

# Overview of Guidance Documents Related to Groundwater Rule

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DPH-Drinking Water Section



Drinking Water Section

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US EPA http://www.epa.gov/safewater/disinfection/gwr/index.html

US EPA Ground Water Rule | Safewater ... Department of Public Health

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This site provides information about the Ground Water Rule (GWR).

EPA published the Ground Water Rule in the Federal Register on November 08, 2006. The purpose of the rule is to provide for increased protection against microbial pathogens in public water systems that use ground water sources. EPA is particularly concerned about ground water systems that are susceptible to fecal contamination since disease-causing pathogens may be found in fecal contamination.

The GWR will apply to public water systems that serve ground water. The rule also applies to 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.

This web site is designed to provide you with basic information about the GWR as well as links to additional information about particular topics such as training for implementation, frequent questions, and guidance. Use the links below or on the sidebar to find out more about the GWR.

- The Final Ground Water Rule was published in the [Federal Register November 08, 2006](#).
  - A correction to the table on Analytical Methods For Source Water Monitoring was published in the [Federal Register November 21, 2006](#).

[Basic Information](#) - This page provides basic information about the rule.  
[Ground Water Rule](#) - Visit this page to read the GW rule.  
[Compliance Help](#) - Visit this page to find out more information on complying with this rule.

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Last updated on Tuesday, November 21st, 2006.  
<http://www.epa.gov/safewater/disinfection/gwr/index.html>  
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US EPA http://www.epa.gov/safewater/disinfection/gwr/compliancehelp.html

US EPA Compliance Help | Ground Water... Department of Public Health

## Compliance Help

- On this page
  - [Quick reference guides and fact sheets](#)
  - [Guidance on the Ground Water Rule](#)
  - [State Guidance](#)
  - [Training](#)

You will need Adobe Reader to view some of the files on this page. See [EPA's PDF page](#) to learn more.

### Quick reference guide and fact sheets

- Quick Reference Guides to GWR**

This documents provides a simple and straightforward description of the rule, critical deadlines and requirements for drinking water systems and states, and information on monitoring requirements.

  - [Ground Water Rule: A Quick Reference Guide \(PDF\)](#) (2 pp, 795K)  
EPA-816-F-08-029, July 2008
  - [Ground Water Rule Compliance Monitoring: A Quick Reference Guide \(PDF\)](#) (2 pp, 369K)  
EPA-815-F-08-008, July 2008
  - [Ground Water Rule Sample Collection and Transport: A Quick Reference Guide \(PDF\)](#) (2 pp, 632K)  
EPA-815-F-08-007, July 2008
  - [Ground Water Rule Triggered and Representative Monitoring: A Quick Reference Guide \(PDF\)](#) (3 pp, 1M)  
EPA-815-F-08-004, July 2008
    - For other quick reference guides visit the [drinking water standards - quick reference guides page](#).
- Fact Sheets**
  - [Ground Water Rule Factsheet: General Rule Requirements \(PDF\)](#) (5 pp, 207K)  
EPA-816-F-08-028, July 2008
  - [Ground Water Rule Factsheet: Monitoring Requirements \(PDF\)](#) (6 pp, 135K)  
EPA-816-F-08-025, July 2008
  - [Ground Water Rule Factsheet: Sanitary Surveys \(PDF\)](#) (5 pp, 143K)  
EPA-816-F-08-027, July 2008
  - [Ground Water Rule Factsheet: Public Notification and Special Notice Requirements for Community Water Systems \(PDF\)](#) (6 pp, 221K)  
EPA-816-F-08-026, July 2008
  - [Ground Water Rule Factsheet: Public Notification and Special Notice Requirements for Noncommunity Water Systems \(PDF\)](#) (5 pp, 106K)  
EPA-816-F-08-030, July 2008

