

GWR Special Primacy Language

State Michigan

CFR Citation 142.16(o)(2)(i)and(ii)

How the state will implement a sanitary survey program that meets the required schedule (with possibility of a phased schedule) and includes the 8 required elements.

State Language:

(i) The MDNRE is already conducting sanitary surveys that meet the requirements of the GWR as addressed in the IESWTR primacy package. The sanitary survey definition in Rule 108(a) includes these 8 components. The MDNRE intends to complete the surveys at the required frequencies and prior to December 31, 2012. 3/8/2010

(ii) The MDNRE will allow sanitary surveys to be completed in a staged process. It is often more appropriate to survey individual water treatment plants apart from the distribution system as a whole. This is especially true for wholesale supplies with consecutive customer supplies. Further, the activities from programs listed below may already serve to address one or more of the sanitary survey components:

1. Source water assessment and protection program;
 2. Wellhead protection area program;
 3. Operator training and certification programs;
 4. Technical assistance programs;
 5. Capacity development programs;
 6. Others
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State Michigan

CFR Citation 142.16(o)(2)(iii)

How the state will determine whether a CWS has an outstanding performance record in previous sanitary surveys.

State Language:

The frequency of a sanitary survey may be decreased from once every third year to no less frequently than once every fifth year, provided both of the following conditions are met:

3/8/2010

1. The CWS has demonstrated outstanding performance, as described later in this cell.
2. None of the following events has occurred since the last sanitary survey was conducted
 - i. There has been a significant change in the population or the size of the service area.
 - ii. The CWS lost key personnel.
 - iii. The CWS added additional pumping or storage facilities or made changes to the treatment system; including chlorine booster stations operated by the CWS for customer supplies.
 - iv. There were MCL or TT violations or water-borne disease outbreaks since the last survey, unless it can be shown that the events were unrelated to deficiencies in system construction, treatment practices, operation or management.

If a CWS meets all of the following criteria, it can be designated as having outstanding performance:

1. No significant deficiencies were cited since the last sanitary survey.
 2. The last sanitary survey performed had a satisfactory rating and the CWS addressed all of the survey recommendations.
 3. There have been no monitoring or reporting violations since the last survey.
 4. At least 90% of all cross connection testing and inspection requirements, per the CWS's approved program, were met by the CWS since the last sanitary survey.
 5. As required by Act 399 and the administrative rules promulgated thereunder, all of the CWS operators are up-to-date with certification requirements.
 6. At least 90% of the monthly operating reports (MORs) submitted by the CWS have been complete and on time since the last sanitary survey.
 7. All of the chemical feeds have been within the CWS's prescribed ranges or limits.
 8. The CWS capacity is sufficient to meet anticipated growth.
 9. Emergency preparedness measures and backup facilities exist.
 10. At Subpart H CWS, all Partnership for Safe Water optimization turbidity goals have been met since the last sanitary survey.
 11. Small, privately owned CWSs have received a copy of their wellhead delineation area.
 12. All other CWSs, except for Subpart S customer supplies, must have an approved wellhead protection program.
- FYI, the MDNRE recently established a policy on sanitary surveys and includes information about outstanding performance. It is available at www.michigan.gov/dnre, click on Environment > Inside DEQ > Water Bureau > WB Policy Guidance Documents under the Water Bureau Links category > Drinking Water Sanitary Surveys (WB-020)

State Michigan

CFR Citation 142.16(o)(2)(iv)

Definition and description of at least one specific significant deficiency in each of the eight sanitary survey elements.

State Language:

1. Source: flooded well casing.
 2. Treatment: unapproved chemical additive.
 3. Distribution system: failure to eliminate a cross connection.
 4. Finished water storage: unprotected openings in storage tanks.
 5. Pumps, pump facilities and controls: failure to maintain 5 pounds per square inch gravity in finished water buried piping.
 6. Monitoring, reporting, and data verification: failure to collect or report repeat coliform samples.
 7. Water supply management & operation: failure to provide a continuous supply of water meeting drinking water standards.
 8. Operator compliance with state requirements: failure to employ a properly certified operator in charge (OIC) in accordance with MDNRE policy.
- FYI, the MDNRE recently established a significant deficiency policy. It is available at www.michigan.gov/dnre, click on Environment > Inside DEQ > Water Bureau > WB Policy Guidance Documents under the Water Bureau Links category > Significant Deficiencies (WB-019).

