EPA
United States
Environmental Protection
Agency

Ground Water Rule Triggered and Representative Monitoring: A Quick Reference Guide

Overview of the Rule

Title	Ground Water Rule (GWR) 71 FR 65574, November 8, 2006, Vol. 71, No. 216 Correction 71 FR 67427, November 21, 2006, Vol. 71, No. 224
Purpose	Reduce the risk of illness caused by microbial contamination in public ground water systems (GWSs).
General Description	The GWR establishes a risk-targeted approach to identify GWSs susceptible to fecal contamination and requires corrective action to correct significant deficiencies and source water fecal contamination in all public GWSs.
Utilities Covered	The GWR applies to all public water systems (PWSs) that use ground water, including consecutive systems, except that it does not apply to PWSs that combine all of their ground water with surface water or with ground water under the direct influence of surface water prior to treatment.

Purpose of 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) (40 CFR 141.21).
  - 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.

Triggered Source Water Monitoring Requirements

Systems Required to Conduct Triggered Source Water Monitoring

GWSs are subject to triggered source water monitoring if they:	► Do not provide, and conduct compliance monitoring for, at least 4-log treatment of viruses (through inactivation and/or removal). ■ This includes systems that decide to discontinue 4-log treatment. ► Do not purchase 100% of their water (and therefore have a source at which to sample).

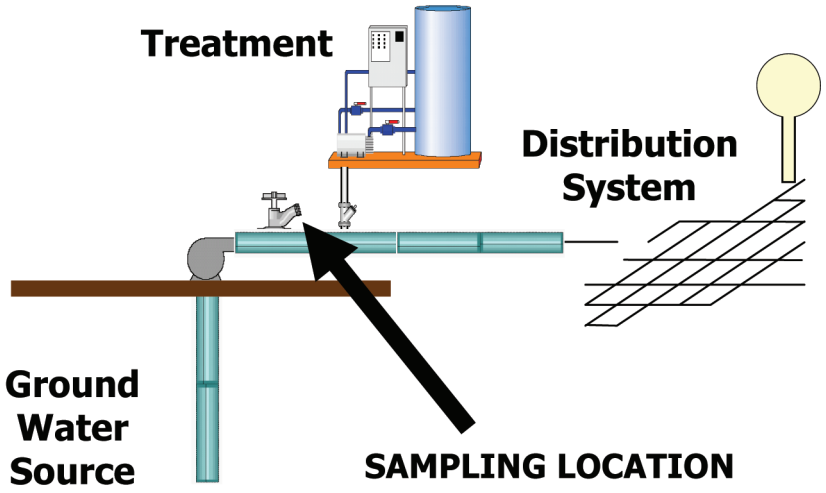
Situations Leading to Triggered Source Water Monitoring

GWSs must conduct triggered source water monitoring when:	► The system is notified of a total coliform-positive sample collected in compliance with the TCR unless: ■ The total coliform sample is invalidated by the State. ■ The State allows an exception to the GWR triggered source water monitoring requirements. OR ► The system is a wholesale system and is notified by one of its consecutive systems that the consecutive system had a total coliform-positive sample during TCR monitoring.

Collecting and Analyzing Triggered Source Water Monitoring Samples

When triggered source water monitoring is required, GWSs must:	► Collect at least one ground water source sample from each source in use at the time the total coliform-positive sample was collected. ■ 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). ■ Sample must be taken before treatment or at a State-approved location after treatment (see the diagram on the next page). ► Ensure all samples are analyzed for the presence of a fecal indicator (e.g., *E. coli*, enterococci, or coliphage) using an approved GWR method. ► 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 using an approved method. See the "Analytical Methods Approved for the Ground Water Rule" at http://www.epa.gov/safewater/methods/analyticalmethods.html.

- 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.



Additional Sampling

- If the initial triggered source water sample is fecal indicator-positive, and the State does not require corrective action in response, GWSs must conduct additional source water monitoring.
  - GWSs must collect five additional source water samples (from the source(s) that contained the original fecal indicator-positive samples) within 24 hours of being notified of the fecal indicator-positive sample.
  - The additional samples must be tested for a fecal indicator using an approved GWR method.
- If any one of the five additional samples is fecal indicator-positive, the system must take corrective action.
- If any additional sample is found to be fecal indicator-positive but is subsequently invalidated by the State, the GWS must resample for the same fecal indicator within 24 hours of being notified of the invalidation.