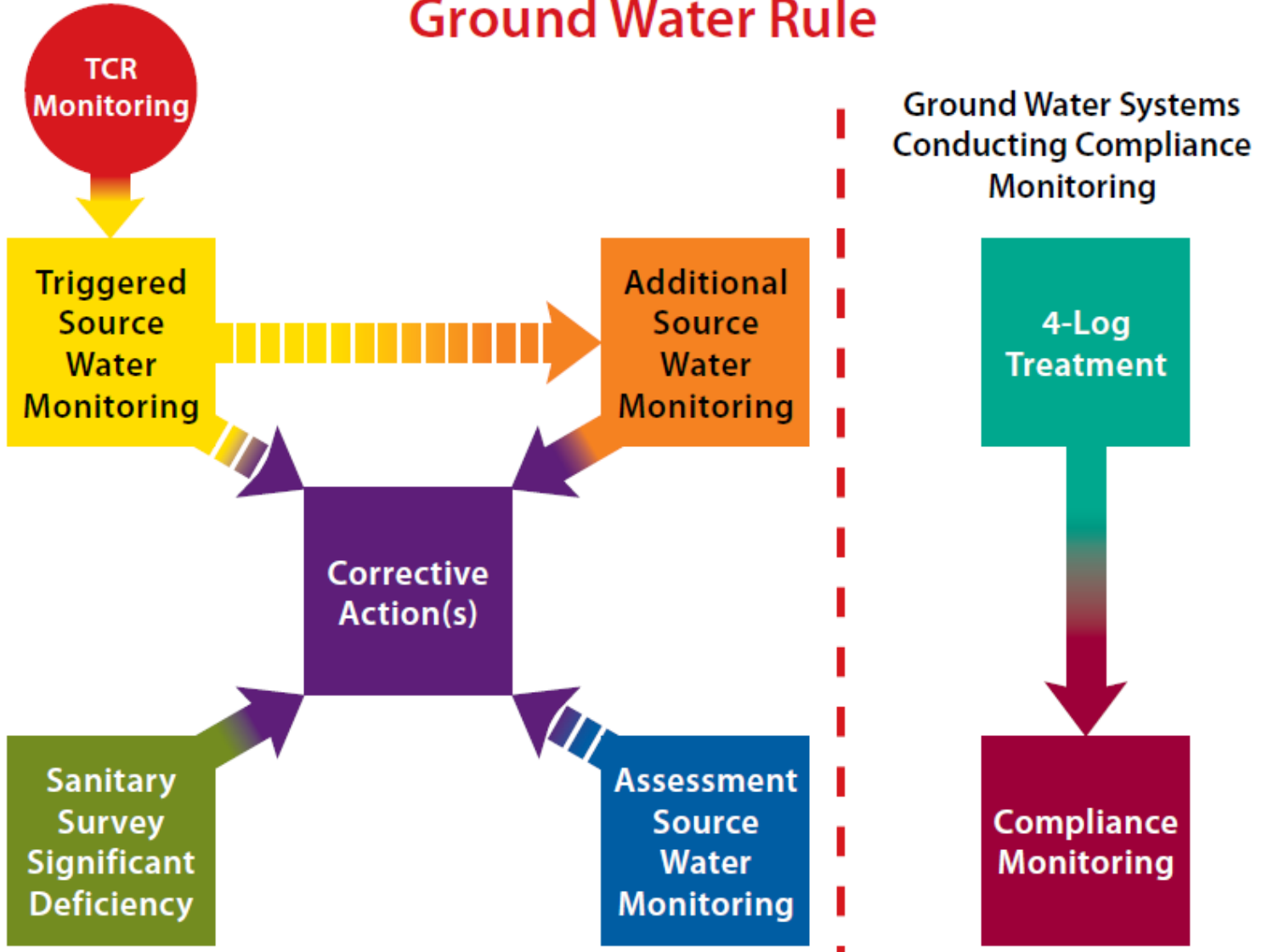
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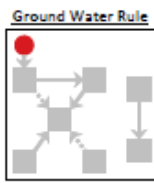
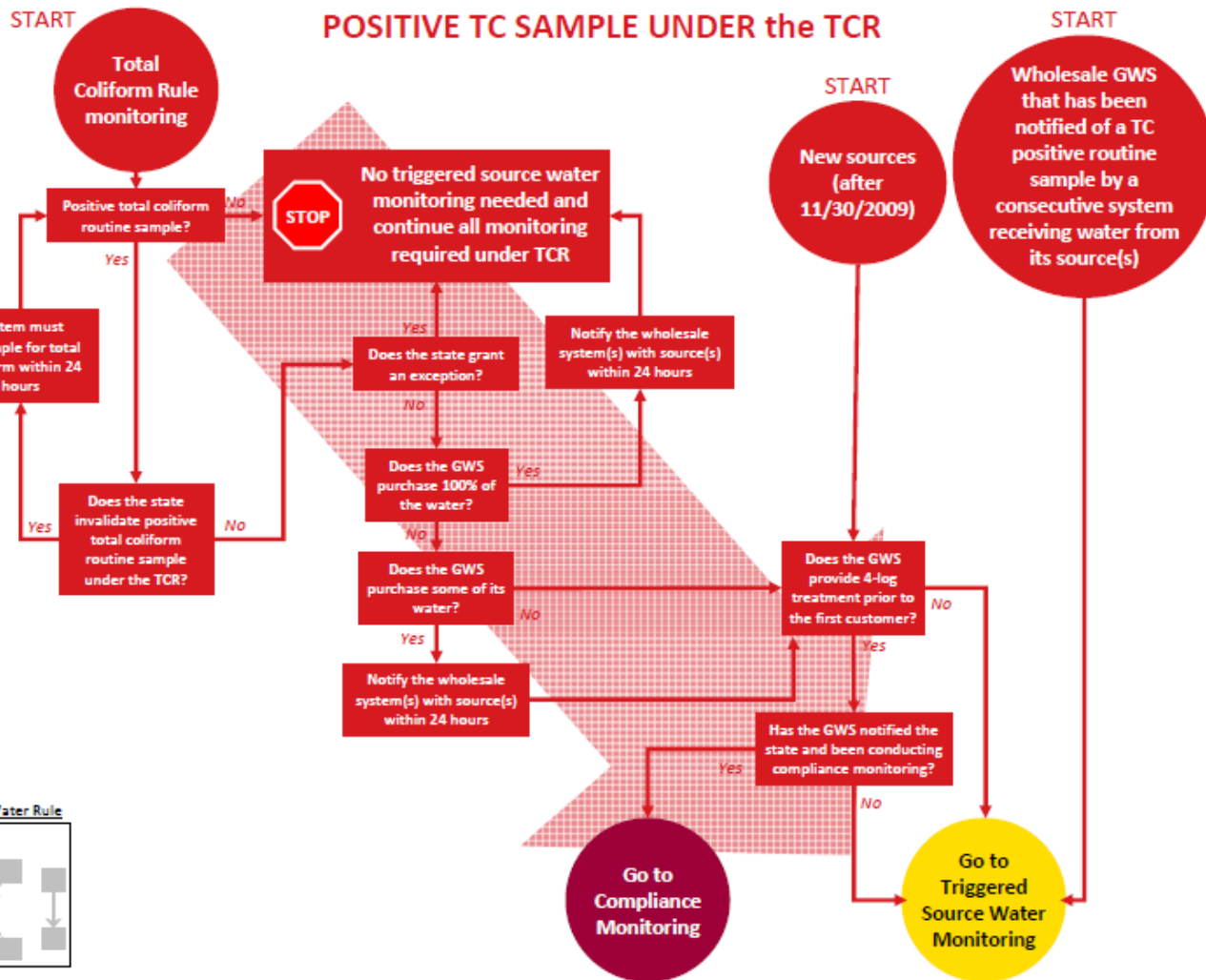
### Guidance on the Ground Water Rule

