

State of California—Health and Human Services Agency
California Department of Public Health



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To: All Public Water Systems Receiving or Providing Groundwater

STATE IMPLEMENTATION OF THE FEDERAL GROUNDWATER RULE

On November 8, 2006, the U.S. Environmental Protection Agency (EPA) published the federal Groundwater Rule (GW Rule), which was subsequently revised on November 21, 2006, for corrections to the analytical methods for source water monitoring. Please visit EPA's Web site at <http://www.epa.gov/ogwdw/disinfection/gwr/regulation.html> to review the final rules. It should be noted that the federal GW Rule contains many requirements left to the discretion of the states. Although the effective date was January 8, 2007, **compliance with the GW Rule begins December 1, 2009.**

As you know, California public water systems are required to meet all federal drinking water regulations, regardless of whether the California Department of Public Health (CDPH) has adopted parallel regulations. The purpose of this memorandum is three-fold:

- Provide a summary of the federal GW Rule and CDPH's intentions regarding adoption of the federal GW Rule requirements (Section 1, beginning on page 2 of this letter).
- Inform water systems of submittals to CDPH that may be needed *before* the compliance date of December 1, 2009 (Section 2, beginning on page 7).
- Provide information regarding a number of key state-discretionary issues (Section 3, beginning on page 9).

If you have any questions regarding the content of this memo, please contact CDPH's District Office overseeing your water system.

Sincerely,

Gary H. Yamamoto, P.E., Chief
Division of Drinking Water
and Environmental Management

SECTION 1

FEDERAL GW RULE OVERVIEW AND CDPH STATEMENT REGARDING ADOPTION OF A STATE RULE

The following summary is not intended to be an exhaustive summary of all of the federal GW Rule requirements, nor should it be used as a substitute for the regulations. For your convenience, reference to the federal section specifying a requirement has been included.

State adoption of GW Rule:

Currently, CDPH is planning to adopt the federal GW Rule, in its entirety, by reference. Although no accurate estimate of when the GW Rule would be adopted can be provided at this time, adopting the GW Rule by reference is expected to shorten the regulatory process.

Effective and Compliance Dates: [40 Code of Federal Regulations, §141.400(d)]

Although the effective date was January 8, 2007, compliance with the federal GW Rule begins December 1, 2009.

Purpose of the GW Rule:

The purpose of the GW Rule is to provide increased protection against microbial pathogens via four major regulatory components:

- Periodic sanitary surveys that include eight elements [§141.401(c)]
- Source monitoring triggered by a routine Total Coliform (TC) Rule positive
- Corrective action if there is:
 - A significant deficiency, or
 - Groundwater source fecal contamination.
- Monitoring to ensure treatment achieves 4-log inactivation/removal of viruses, if treatment is required or applied in lieu of performing triggered monitoring.

Applicability: [§141.400(b)]

The GW Rule applies to all public water systems serving GW, including:

- Wholesale systems supplying groundwater
- Consecutive systems buying groundwater
- Systems using a mix of groundwater and surface water

For the most part, the GW Rule does not apply if the groundwater receives treatment to comply with Surface Water Treatment Rule (SWTR). However, the treatment monitoring requirements specified in the GW Rule also apply to existing groundwater sources that treat to comply with the SWTR.

Triggered Source Monitoring:

For *each* distribution system *routine* TC Rule TC-positive, fecal monitoring is required from *all* groundwater sources* not receiving 4-log virus inactivation/removal, within 24 hours of being notified of the TC positive [§141.402(a)(2)]

- If the source sample is fecal positive, Tier 1 public notification is required **and** either 5 additional fecal samples (within 24 hrs) from the same source **or** corrective action is required [§141.402(a)(3); §141.402(g)]
 - If any of the 5 follow-up samples are fecal positive, continued Tier 1 public notification and corrective action is required [§141.402(g); §141.403(a)(1)]
 - The fecal indicator used must be *E. coli*, enterococci, or coliphage, as determined by the State.
- *All groundwater sources may not need to be sampled if representative monitoring has been approved. See Section 2 for more details.

Consecutive and Wholesale Systems: [§141.402(a)(4)(A)&(B); §141.402(g)]

- A consecutive system purchasing groundwater must notify its wholesaler within 24 hours of being notified of a routine TC Rule positive
- A notified groundwater wholesaler must perform triggered source monitoring within 24 hours of being notified by a consecutive system. If the fecal indicator is positive, the wholesaler must notify *all* their consecutive systems being served the groundwater within 24 hours and both the wholesaler and the consecutive system(s) must provide Tier 1 public notification.