3/8/2010

State Michigan

CFR Citation 142.16(o)(3)(i)

Criteria the state will use for extending the 24-hour time limit for a system to collect a ground water source sample to comply with source water monitoring requirements.

State Language:

- Consideration of when a waiver of the 24 hour time limit is appropriate includes such factors as:
- when the water supply is available to serve water to the public (seasonal or intermittent use of a noncommunity supply),
 - availability of sampling containers,
 - availability of an approved laboratory to perform the analysis when needed (taking into account holidays and weekends),
 - unsuccessful attempts by water supply operators to contact MDNRE staff to discuss delay problems.
- Other instances may occur which would have to be evaluated on a case by case basis.

3/3/2010

State Michigan **CFR Citation** 142.16(o)(3)(ii) Criteria the state will use for determining whether the cause of a total-coliform positive sample is directly related to the distribution system.

State Language: Criteria will be determined on a case by case basis but may include: 2/25/2010

- a water supply provides complete treatment* prior to the distribution system,
- water main repair,
- loss of pressure,
- storage tank deficiencies,
- recurring documented biofilm problems,
- and satisfactory coliform results from EPTDS samples or raw water samples if available.

* "Complete treatment" means a series of processes, including disinfection and filtration, to treat surface water or ground water under the direct influence of surface water, or to treat ground water not under the direct influence of surface water that uses precipitative softening, to produce a finished water meeting state drinking water standards.

State Michigan **CFR Citation** 142.16(o)(3)(iii) Criteria the state will use for determining whether to invalidate a fecal indicator positive source water sample.

State Language: MDNRE will use the information in 4.4.6.3 of the USEPA GWR Implementation Guidance. Specifically: 3/3/2010

- 1) If a laboratory establishes that improper sample analysis caused the fecal indicator-positive result.
- 2) If the fecal indicator-positive result is due to a circumstance or condition that does not reflect the water quality in the ground water source. This may be due to a sample collected at a tap not drawing from an active well or otherwise not drawing from an active raw water stream flowing into the distribution system

State Michigan **CFR Citation** 142.16(o)(3)(iv) Criteria the state will use to allow source water microbial monitoring at a location after treatment.

State Language: Sampling locations after treatment will only be allowed if both of the following conditions are met: 2/25/2010

1. The treatment (e.g. fluoride) will have no impact on microbial quality of water, and
2. It is not possible to directly sample the untreated water.

State Michigan **CFR Citation** 142.16(o)(4)(i) Process the state will use to determine that a system achieves 4-log treatment because the system has informed the state that it provides 4-log treatment in lieu of being subjected to source water monitoring requirements.

State Language: MDNRE will use the CT tables developed for the surface water treatment series of rules* and adopted by reference in Rule 722(3)(c) for determination of compliance. The state will also obtain guidance in the LT1ESWTR Profiling and Benchmarking guidance manual. 3/8/2010

* CT99.99 values in the tables in Appendix B of the LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual, May 2003

State Michigan **CFR Citation** 142.16(o)(4)(iii) State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve 4-log disinfection at or before the first customer.

State Language: MDNRE will consider the technologies listed in the Corrective Action Guidance Manual for 4-log inactivation or removal of viruses. These include chlorine (chlorine gas or hypochlorite), chlorine dioxide, ozone, ultraviolet (UV) radiation, anodic oxidation and membrane technologies. 3/3/2010

MDNRE will use the additional publications listed in the Corrective Action Guidance Manual as more detailed guidelines.

State Michigan **CFR Citation** 142.16(o)(4)(iv) Monitoring and compliance requirement the state will require for ground water systems treating to at least 4-log for approved alternative technologies.