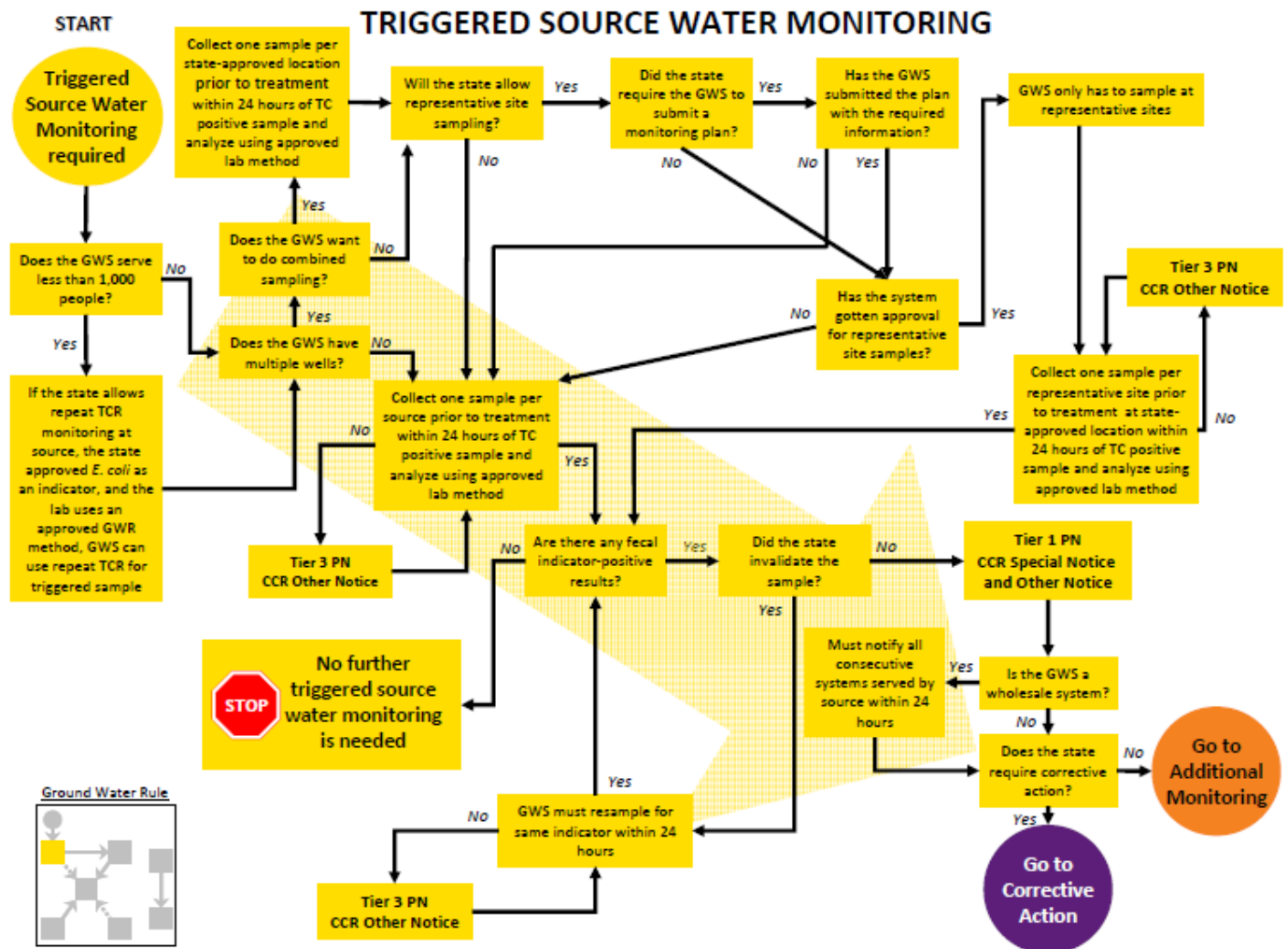
#### GWR Triggered and Representative Source Water Monitoring Guidance

This document provides guidance in meeting the triggered and representative monitoring requirements under the Ground Water Rule (GWR). A significant requirement of the GWR is that ground water systems (GWSs) that do not demonstrably provide adequate treatment to control viral pathogens (99.99% inactivation and/or removal) must test their source water for the presence of a fecal indicator when they encounter a total coliform-positive sample in the distribution system under the Total Coliform Rule. The triggered monitoring requirement is designed to allow

