Disclaimer: This article is not a rule and is not legally enforceable. As indicated by the use of non-mandatory language such as "may" and "should," it does not impose any legally binding requirements. This article describes requirements under existing laws and regulations, and does not replace any existing established laws or regulations.

Mapping Ground Water Rule Requirements:

Introduction to the Rule

This is the first article in a series of five by US Environmental Protection Agency (EPA), Office of Ground Water and Drinking Water (OGWDW) that summarize key components of the Ground Water Rule (GWR). As with all drinking water rules, please check with your Primacy Agency for specific State-related requirements.

The goal of this series of short articles is to help ground water systems (GWSs) navigate their way through the Ground Water Rule (GWR) requirements. This is the first article in the series where you will be introduced to some of the key elements of the rule. A summary of the remaining articles is provided below.

- *Article #2: Triggered Source Water Monitoring* – Triggered source water monitoring applies to systems that do not provide 4-log treatment of viruses and are notified of a total coliform-positive sample while collecting routine samples under the Total Coliform Rule (TCR).
- *Article #3: Compliance Monitoring* – An operator confirms through compliance monitoring that the treatment technologies installed to treat drinking water are reliably achieving 4-log treatment of viruses before or at the first customer.
- *Article #4: Sanitary Surveys & Corrective Action* – Sanitary surveys requires utilities to evaluate eight critical elements of a public water system as well as identify significant deficiencies that may exist at the water system. Corrective action will be required for any system in which a significant deficiency is identified.
- *Article #5: Ground Water Rule Public Notification and Consumer Confidence Report Requirements for Community and Non-Community Water Systems* – The GWR has new public notification, special notice, and consumer confidence report requirements that affect community and non-community water systems, as well as wholesale and consecutive water systems.

Ground Water System (GWS): A public water system that relies on ground water sources and any system that mixes surface and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment.
Community Water System (CWS): A public water system serving at least 15 service connections used by year-round residents or regularly serving at least 25 year-round residents
Non-Transient Non-Community Water System (NCWS): A public water system that is not a CWS and that regularly supplies water to at least 25 of the same people at least 6 months per year..
Transient Non-Community Water System (TNCWS): A non-community water system that does not regularly serve at least 25 of the same persons over six months per year.
Consecutive System: A public water system that receives some or all of its finished water from one or more wholesale systems
Wholesale System: A public water system that treats source water, as necessary, to produce finished water, and then delivers some or all of that finished water to another public water system.

The GWR is flexible in that it requires state involvement to ensure systems are compliant. USEPA encourages GWSs to openly discuss GWR requirements with state authorities to ensure compliance with state regulations.

What is the Purpose of the Ground Water Rule?

The GWR became effective December 1, 2009, and applies to public water systems relying on ground water sources and systems that introduce ground water directly to the distribution system without treatment equivalent to the treatment provided to surface water. The purpose of the rule is to provide increased protection against microbial pathogens in public water systems that use ground water sources. USEPA is particularly concerned about harmful viruses and bacteria. USEPA uses fecal contamination as an indicator of the presence of pathogens in the aquifer that may have implications for public health, including sensitive subpopulations, (e.g., the elderly, pregnant women, children, and individuals with compromised immune systems). Examples of viral pathogens that have been found in ground water sources include enteric viruses such as Echovirus, Hepatitis A and E, Rotavirus and Noroviruses (i.e., Norwalk-like viruses); and enteric bacterial pathogens like *Escherichia coli* (including *E. coli* O157:H7), *Salmonella* species, *Shigella* species, and *Vibrio cholerae*. Ingestion of these and/or other pathogens can cause gastroenteritis or, in certain rare cases, serious illnesses such as meningitis, hepatitis, or myocarditis. It is estimated that the GWR will prevent approximately 42,000 cases of viral illness and one related death annually.

Like the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) and Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), the GWR highlights the relationship between wholesale and consecutive systems. Some GWR requirements specify that wholesale and consecutive systems communicate with one another in order to comply with the rule.

Ground Water Systems: Critical Deadlines and Requirements

The GWR is a targeted, risk-based regulation. The rule relies on four major components that became effective December 1, 2009, as shown in Table 1.

Table 1. GWR Rule Requirement Components

GWR Component	Description of Requirement Effective December 1, 2009
Source Water Monitoring	If a system does not provide 4-log treatment and is notified of a total coliform-positive sample collected under the Total Coliform Rule (TCR), it must conduct triggered source water monitoring. These water systems may also be directed by their State to conduct additional and/or assessment monitoring.