Corrective actions (Treatment Techniques): [§141.403; §141.404]

- Corrective action must include at least one of the following:
 - eliminating the source of contamination
 - correcting the significant deficiency or deficiencies
 - providing an alternate source of water
 - providing 4-log virus inactivation/removal treatment
- The water system must consult with CDPH within 30 days of:
 - notice from CDPH of a significant deficiency
 - notice from CDPH as a result of the original fecal sample being positive
 - notice from lab that any one of the five sample-set was positive
- If corrective action is needed, within 120 days (or earlier if required by the State), the water system must:
 - complete the corrective action **or**
 - be compliant with a State-approved corrective action plan such that modifications to the plan are approved and interim measures, to protect public, are implemented
- It is a Tier 2 violation, if corrective action timeframes are not met

Significant Deficiencies: [broad examples included in §141.403(a)(4)]

- A significant deficiency does **not** have to be microbiologically related. A significant deficiency is a deficiency that CDPH determines to be causing, or have the potential for causing, the introduction of contamination into the water delivered to consumers.
- A community water system (CWS) must inform the public via their consumer confidence report (CCR) if a significant deficiency is not corrected by the end of the CCR reporting period [§141.403(a)(7)(i) via §141.153(h)(6)].

- A non-community water system (NCWS) has 12 months (or less if directed by the State) to correct a significant deficiency. If not met, the water system must inform the public of the significant deficiency, the plans to correct, and include information in appropriate language to non-English speaking customers (similar to Tier 3 PN). [§141.403(a)(7)(ii)]
- CWS and NCWS, if directed by the State, must include notice to public of corrections.

Assessment monitoring: [§141.402(b) and (f)]

- The State *may* require assessment monitoring. Typically, assessment monitoring would consist of on-going monthly monitoring of a source (i.e., not necessarily triggered by a positive TC distribution sample).
- While conducting assessment monitoring, any result that is fecal positive requires Tier 1 public notification.
- In addition, the State may require a system to implement a hydrogeologic sensitivity assessment. A hydrogeologic sensitivity assessment is a methodology used to identify whether systems are obtaining ground water from hydrogeologic settings that are sensitive to fecal contamination.

Treatment Monitoring: [§141.403(b)(3)(i)(A) & (B)]

A water system providing treatment to meet 4-log virus inactivation/removal, must comply with the following:

- If a water system serves > 3300 people, the water system must:
 - continuously monitor the residual and if the continuous analyzer is down, the system must:
 - take grab samples every 4 hours
 - resume continuous analyzing within 14 days
 - record the lowest daily residual value
 - meet the State-specified minimum residual
- If a water system serves ≤ 3300 people, the water system must:
 - monitor daily via grab samples at peak flow (or other time specified by the State)
 - meet the State-specified minimum residual and take grab samples every 4 hours if the water system fails to meet the minimum
- Failing to monitor as required leads to Tier 3 public notification [§141.403(d)]

A water system serving ≤ 3300 people may also continuously monitor and meet the requirements applicable to continuous monitoring. In addition, the GW Rule requires the water system to perform verifications and reporting pursuant to the SWTR [§141.74(a)(2)]

A water system choosing to use membrane filtration to meet the 4-log virus removal requirement must:

- have a parameter (e.g., molecular weight cut-off) that indicates 4-log virus removal
- be operated per State-specified requirements
- have a means for ensuring the membrane integrity is intact

A water system choosing an alternate treatment process must monitor and operate per CDPH requirements. UV may be used, but only in combination with other treatment.

Reporting: [§141.405(a)(1) - (3); §141.405(b)]

Water systems must:

- notify the State by the next business day if the water system fails to meet treatment operation criteria (e.g., if operation not restored within 4 hrs)
- notify the State within 30 days of corrective action completion
- notify the State and provide documentation, within 30 days, if the water system does not collect triggered samples because the routine TC Rule positive was taken from a location known to have conditions causing TC Rule positive results pursuant to §141.402(a)(5)(ii)
- maintain records of:
 - corrective actions (10 yrs)
 - public notice (3 yrs)
 - invalidations (5 yrs)
 - documentation of notification to wholesalers (5 yrs)
 - compliance monitoring performance, records of:
 - State-specified minimum disinfectant residual (10 yrs)
 - lowest daily residual, along with date and duration of failure to meet minimum for more than 4 hours (5 yrs)
 - State-specified requirements for membranes/alternatives treatments and failure to meet for more than 4 hours (5 yrs)