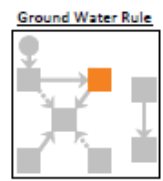
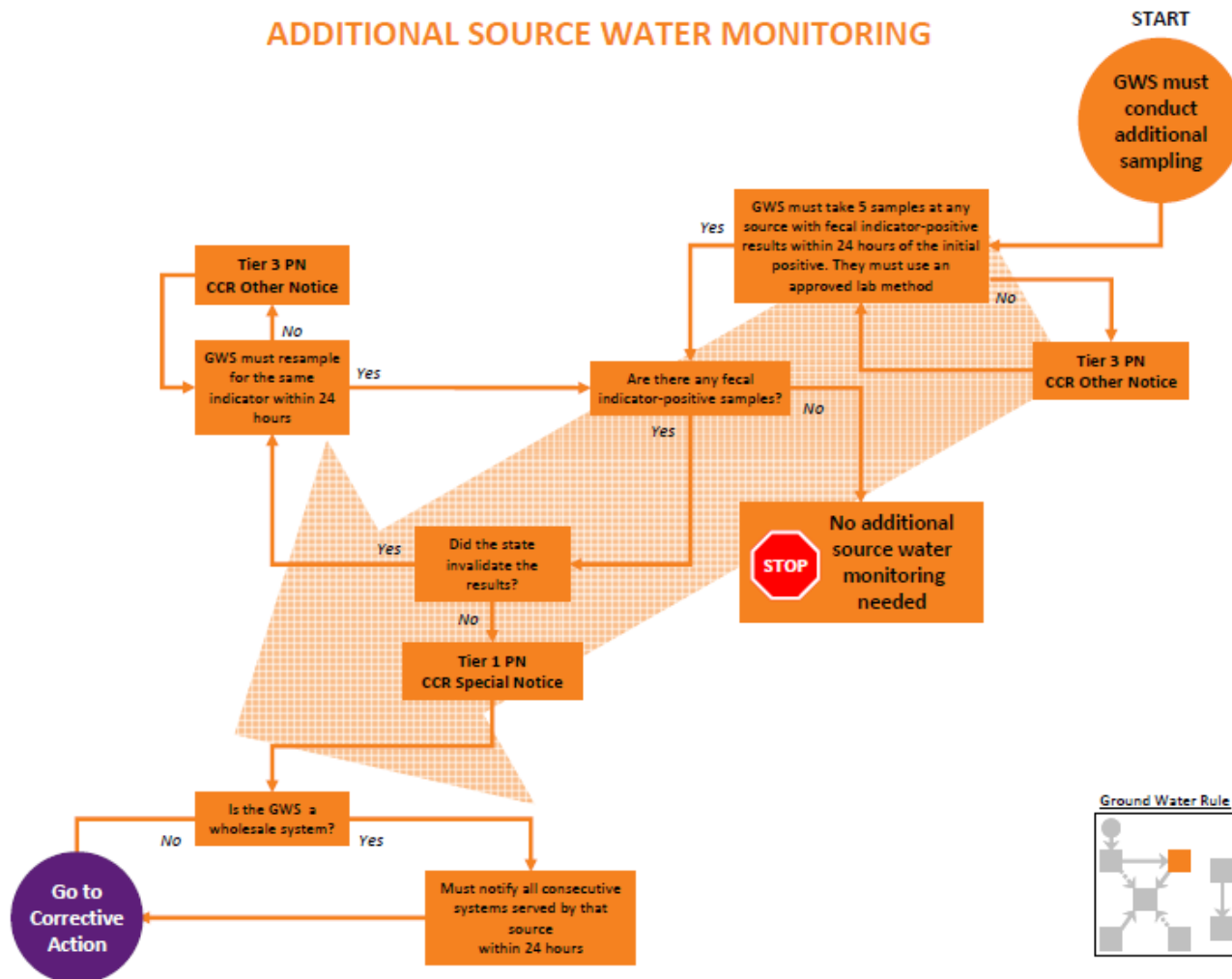
# Ground Water Rule



