

Bacteriological Source Monitoring Plan

GROUNDWATER RULE MONITORING REQUIREMENTS

The US Environmental Protection Agency (EPA) published the Groundwater Rule (GWR) on November 8, 2006 which becomes effective December 1, 2009. One goal of the GWR is to provide increased protection against microbial pathogens, specifically bacterial and viral pathogens, in public water systems (PWS) that use groundwater. Instead of requiring disinfection for all ground water sources, the GWR establishes a risk-targeted approach to identifying groundwater sources that are susceptible to fecal contamination. The GWR requires systems with ground water sources at risk of microbial contamination to take corrective action to protect consumers from harmful bacteria and viruses. Monitoring is a key element of this risk-targeted approach.

What are the Source Water Monitoring Requirements?

Assessment Source Water Monitoring

Ground Water Systems (GWS) with sources that seem susceptible to fecal contamination (higher risk) may be required to conduct assessment source water monitoring. Assessment source water monitoring may be required at any time, and may require GWS to regularly monitor each source (or representative source) on a state-specified schedule (e.g. monthly) for an extended period (e.g., 12 months). Based on the results of the assessment source water monitoring, systems may have to take corrective action.

Triggered Source Water Monitoring

The purpose of triggered source water monitoring is to evaluate whether the presence of total coliform in the distribution system is due to fecal contamination in the ground water source. This type of source water monitoring is triggered by routine total coliform monitoring required by the Total Coliform Rule (TCR). Since TCR monitoring is conducted regularly, triggered source water monitoring can occur at any time and thus provides an ongoing evaluation of ground water sources.

Within 24 hours of being notified of a positive total coliform result under routine TCR monitoring, a GWS must collect at least one ground water source sample from each source in use when the positive total coliform result under the TCR was collected. If any triggered monitoring sample is positive for fecal indicator, GWS must take corrective action or collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator test result. If any one of the five additional samples is fecal indicator-positive, the system must take corrective action.

Small Systems

GWS serving fewer than 1,000 people that have a total coliform-positive result under the TCR may use the triggered source water monitoring sample collected from the ground water source to meet

both the triggered source water monitoring requirement of the GWR as well as part of the repeat sampling requirement of the TCR.

Consecutive Systems

A consecutive system with a positive routine total coliform result under the TCR must notify its wholesale system(s) within 24 hours of being notified of the positive sample.

Wholesale Systems

A wholesale system that receives notice from a consecutive system of a positive total coliform result under routine monitoring of the TCR must collect a triggered source water sample from its ground water source(s) and analyze the source water sample(s) for a fecal indicator within 24 hours of being notified by the consecutive system. If the triggered source water sample is positive for the fecal indicator, the wholesale system must notify all consecutive systems served by that source within 24 hours of the positive sample result. The wholesale system and any consecutive systems served by the fecal indicator-positive source must all notify their consumers within 24 hours of learning of the result. The wholesale system must take corrective action or collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator test result. If any one of the five additional samples is fecal indicator-positive, the wholesale system must take corrective action.

Triggered Source Water Monitoring Exemptions

GWS providing at least 99.99 percent (4 log) treatment of viruses (using inactivation, removal, or a state-approved combination of inactivation and removal) of all of their groundwater can notify the state of this treatment and would not be required to conduct triggered source water monitoring. Those systems are, however, required to conduct compliance monitoring to show they are providing consistent and sufficient treatment.