Compliance Monitoring	Submit written notification[1] to the State if the system intends to provide at least 4-log treatment, and begin conducting compliance monitoring[2].
Sanitary Surveys	Provide the State with any existing information that will enable the State to conduct a sanitary survey.
Corrective Action	Complete the task or action required by the State in the event that a) the State identifies a significant deficiency, or b) a triggered source water monitoring sample or one of the five additional ground water source samples tests positive for fecal contamination.

The requirements that a GWS must follow under the GWR are based on whether the GWS provides at least 4-log treatment, as follows:

1. GWSs that consistently and reliably provide at least 4-log virus inactivation, removal, or a state-approved combination of these technologies before or at the first customer have the option of conducting compliance monitoring, as illustrated in Figure 1.

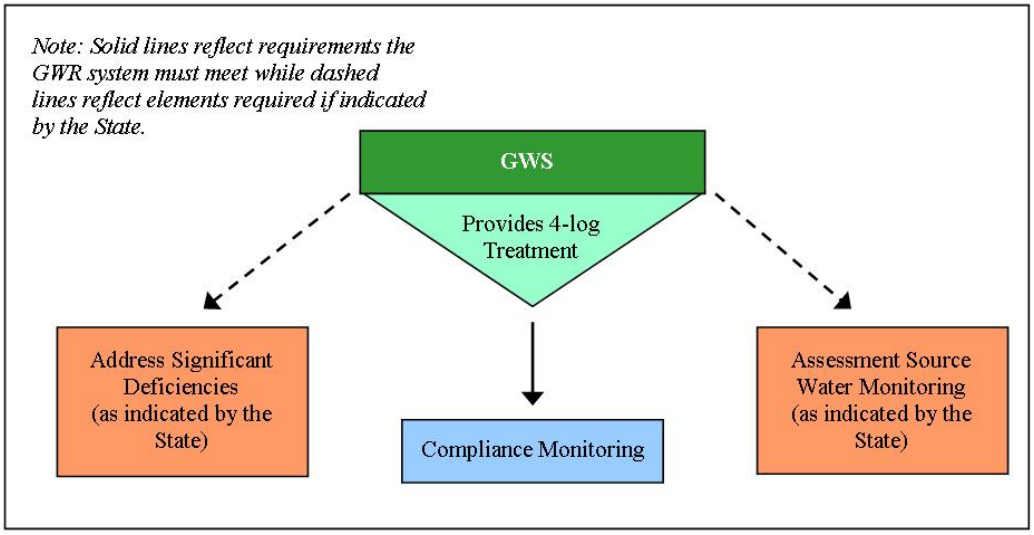

Figure 1. GWR Requirements for Systems Providing 4-log Treatment

2. GWSs that do not provide at least 4-log virus inactivation, removal, or a state-approved combination of these technologies before or at the first customer must comply with the triggered source water monitoring provision of the rule, as illustrated in Figure 2.

[1] Written notification must include engineering, operational, or other information that the State requests to evaluate the submission.
[2] If the system has not submitted written notification and/or received approval from the State by the December 1, 2009 deadline, the system must conduct triggered source water monitoring until the notification is submitted and approved.