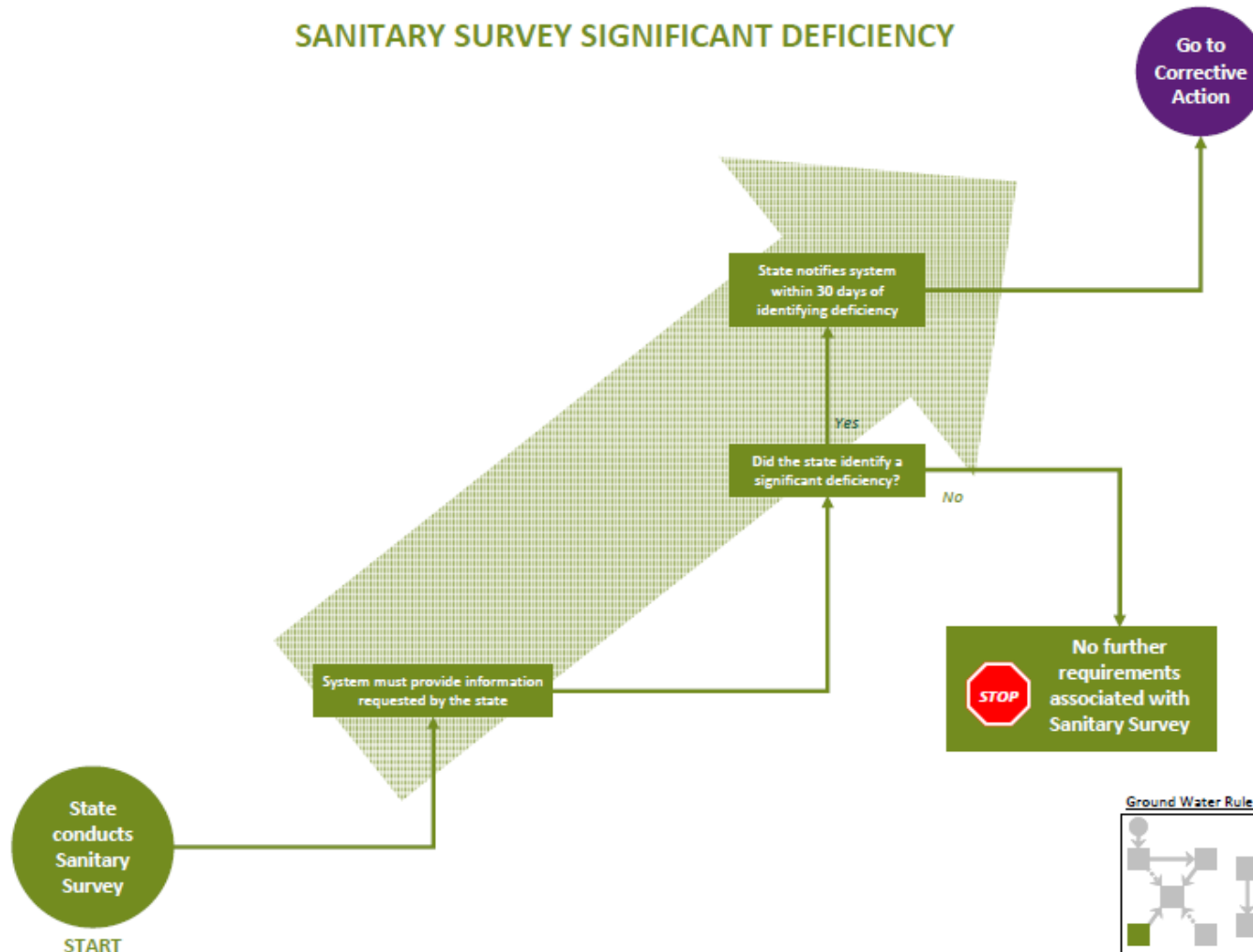




## ADDITIONAL SOURCE WATER MONITORING

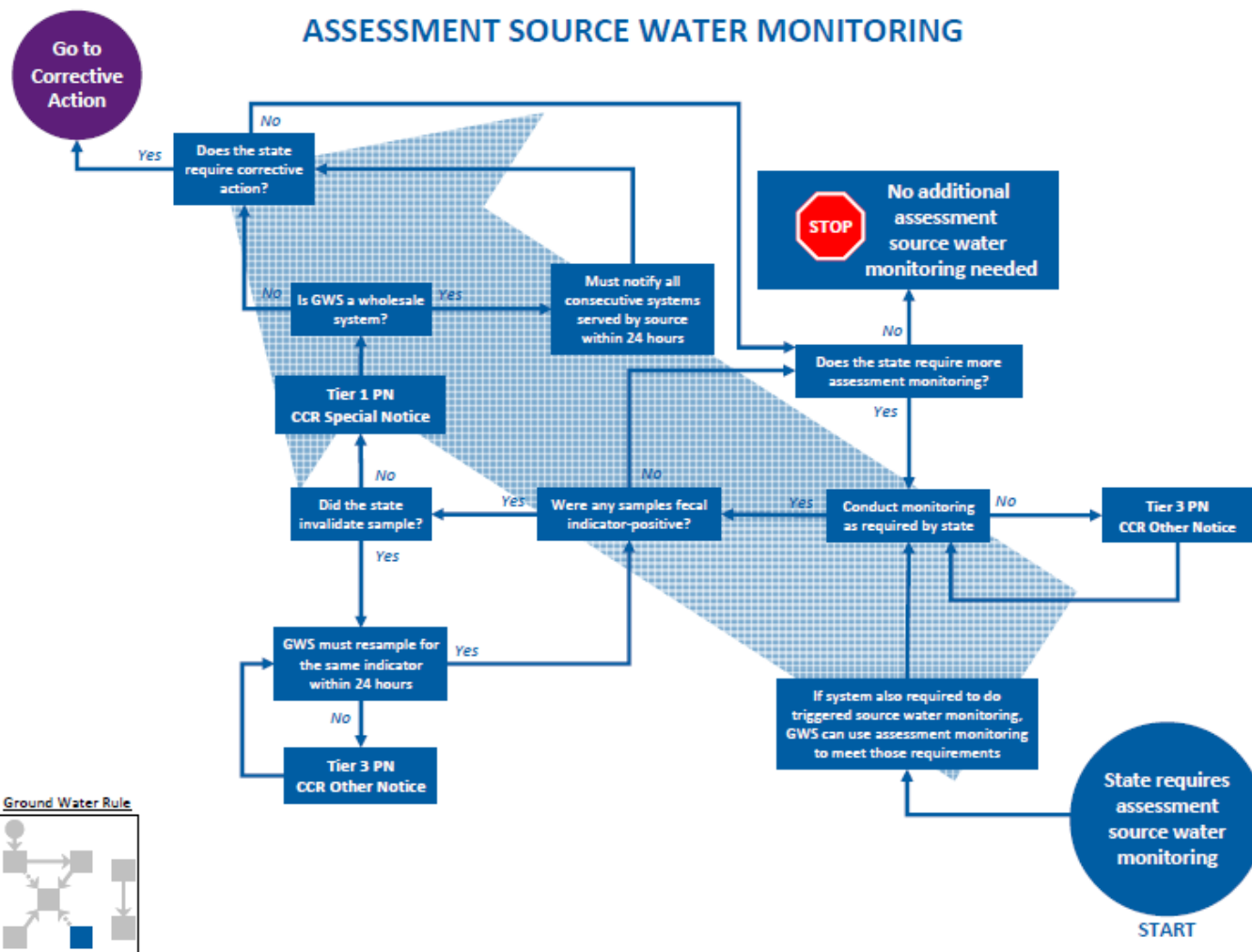


## SANITARY SURVEY SIGNIFICANT DEFICIENCY

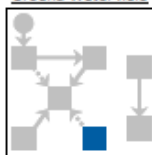