Public Notification:

- Tier 1 public notification is required when a GW Rule-required source water fecal indicator is positive [§141.402(g)]
- Tier 2 public notification is required when a treatment technique violation occurs, such as a failure to take corrective action(s) for a significant deficiency [§141.404(d)]
- Tier 3 public notification is required for failures to perform required source monitoring or treatment monitoring [§141.402(h); §141.404(d)]
- The State may require notice in CCRs when a significant deficiency is corrected

Periodic Sanitary Surveys:

The GW Rule requires CDPH to conduct sanitary surveys of water systems at specified frequencies. Furthermore, the sanitary surveys must include an evaluation of 8 elements [§141.401(b) and (c)] and must include an onsite review [§142.16(o)(2)].

- The 8 elements are:
 - (1) Source,
 - (2) Treatment,
 - (3) Distribution system,
 - (4) Finished water storage,
 - (5) Pumps, pump facilities, and controls,
 - (6) Monitoring, reporting, and data verification,

- (7) System management and operation, and
 - (8) Operator compliance with State requirements.
- CWS groundwater systems must have sanitary survey conducted every 3 years, with the first survey being conducted by 12/31/2012, unless the water system:
 - provides 4-log inactivation/removal of viruses or
 - has an outstanding performance record and no TC Rule MCL or monitoring violations, in which case the first sanitary survey may be performed as late as 12/31/2014 and a frequency of every 5 years is acceptable [§142.16(o)(2)(iii)]
 - NCWS groundwater systems must have sanitary survey at least every 5 years [§142.16(o)(2)(i)]

Miscellaneous:

The GW Rule also includes criteria for the following:

- Exceptions to triggered monitoring [§141.402(a)(5)], when triggered monitoring would not be required. The criteria include:
 - The routine TC Rule positive was collected from a location in the distribution system that causes TC positive results and
 - The State documents in writing that the routine TC Rule positive was due to a distribution system deficiency

Historically, CDPH has required or recommended “operational monitoring” for many groundwater sources, which typically includes on-going monthly/quarterly raw water coliform monitoring of wells. The data obtained from such operational monitoring will be a valuable tool in CDPH’s determination whether a TC Rule positive was due to a distribution system deficiency.

- Fecal sample invalidation. [§141.402(d)(1) and (2)]
- Treatment discontinuation. [§141.403(c)]
- Sampling Locations [§141.402(e)]: Samples must be collected before treatment unless the State designates a location after treatment. If sampling at a well is not possible, the State may approve an alternate location that is representative of the well.

SECTION 2
SUBMITTALS TO THE DEPARTMENT NEEDED BEFORE DECEMBER 1, 2009

There are three subjects related to the GW Rule that may necessitate a submittal of information to CDPH prior to the GW Rule compliance implementation date of December 1, 2009:

- When a water system would like to perform representative monitoring.
- When a water system seeks to have a source exempt from triggered monitoring by virtue of the source having 4-log inactivation/removal of viruses.
- When a water system is unable to sample at the well itself, resulting in the water system needing State approval to sample at an alternative location that is representative of the well.

These subjects are discussed in more detail below.

Representative Monitoring:

If permitted by the State, the GW Rule allows two types of representative monitoring:

- **Type 1:** When one groundwater source (or fewer than the total number of wells) represents a portion of the distribution system.

For example, assume Well A serves only Zone A and Well B serves only Zone B. In the event of a routine TC Rule positive in Zone A, with approval from CDPH, the water system would only be required to perform triggered source monitoring from Well A.

CDPH intends to permit this form of representative monitoring. To allow ample time for review and comment, if you would like to be allowed to perform this type of representative monitoring **you will need to submit a request** to CDPH's District Office overseeing your water system **by October 1, 2009**. The submittal should be in the form of a supplement to your TC Rule bacteriological monitoring plan; such as a table indicating the groundwater source (or sources) to be subject to triggered monitoring in the event of a TC positive from each distribution system sample site. The level of detail needed in the submittal to justify the requested representative monitoring will vary, depending on the water system. **Without an approved request, beginning December 1, 2009, you will need to monitor every groundwater source not being provided 4-log virus inactivation/removal for every routine TC Rule distribution system positive.**

- **Type 2:** When one well represents one or more other wells in the same aquifer.

