Iowa Department of Natural Resources

Groundwater Rule: A Quick Reference Guide

Overview of the Rule

Title	The Groundwater Rule (GWR) was published in the 71 Federal Register 65574, November 8, 2006, Vol. 71, No. 216. Corrections were published in the 71 Federal Register 67427, November 21, 2006, Vol. 71, No. 224.
Purpose	Reduce the risk of illness caused by microbial contamination in public groundwater 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.
Applicability	The GWR applies to all public water supply systems (PWSs) that use groundwater, including consecutive systems, except that it does not apply to PWSs that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment.

Critical Deadlines and Requirements for Drinking Water Systems

November 30, 2009	New groundwater sources put in place after this date must meet triggered source water monitoring requirements or conduct compliance monitoring.
December 1, 2009	By this date, GWSs conducting compliance monitoring because they provide at least 4-log virus inactivation, removal, or an IDNR-approved combination of these technologies at or before the first customer, must have notified the IDNR of their intent to use the 4-log treatment, and must begin compliance monitoring. The written notification to the IDNR must include engineering, operational, and any other information requested by the IDNR.
December 1, 2009	GWSs must conduct triggered source water monitoring if the GWS does not provide at least 4-log virus inactivation and/or removal at or before the first customer and the GWS is notified that a sample collected for the Total Coliform Rule (TCR) has a positive analytical result for total coliform bacteria.
December 1, 2009	GWSs for which the IDNR has identified a significant deficiency and GWSs at which at least one of the five additional groundwater source samples (or at IDNR discretion, after the initial source sample) has tested positive for fecal contamination must comply with the treatment technique requirements.

Major Provisions of the Groundwater Rule

Sanitary Surveys

All Groundwater Systems	► The IDNR or its county partners are required to conduct sanitary surveys of all GWSs in order to identify significant deficiencies, including deficiencies which may make a system susceptible to microbial contamination. ► The IDNR must conduct sanitary surveys at a minimum frequency of every 3 years for community systems and every 5 years for non-community systems. ► Each survey must contain an evaluation of the eight required components: Source; Treatment; Distribution system; Finished water storage; Pumps, pump facilities, and controls; Monitoring, reporting, and data verification; System management and operation; and Operator Certification compliance with IDNR requirements. ► The system must consult with the IDNR within 30 days of receiving written notification of any significant deficiency identified during the survey regarding appropriate corrective action, unless the IDNR directs the system to implement a specific corrective action. ► The system must have completed the corrective action or be in compliance with an IDNR-approved compliance plan within 120 days after receiving written notification of any significant deficiency identified during the survey, or earlier if required by the IDNR.

Source Water Monitoring

Triggered Source Water Monitoring *Sample Point ID: TG*	► GWSs that do not conduct the 4-log treatment technique compliance monitoring and are notified of a total coliform-positive routine sample collected in compliance with the TCR must conduct triggered source water monitoring. This is in addition to your distribution system repeat coliform bacteria monitoring samples. ► Consecutive Systems: GWSs that are notified of a total coliform-positive routine sample collected in compliance with the TCR that is located in an area of their system served by water purchased from a groundwater wholesale system, must notify the wholesaler (producer) within 24 hours of the initial positive sample notification. The wholesale system must then conduct triggered source water monitoring, unless it is already meeting the 4-log treatment technique requirements. ► GWSs must collect at least one groundwater source sample from each source in use at the time the total coliform-positive sample was collected that reasonably could have contributed to the water in the sample. The triggered source water sample must be analyzed for the presence of one of the three fecal indicators: *E. coli*, coliphage, or enterococci. ► If the triggered source water sample is fecal indicator-positive, the GWS must, within 24 hours, either take corrective action as directed by the IDNR, or, must conduct additional source water sampling. ► The IDNR may waive the triggered source water monitoring requirement if the system determines and documents, in writing, that the total coliform-positive routine sample is the result of a documented distribution system deficiency. ► The IDNR may invalidate a fecal indicator-positive groundwater source sample under specific conditions and in writing. If a fecal indicator-positive source sample is invalidated, the GWS must collect another source water sample within 24 hours of being notified by the IDNR of its invalidation decision. ► If a system has positive total coliform routine samples on multiple days during the month, the triggered source water requirements apply each day (one triggered monitoring event per day). ► System must update the TCR sampling plan to include the necessary elements of the GWR, including identification of which well(s) serve which TCR site on a routine basis, description of how the wells are used, where to collect the source water sample from each well (if not at the well itself), after hours contact information for laboratory and producer system (for consecutives)