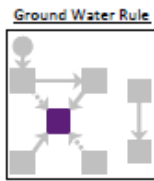
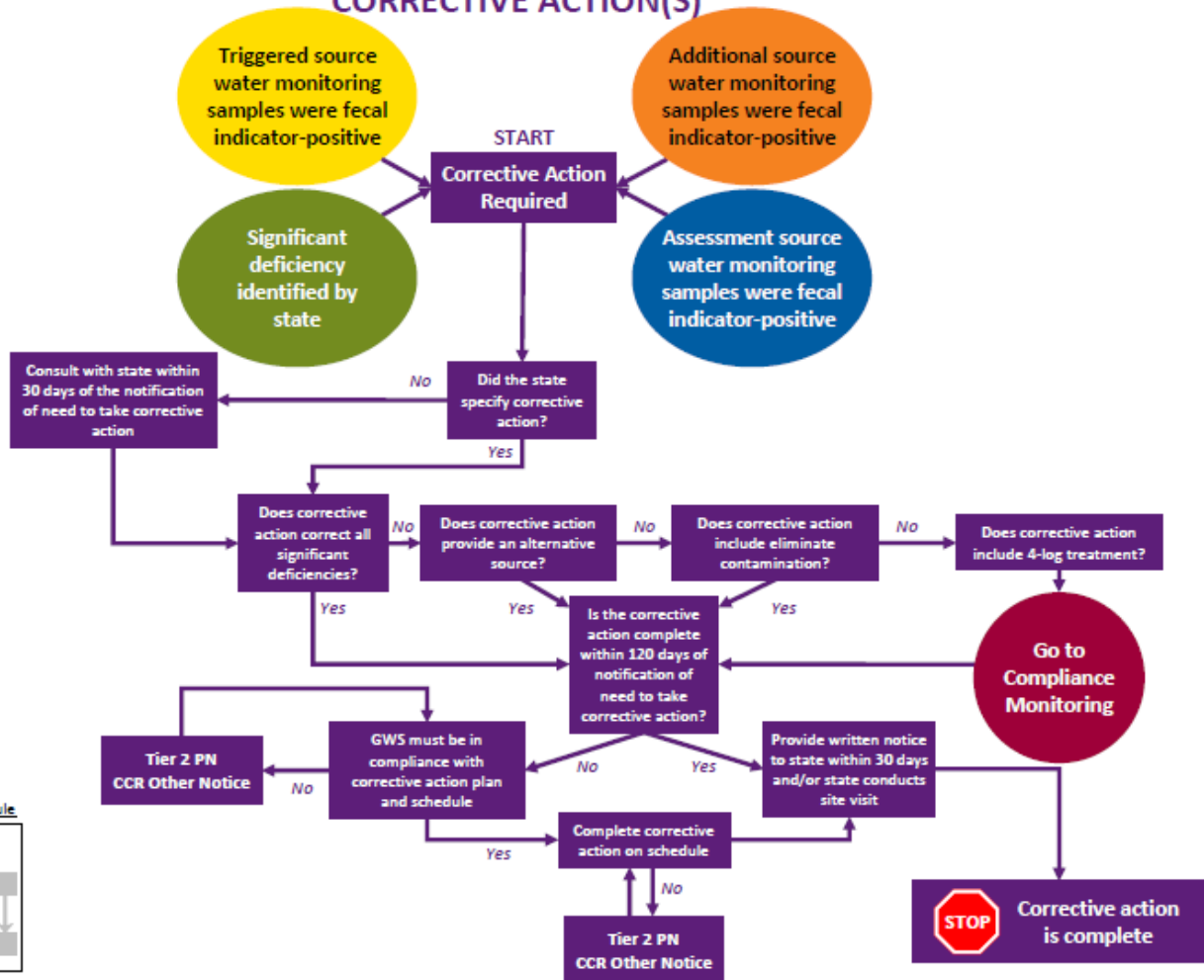
## ASSESSMENT SOURCE WATER MONITORING



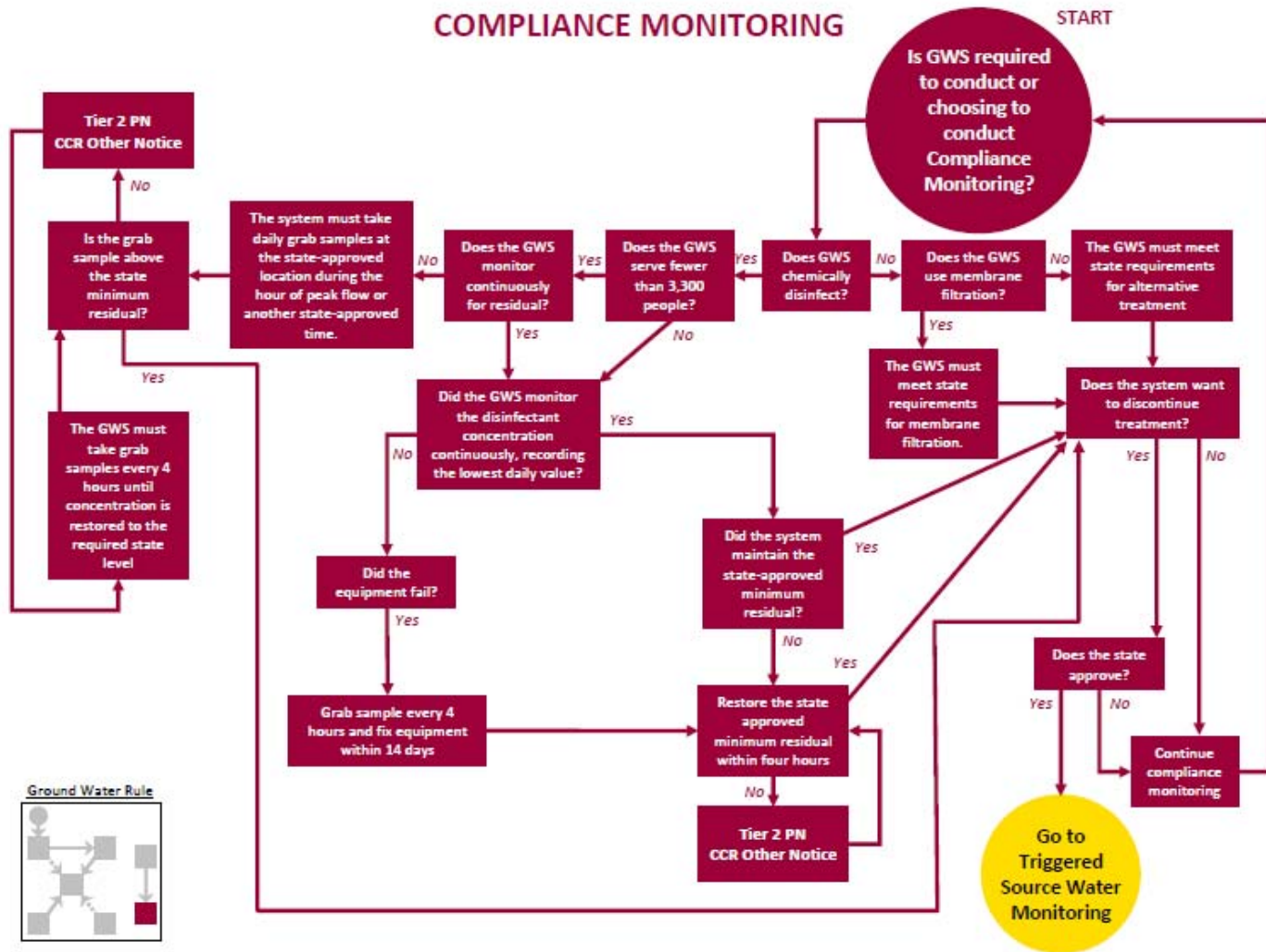
Ground Water Rule



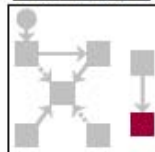
### CORRECTIVE ACTION(S)