Note: If the GWS is a wholesale system, it must notify all consecutive systems served by a source of any fecal indicator-positive samples from that source within 24 hours of being notified of the sample result.

Sampling at Representative Sources and Triggered Source Water Monitoring Plans

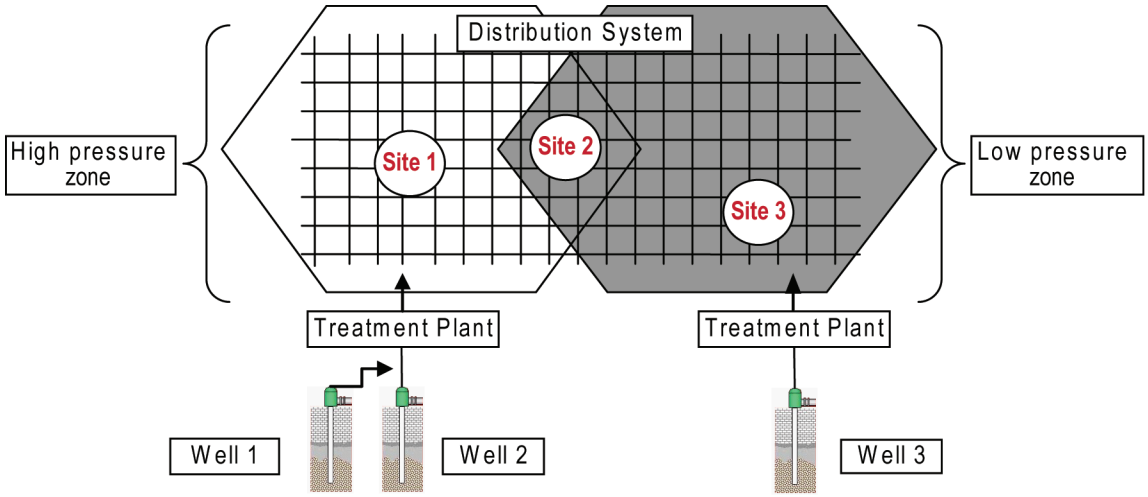
Representative Source Sampling

- If a GWS has multiple sources, the State may allow the GWS to conduct representative source sampling.
- Representative source water sampling allows systems to collect samples from the sources that represent (serve) the TCR monitoring site rather than from all sources. These representative ground water sources must be approved by the State.
- Systems must still:
  - Sample within 24 hours of total coliform-positive sample.
  - Analyze using an approved GWR method.

Triggered Source Water Monitoring Plan

- If the State allows representative site sampling, the State may require the GWS to submit a triggered source water monitoring plan for approval before the GWS starts conducting representative source sampling.
  - A triggered source water monitoring plan may include:
    - A map of the water system (including location of ground water sources, location of pressure zones, and location of storage facilities),
    - A written explanation of how the GWS knows which source feeds which section of the distribution system, and
    - Seasonal or intermittent ground water sources and when they are used.
  - Regardless of whether or not the State requires a plan to be submitted, all representative source sampling locations must be approved by the State.

- The diagram below provides an example of a system schematic that could be used to determine representative sources and develop a triggered source water monitoring plan, based on where in the distribution system the total coliform-positive sample is found. If approved by the State, the system could sample sources 1 and 2 after a total coliform-positive at Site 1 since Site 1 is in the zone served by those sources. A total coliform-positive at Site 2 would require source sampling from all sources since this area is served by all sources.



Variations in Requirements Based on System Size

GWSs Serving Fewer than 1,000 Persons

- GWSs that serve fewer than 1,000 persons may be able to meet TCR repeat monitoring requirements and GWR triggered source water monitoring requirements together if the State allows:
  - Repeat TCR monitoring at the source
    AND
  - *E. coli* to be used as a fecal indicator under the GWR.
- If the State allows this situation, then the GWS can use a TCR repeat sample collected at the source to meet the triggered source water monitoring requirement of the GWR. The fourth TCR repeat sample is collected at the source. Upstream and downstream samples and a sample at the TCR site are still needed to meet TCR requirements.
- Labs must use an approved GWR method to test for *E. coli.*

Note: If the TCR repeat sample collected at the source is TCR-positive but *E. coli* is not found, the GWR does not require further action but the system is in violation of the TCR MCL.