Major Provisions of the Groundwater Rule, continued

Source Water Monitoring, continued

Additional Source Water Sampling *Sample Point ID: AD*	► When a triggered sample tests positive for a fecal indicator, the GWS must collect five additional source water samples from the same well that tested positive, using the same indicator as used in triggered source water monitoring. The additional samples must be collected within 24 hours of being notified of the fecal indicator-positive sample. If multiple wells test fecal indicator-positive, five samples must be collected from each well. The IDNR may require corrective action to be taken in response to a fecal indicator-positive triggered source water sample (i.e., removing the source of contamination), instead of requiring all five additional samples.
Assessment Source Water Monitoring *Sample Point ID: AS*	► The IDNR may require higher risk GWSs to do additional testing, called Assessment source water monitoring, which will be determined on a case-by-case basis. Assessment source water monitoring routinely consists of a monthly sample from the specific well for 12 months. This sample can be used in lieu of a triggered sample.

Treatment Technique Compliance Monitoring

Treatment Technique Compliance Monitoring	► In order not to be subject to triggered source water monitoring, a GWS can notify the IDNR that it provides at least 4-log treatment of viruses using virus inactivation and/or removal at or before the first customer. The GWS must then begin compliance monitoring designed to show the effectiveness of its treatment processes. ► GWSs that use chemical disinfection and serve more than 3,300 people must continuously monitor their disinfectant concentration. GWSs must maintain the minimum disinfectant residual concentration assigned by the IDNR after evaluation of the system's 4-log virus inactivation credit application. ► GWSs that use chemical disinfection and serve 3,300 people or fewer must take daily grab samples or meet the continuous monitoring requirements described above for GWSs serving more than 3,300 people.

Treatment Technique Requirements

GWSs with Significant Deficiencies or Source Water Fecal Contamination	► GWSs must take corrective action if a significant deficiency is identified, if the initial source water sample (if required by IDNR), or if one of the five additional groundwater source samples tests positive for fecal contamination. The GWS must implement at least one of the following corrective actions: • Correct all significant deficiencies. • Provide an alternate source of water. • Eliminate the source of contamination. • Provide treatment that reliably achieves at least 4-log treatment of viruses (using 4-log virus inactivation and/or removal) at or before the first customer for the groundwater source.

New Sources

New Groundwater Sources *Sample Pt ID: NEW*	► New sources are required to either conduct source water monitoring using an approved GWR analytical method, or provide at least 4-log virus inactivation and/or removal and conduct compliance monitoring, within 30 days of the source being put in service.

Further Questions: Groundwater Rule Implementation Team Members

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E-mail Addresses and Websites	E-mail addresses for IDNR staff: first name.last name@dnr.iowa.gov Websites: IDNR Water Supply Homepage: www.iowadnr.gov/water/drinking/ IDNR Water Supply Monthly Operating Report Forms and Sampling Plans: www.iowadnr.gov/water/wso/ EPA's Groundwater Homepage: www.epa.gov/ogwdw/disinfection/gwr

Analytical Methods for Source Water Monitoring, using the 3 Approved Fecal Indicators

Fecal Indicator	Methodology	Method Citation*
E. coli	Colilert Colisure Membrane Filter Method with MI Agar m-ColiBlue24 Test E*Colite Test EC-MUG NA-MUG	Standard Methods 9223 B. Standard Methods 9223 B. EPA Method 1604. Standard Methods 9221 F. Standard Methods 9222 G.
Enterococci	Multiple-Tube Technique Membrane Filter Technique Membrane Filter Technique Enterolert	Standard Methods 9230 B. Standard Methods 9230 C. EPA Method 1600.
Coliphage	Two-Step Enrichment Presence-Absence Procedure Single Agar Layer Procedure	EPA Method 1601. EPA Method 1602.

* Footnotes regarding methods can be found in 40 CFR 141.402

This fact sheet is based upon the EPA's Groundwater Rule Quick Reference Guide, June 2008, EPA-816-F-08-029. It has been modified for use by Iowa's public water supply systems.