## COMPLIANCE MONITORING



Ground Water Rule





[http://www.epa.gov/safewater/disinfection/  
gwr/pdfs/guide\\_gwr\\_stateimplementation  
appendices\\_final.pdf](http://www.epa.gov/safewater/disinfection/gwr/pdfs/guide_gwr_stateimplementation_appendices_final.pdf)

# Need more?



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**SANITARY SURVEY GUIDANCE MANUAL FOR  
GROUND WATER SYSTEMS**



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**GROUND WATER RULE CORRECTIVE ACTIONS  
GUIDANCE MANUAL**

November 2008  
EPA 815-R-08-011

# Need more?



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**GROUND WATER RULE  
TRIGGERED AND REPRESENTATIVE SOURCE  
WATER MONITORING GUIDANCE MANUAL**



## **Ground Water Rule Source Water Monitoring Methods Guidance**

Office of Water (4607M)  
EPA 815-R-07-019  
Revised March 2008

*Prepared for:*

U.S. Environmental Protection Agency  
Office of Ground Water and Drinking Water  
1200 Pennsylvania Ave, N.W.  
Washington, D.C. 20460

# More Concise



## Complying with the Ground Water Rule: Small Entity Compliance Guide

One of the Simple Tools for  
Effective Performance (STEP) Guide Series



# What else?

💧 Consecutive systems should consult the following guidance.....  
[http://www.epa.gov/safewater/disinfection/gwr/pdfs/guide\\_gwr\\_consecutive-guidance.pdf](http://www.epa.gov/safewater/disinfection/gwr/pdfs/guide_gwr_consecutive-guidance.pdf)  
(EPA 815-R-07-020)

💧 Consecutive systems and wholesalers that use GW sources should interact prior to the Rule to ensure that notifications and sampling occur within the required timeframes.





# Where is the Information?

<http://www.epa.gov/safewater/disinfection/gwr/index.html>

New England States'  
Sample Collection  
& Preservation Guidance Manual  
For Drinking Water

2009

Revision 4.2

May 1, 2009

💧 <http://www.epa.gov/NE/lab/qa/pdfs/NE-States-Sample-Collection-Manual.pdf>

SOP - MICROBIOLOGY

**READ INSTRUCTIONS CAREFULLY. LAB MAY REJECT SAMPLES IF ALL INSTRUCTIONS ARE NOT FOLLOWED. CONFIRM SCHEDULING AND INSTRUCTIONS WITH LAB BEFORE SAMPLING. WASH HANDS, WEAR SAFETY GLASSES, AND CLEAN NITRILE GLOVES.**

Refer to State-Specific Instructions:- [CT](#), [ME](#), [MA](#), [NH](#), [RI](#), [VT](#)

1. **Applicable Parameters:** Total Coliforms, Fecal Coliforms, Escherichia coli, Enterococci, Heterotrophic Bacteria (HPC), Male-Specific and Somatic Coliphage (See 40 CFR Part 141 for the most up to date list of approved methods.)
2. **Sample Location:** A state-approved location. If one has not been designated, select an appropriate location that is representative of the distribution system. Avoid threaded faucets.
3. **Sampling materials:**
  - 3.1. Containers: Sterile glass or plastic bottles with a minimum capacity of 125mL.
  - 3.2. Preservative: Sodium thiosulfate in powder or tablet; ice
  - 3.3. Other: Labels, marker, safety glasses, and clean disposable gloves.
4. **Safety Concerns:**
  - 4.1. Before collecting samples, all samplers must receive thorough training in proper handling of chemical preservatives and safety protocols so they are aware of the associated dangers and to determine appropriate safety precautions and first aid, should it be necessary.
  - 4.2. Sample bottles that have preservatives in them should be labeled accordingly. The specific chemicals should be identified.
5. **General Sample Collection Procedure:**

- 5.1.4. Turn on cold water tap and run for 4 to 5 minutes or until the water temperature has stabilized, whichever is longer. Then reduce flow so that stream of water is no greater than 1/8 inch in diameter.
- 5.1.5. Remove container cap. Do not put cap face down or in pocket. Do not allow inside of cap, inside of container or bottle threads to be touched by any object.
- 5.1.6. Do NOT rinse the bottle or remove any liquid or tablets in the bottom of the container. This may be the preservative.
- 5.1.7. Fill container, ensuring that at least 100mL of sample are collected, and leaving airspace of approximately one inch.
- 5.1.8. Carefully replace cap on container and tighten securely. Replace dust cover if applicable.



# NE Sample Collection Guidance

- 💧 Also includes a section that outlines sampling protocols specific to Connecticut.

- For information specific to Connecticut, visit the Drinking Water Section website
- [www.ct.gov/dph/publicdrinkingwater](http://www.ct.gov/dph/publicdrinkingwater)

## Ground Water Rule

SUMMARY: The Environmental Protection Agency developed the Ground Water Rule (40 CFR Parts 9, 141 and 142) to provide for increased protection against microbial pathogens in public water systems that use ground water sources. This final rule is in accordance with the Safe Drinking Water Act. The final rule became effective on January 8, 2007. The compliance date for public water systems, unless otherwise noted, for rule requirements is December 1, 2009.

The Ground Water Rule establishes a risk-targeted approach for ground water systems that are susceptible to fecal contamination, instead of requiring disinfection for all ground water systems. The occurrence of fecal indicators in a drinking water supply is an indication of the potential presence of microbial pathogens that may pose a threat to public health. This rule requires ground water systems that are at risk of fecal contamination to take corrective action to reduce potential cases of illness and death from exposure to waterborne microbial pathogens.