GWS that Have More than One Ground Water Source

Representative Source Water Monitoring

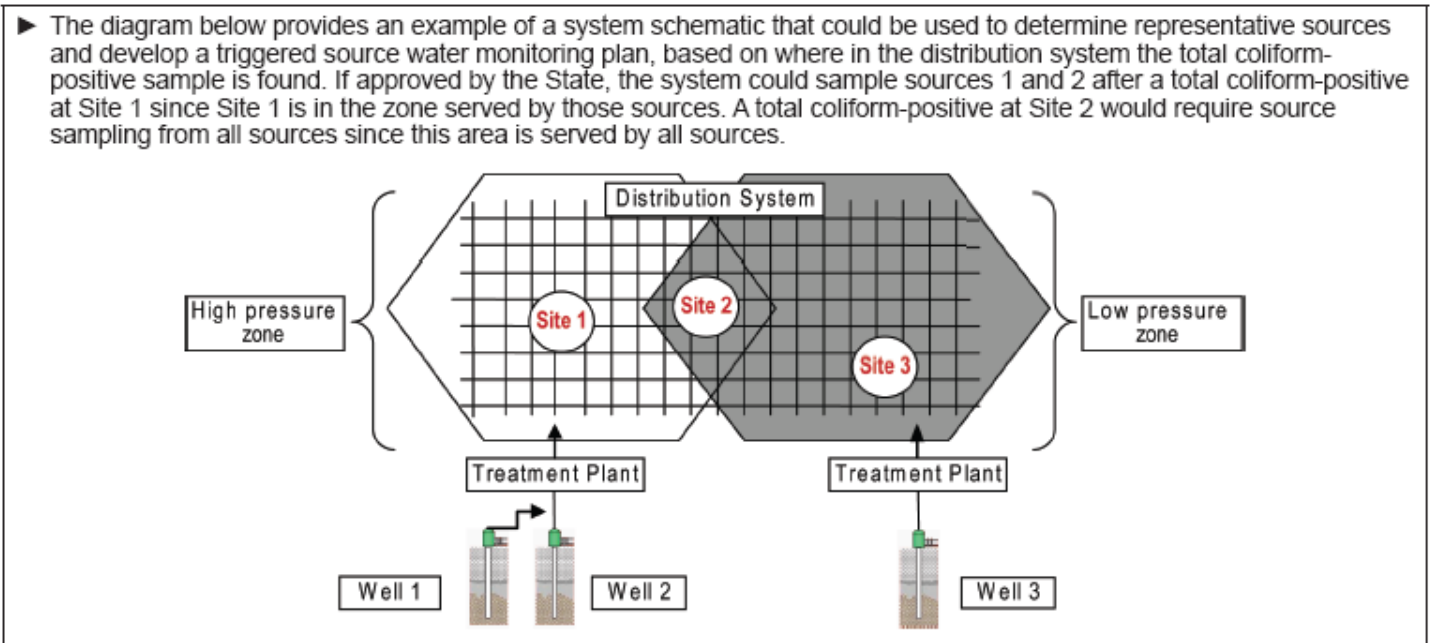
With State approval, GWS with more than one ground water source may fulfill the triggered source water monitoring requirements by taking a ground water sample at a representative source. Representative source water sampling allows systems to collect samples from the sources that represent (serve) the TCR monitoring site rather than from all sources. GWS are required to submit a triggered source water monitoring plan that identifies the sources that are representative of its TCR sampling sites.

Triggered Source Water Monitoring Plan

A triggered source water monitoring plan should be submitted to the Division of Drinking Water by September 30, 2009. Plans must include:

1. A map of the water system with location of groundwater sources, location of pressure zones, and location of storage and disinfection facilities,

2. A written explanation of how the GWS knows which source feeds which section of the distribution system, and
3. Seasonal or intermittent ground water sources and when they are used.

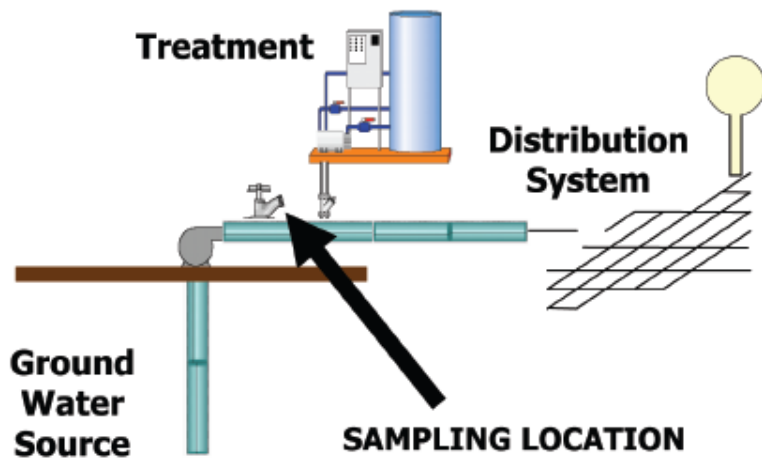


Collecting and Analyzing Triggered Source Water Monitoring Samples

When triggered source water monitoring is required, GWS must:

1. Collect at least one ground water source sample from an approved representative source monitoring location, or at each source in use at the time the total coliform-positive sample was collected.
2. Samples must be collected within 24 hours of being notified of the total coliform-positive sample (unless the 24-hour limit is extended by the State)
3. Sample must be taken before treatment and disinfection or at a State-approved location after treatment and disinfection.
4. Samples must be analyzed for the presence of a fecal indicator (e.g. *E. coli*, enterococci, or coliphage) using an approved GWR method.
5. If a fecal indicator-positive source sample is invalidated by the State, the GWS must collect another source water sample within 24 hours of being notified by the State of the sample invalidation.

► The diagram below represents an appropriate sampling location for triggered source water monitoring. GWSs should have a sample tap at each source that enables triggered source water monitoring.



Triggered Source Water Monitoring Plans should be submitted to the DDW by September 30, 2009.