Consecutive Systems and Wholesale Systems

Consecutive Systems	► Consecutive systems that purchase 100% of their water (and therefore do not have a source from which to sample) must: ■ Notify their wholesale system within 24 hours of receiving notice of a total coliform-positive sample taken under the TCR. ■ Upon hearing from the wholesale system of a fecal indicator-positive source water sample (either initial triggered samples or additional samples), notify the public within 24 hours. ► Consecutive systems that purchase only some of their water must: ■ Notify their wholesale system within 24 hours of receiving notice of a total coliform-positive sample taken under the TCR. ■ Collect GWR triggered source water monitoring samples and additional samples as required. ■ Upon receipt of notification from the laboratory about a fecal indicator-positive source water sample at the system's source(s) take corrective action, if required, and notify the public within 24 hours. ■ Upon receipt of notification from the wholesale system of a fecal indicator-positive sample (either initial triggered samples or additional samples) at the wholesale system's source(s), notify the public within 24 hours.
Wholesale Systems	► Wholesale systems that are notified by a consecutive system of a total coliform-positive sample must: ■ Within 24 hours of being notified, collect at least one ground water source sample from each source in use (unless representative sampling is allowed) when the total coliform-positive sample was collected. ■ Notify the public and ALL consecutive systems served by the source within 24 hours of learning that a source water sample is fecal-indicator positive.

Invalidation of Fecal Indicator-Positive Samples

- The State can invalidate a fecal indicator-positive triggered source water sample if:
  - The system provides the State with written notice from the laboratory that improper sample analysis occurred or
  - The State determines there is substantial evidence that the sample does not reflect source water quality.
    - The State must document in writing there is substantial evidence that the fecal indicator-positive ground water source sample is not related to source water quality.
- If any sample is found to be fecal indicator-positive and is subsequently invalidated by the State, the GWS must resample for the same indicator within 24 hours of being notified of the invalidation.

Exceptions to the Triggered Source Water Monitoring Requirements

Extension of the 24-hour collection limit

- The State may extend the 24-hour limit for collecting source water samples on a case-by-case basis if the State determines the system cannot collect the ground water source water sample within 24 hours due to circumstances beyond its control.
- In the case of an extension, the State must specify how much time the system has to collect the sample.

Total Coliform-Positive Sample Is The Result of Distribution System Conditions

- A GWS is not required to conduct triggered source water monitoring under one of the following circumstances:
  - The State determines and documents in writing that the total coliform-positive TCR sample is caused by a distribution system deficiency.
  - The GWS determines the total coliform-positive TCR sample was collected at a location that meets State criteria for distribution conditions that will cause total coliform-positive samples and notifies the State within 30 days.

Notification Requirements

If a GWS receives notice of a fecal indicator-positive source water sample collected under the GWR, the system must:	► Consult with the State within 24 hours. ► Notify the public within 24 hours. ■ Tier 1 Public Notification. ► If the system is a community GWS, they must provide Special Notice of the fecal indicator-positive sample in their CCR.
If a GWS fails to conduct required triggered or additional monitoring, the system must:	► Notify the public within 12 months. ■ Tier 3 Public Notification. ► Community GWSs may be able to use their CCR.
Wholesale and consecutive systems are subject to:	► The same notification requirements outlined above, in addition to the requirements to notify the wholesale or consecutive systems.

Critical Deadlines for Triggered Source Water Monitoring for Drinking Water Systems

November 30, 2009	New ground water sources put in place after this date must conduct triggered source water monitoring if the GWS does not provide 4-log virus treatment and conduct compliance monitoring and the GWS is notified that a sample collected for the TCR is total coliform-positive.
December 1, 2009	GWSs must conduct triggered source water monitoring if the GWS does not provide 4-log virus treatment and conduct compliance monitoring and the GWS is notified that a sample collected for the TCR is total coliform-positive.