Groundwater public water supply systems that are currently considering upgrades or improvements to their sources of supply, storage facilities, or treatment systems should pay particular attention to the requirements of the GWR and assess the Rule's potential impact on the design and configuration of any proposed upgrades. Please also note that the GWR requires that all groundwater systems have the capability of sampling the raw water at each of their groundwater sources before any treatment as of December 1, 2009.

- [Conducting Source Water Sampling Under the Ground Water Rule](#) (pdf)
- [How Groundwater Systems with Chlorine, UV and/or Ozone Treatment Systems may be Affected by the GWR](#) (pdf)
- [Modifying a sampling site plan to allow use of representative sampling locations for triggered source water monitoring](#) (pdf)
- [Requirement to have raw water sampling taps for each groundwater source of supply](#) (pdf)
- [More information is available on EPA's website](#)
- [Click Here to view a presentation that explains the Ground Water Rule](#) (pdf)



# DWS Guidance Documents

- 💧 Conducting Source Water Sampling Under the Ground Water Rule
- 💧 How Groundwater Systems with Chlorine, UV and/or Ozone Treatment Systems may be Affected by the GWR
- 💧 Requirement to have raw water sampling taps for each groundwater source of supply
- 💧 Representative Monitoring (Tiziana)

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This afternoon



Next



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### **Groundwater Public Water Systems that Utilize Chlorine, UV, or Ozone Treatment**

On December 1, 2009, public water systems (PWSs) using groundwater sources will be required to comply with provisions of the [Ground Water Rule](#) (GWR). PWSs that use groundwater sources and use chlorination, ozonation or UV treatment systems may be affected differently by the monitoring provisions of the GWR.

PWSs that can substantiate that treatment of their groundwater sources is maintained to at least 4-log (99.99%) inactivation and/or removal of viruses will be exempt from the monitoring provisions of the GWR. PWSs that use chlorine, ozone or UV treatment that does not provide 4-log inactivation will likely be required to conduct additional monitoring to ensure that the treatment is not masking microbial pathogen contamination.

If you believe that the treatment system that is installed for your groundwater source(s) will provide 4-log treatment of viruses please submit written documentation to the Drinking Water Section (DWS). If the DWS concurs you will receive a written acknowledgement exempting your PWS from the monitoring provisions of the GWR, provided the compliance monitoring requirements of the GWR for your treatment system(s) are maintained.

The DWS's "[Technical Guidelines for Determining Disinfection "CT" When Using Chlorine for Chlorination of Groundwater Sources of Supply](#)" should be utilized as guidance in calculating and documenting the log removal of chlorination treatment system(s). The DWS believes a CT value of 6 is necessary under normal circumstances to achieve 4-log treatment of viruses. If you believe that 4-log treatment can be achieved with a lower CT at your PWS, you may provide evidence supporting that. For ozone systems, a minimum CT of 1.0 is necessary.

If you wish to submit data substantiating that a membrane filtration unit, UV disinfection system, or combination of treatment systems provides at least 4-logs of virus treatment, you must minimally provide the following as evidence:

- Validation of the log treatment indicated for a treatment unit. Acceptable validation methods include, but are not limited to, verification through industry, state or federal studies, including USEPA's ETV program or an actual in-situ validation conducted by the PWS.
- Verification that the UV dose can be reliably delivered with the site specific conditions of the system (if applicable), including water chemistry, flow rate changes, redundancy, backup power, etc.
- In the absence of DWS issued compliance monitoring requirements, a compliance monitoring plan that assures that the treatment unit(s) is/are being maintained to 4-log treatment of viruses.

Treatment systems installed in series can be approved provided that the sum total of treatment provides 4-log (e.g. UV+chlorine, membrane filtration+ UV, UV+UV+UV). There are currently no known single standalone UV units that will provide 4-log inactivation of viruses.

If you do not apply for and receive written approval from the DWS that your PWS achieves 4-log treatment prior to December 1, 2009, you will be required to comply with the monitoring provisions of the GWR until such time as DWS approval is granted.

Groundwater systems may wish to upgrade their existing treatment systems to provide 4-log treatment. An [application](#) for modifications or upgrades to treatment systems must be approved by the DWS prior to installation in accordance with Section 19-13-B102(d)(2) of the Regulations of Connecticut State Agencies.

If you have any questions, please contact Eric McPhee at [eric.mcphee@ct.gov](mailto:eric.mcphee@ct.gov) or 860.509.7333.



# Highlights of DWS Guidance Docs

- 💧 PWSs that can substantiate that treatment of their groundwater sources is maintained to at least 4-log (99.99%) inactivation and/or removal of viruses will be exempt from the monitoring provisions of the GWR.
- 💧 PWSs that use chlorine, ozone or UV treatment that does not provide 4-log inactivation will likely be required to conduct additional monitoring to ensure that the treatment is not masking microbial pathogen contamination.

# Highlights of DWS Guidance Docs

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# Highlights of DWS Guidance Docs

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  - 💧 In the absence of DWS issued compliance monitoring requirements, a compliance monitoring plan that assures that the treatment unit(s) are being maintained to 4-log treatment of viruses.



# Highlights of DWS Guidance Docs

- 💧 Each well must be able to be sampled individually. A dedicated tap should be installed for each well.
- 💧 For systems that do not currently have an instantaneous and totalizing flow meter installed on individual well discharge lines and plan to install raw water sampling taps, the department is recommending that a meter be installed at the same time as the sample tap(s).
- 💧 Meters are important to allow systems to determine if their supply is adequate to meet demands, and aid the department in determining compliance with separating distance requirements.



# DWS GWR Guidance Docs

💧 More to Come...check back frequently.  
[www.ct.gov/dph/publicdrinkingwater](http://www.ct.gov/dph/publicdrinkingwater)



# Questions?