Under this scenario, a routine TC rule positive may lead to monitoring only one well in a cluster of wells, rather than each well in the cluster. **CDPH does NOT intend on permitting this form of representative monitoring.**

Exemption of a source from triggered monitoring by virtue of proper treatment:

Under the GW Rule, groundwater sources receiving 4-log virus removal/inactivation are not subject to triggered monitoring in the event of a routine TC Rule distribution system positive. However, to be exempt from the triggered monitoring, the water system must

notify CDPH and "*include engineering, operational, or other information that the State requests to evaluate the submission*" [§141.403(b)(1)]. To qualify, a water system will need to submit information to CDPH as follows:

- If you have a groundwater source that has been issued a permit to meet 4-log virus removal/inactivation, you will not need to submit any information to CDPH before December 1, 2009. Such a well will not be triggered to be monitored for fecal indicators if there is a routine TC Rule positive; however, the treatment monitoring and reporting requirements in the GW Rule apply.
- If you have a groundwater source that either - 1) receives disinfection for which you would like to get credit for 4-log virus removal/inactivation or 2) does not receive disinfection, but you would like to add treatment to get credit for 4-log virus removal/inactivation - then you'll need to apply for a permit amendment and submit requisite information by September 1, 2009. Please contact the CDPH's local District Office for more details.

Sampling Locations: Section 141.402(e) requires samples to be collected before treatment, unless the State designates a location after treatment. Alternate locations may be approved by the State on a case-by-case basis. **If you cannot sample from the well, prior to treatment, you will need to submit a request for an alternative sampling location by October 1, 2009.** At a minimum, the request must include the reasons why sampling at the well is not possible and how sampling representative of the well will be performed.

SECTION 3
CDPH's POSITION ON KEY STATE-DISCRETIONARY ISSUES

- **Fecal Indicator:** *E. coli* is the fecal indicator that has been chosen by CDPH. However, CDPH may require coliphage monitoring of some wells (especially hard-rock wells) near those found to have *E. coli*, as an early warning indicator. It should be noted that by choosing *E. coli* as the fecal indicator, systems serving < 1000 persons will be able to use a GW Rule triggered source sample as one of the four TC Rule-required distribution system repeat samples.
- **Assessment Monitoring:** CDPH will require assessment monitoring on a case-by-case basis, using the following risk factors:
 - Sources in densely populated communities without centralized sewage treatment
 - Sources in shallow unconfined aquifers or thin soil cover
 - Sources with historical fecal contamination
 - Sources for which there are no recent, routinely collected, coliform monitoring data available
 - Sources with improper or unknown well construction
 - Source water assessment indicates potential contamination
 - Sources in aquifers in which viruses may travel faster/farther than bacteria (e.g., coastal plain sand aquifers)
 - Sources in sensitive aquifers (e.g., karst, fractured rock)

The assessment monitoring will include a minimum of 12 months of monthly raw water monitoring. Based on the risk factors above and the results of assessment monitoring, a hydrogeologic sensitivity assessment may be required to further assess sensitive aquifers.

- **Representative Monitoring:** As discussed in detail in Section 2, if permitted by CDPH, the GW Rule allows two types of representative sampling:
 - Type 1: A groundwater source (or sources) representing a portion of the distribution system.
 - Type 2: A groundwater source representing several groundwater sources in an aquifer.

CDPH does not intend on permitting Type 2 representative monitoring. Type 1 will be permitted. Requests to pursue Type 1 representative monitoring should be submitted to CDPH by October 1, 2009.

- **Five Fecal Samples vs Corrective Action:** Section 141.402(a)(3) of the GW Rule requires analyses of an additional five fecal samples from a source with a triggered monitoring fecal positive result, if the State does not require immediate corrective action. CDPH will require corrective action following any triggered monitoring fecal positive result. Please note that CDPH will not permit *on-going* use of a source that is known to be fecal-contaminated if the only barrier provided consists solely of 4-log

virus inactivation through disinfection. With 4-log treatment, a contaminated well may be used on an *interim* basis if:

- not using the source presents a greater potential health hazard (i.e. the well is the sole source),
 - the water system submits a plan to address the issue, and
 - the source undergoes frequent effluent TC and *E. coli* monitoring
- **Sampling Location:** Section 141.402(e) requires samples to be collected before treatment, unless the State designates a location after treatment. Alternate locations will need to be approved by CDPH on a case-by-case basis. See Section 2 for more details.
 - **Significant Deficiency Correction Notification:** If directed by the State, a water system with significant deficiencies that have been corrected, it must inform its customers of the significant deficiency, how the deficiency was corrected, and the date of correction. CDPH believes it is in the best interest of the water system to inform its customers of corrections for significant deficiencies, especially in those cases where the public was notified of significant deficiencies.