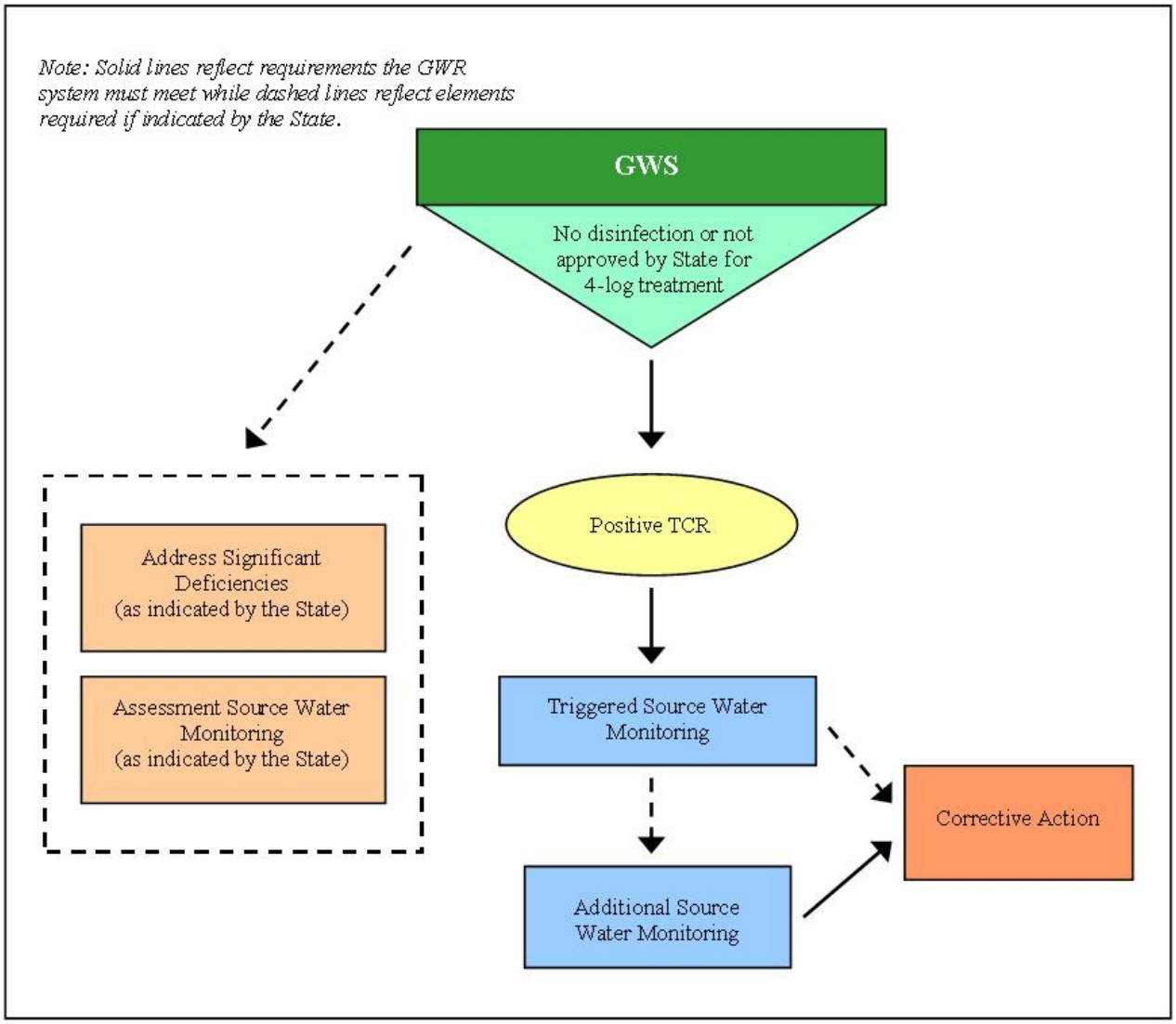

Figure 2. GWR Requirements for Systems Not Providing 4-log Treatment

There are some GWR requirements that apply to all GWSs and are not dependent on whether treatment is provided. These include resolving significant deficiencies, completing corrective action, and follow-up and/or assessment source water monitoring. Significant deficiencies, follow-up, and/or assessment monitoring are components of the GWR that the state may require at any time, and do not have to be directly a result of a total coliform-positive (TC+) or fecal indicator-positive (FI+) sample. A significant deficiency can be identified at any time by the State but is typically found during a sanitary survey. Follow-up and assessment monitoring consist of State-directed monitoring requirements used to determine the quality of the system's water source. Follow-up monitoring may be done in response to a TC+ sample result, and source water assessment monitoring can be requested at any time at the discretion of the State. These requirements will be

discussed more fully in the next four articles.

Frequently Asked Questions Regarding the Ground Water Rule:

Question #1: Does the GWR require all GWSs to disinfect?

Answer #1: No. The requirements of the rule are based on the level of treatment the GWS provides. If the system reliably provides 4-log treatment of viruses and wants to conduct compliance monitoring, it will have to submit a notice, get approval, and monitor for disinfectant residual at or before the first customer as described in **Figure 1**. If the system provides less than 4-log treatment of viruses, the GWS will need to comply with the triggered source water monitoring requirements as described in **Figure 2**.

Question #2: What is the first deadline that GWSs have to comply with?

***Answer#2*:** By December 1, 2009, GWSs must inform their Primacy Agency if they reliably provide 4-log level of treatment and want to conduct compliance monitoring. If they do not meet the specified level of treatment, the system must be prepared to conduct triggered source water monitoring by the December 1, 2009 deadline. See **Table 1** for more detailed information.

Question #3: Are there any tools available to help me calculate whether my water system meets the 4-log treatment requirement?

***Answer #3*:** Yes. EPA has developed a tool that will assist GWSs in determining whether they meet the 4-log treatment of viruses located at http://www.epa.gov/OGWDW/disinfection/gwr/compliancehelp.html; and distributed to the EPA Regions and States. The States may have also developed their own tools, so please check with your Primacy Agency for more information.

Training Opportunities

Currently USEPA Headquarters has not scheduled any additional workshops or webcast trainings on the GWR; however there still may be trainings sponsored by your State, EPA Region, or technical assistance providers. Contact your EPA Region or State for more information on workshops or trainings that may be held near you. For more information on the GWR, please visit the GWR homepage at: www.epa.gov/safewater/disinfection/gwr. The next article will cover GWR requirements for triggered and additional source water monitoring.