State Language: The MDNRE currently has no approved alternative treatment technologies for treating to 4-log inactivation or removal of viruses. The MDNRE has no data or information to determine monitoring compliance requirements based on technologies not currently listed in the rule. If such technologies emerge, the MDNRE would use available or developed EPA guidance documents. 3/3/2010

State Michigan **CFR Citation** 142.16(o)(4)(v) Monitoring, compliance and membrane integrity testing requirements the state will require to demonstrate virus removal for ground water systems using membrane filtration technologies.

State Language: The MDNRE would require a water supply to adhere to procedures outlined in the Membrane Filtration Guidance Manual, USEPA 2005, to develop monitoring, compliance and membrane integrity testing for water supplies proposing to use membrane technology to meet the GWR. 3/3/2010

State Michigan **CFR Citation** 142.16(o)(4)(vi) Criteria the state will use to determine if a system may discontinue 4-log treatment.

State Language: For a CWS providing 4-log treatment in lieu of triggered monitoring, the MDNRE will require a CWS to notify the MDNRE prior to discontinuing the 4-log treatment and will require the CWS to comply with triggered source water monitoring provisions in 40 CFR §141.402(a), which crosses with Rule 739(1). 3/8/2010

Before the MDNRE will allow a CWS that has been providing 4-log treatment for some time to discontinue 4-log treatment, the MDNRE:

- will require the CWS to demonstrate compliance with part 8 groundwater source provisions*,
- will require the CWS to demonstrate a safe microbiological water quality history, and
- may require the CWS to demonstrate stability in other measurements of water quality.

As per the GWR, the CWS must then comply with triggered monitoring provisions.

The MDNRE will not allow a CWS with a fecally contaminated ground water source the option of providing 4-log disinfection in lieu of meeting Subpart H requirements.

* Part 8 groundwater provisions are R 325.10807 well location, R 325.10808 standard isolation area, R 325.10812 location of wells major sources of contamination, R 325.10813 study of hydrogeological conditions, R 325.10816 location of wells in area subject to flooding, R 325.10817 top of well casing, R 325.10818 minimum well casing depth, R 325.10819 well casing in rock formation, R 325.10820 water suction lines, and R 325.10822 grouting.

State Michigan **CFR Citation** Alternative Technologies Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding alternative technologies.

State Language: We will follow guidance published by the USEPA. 3/3/2010

State Michigan **CFR Citation** Assessment Monitoring Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the assessment source water monitoring.

State Language: Assessment monitoring will be on a case by case basis. Assessment monitoring will be based on groundwater formation vulnerability for proposed well construction and based on historical bacteriological records for existing wells. 3/3/2010

State Michigan **CFR Citation** Fecal Indicator Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding your state's choice of a fecal indicator.

State Language: E. coli. However, Michigan PWSs may sample for the presence of enterococci, or coliphage, if approved by the MDNRE. The state laboratory is currently certified for only E. coli, but not the other two (this may change). 3/3/2010

State Michigan **CFR Citation** Triggered Source Water M Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the triggered source water monitoring requirements.

State Language: All community ground water systems must collect untreated samples from each source for each TCR positive sample. Although not in Rule, MDNRE stipulates a sample must be collected from each well that provided water to the distribution system at any time 72 hours prior to the TCR positive result. A community water supply may wish to modify the 72 hour time period based on the size and complexity of its distribution system. Modification of the 72 hour policy must be approved in writing by the MDNRE. See the Michigan bacteriological sample siting plan for CWS template on our Web site at www.michigan.gov/dnre, click on Environmental Services, click on Water, click on Drinking Water, click on Community Water Supply, click on Reporting Forms under the Manuals Forms & Brochures category. 3/3/2010

State New York **CFR Citation** 142.16(o)(2)(i)and(ii) How the state will implement a sanitary survey program that meets the required schedule (with possibility of a phased schedule) and includes the 8 required elements.

State Language: New York already requires sanitary surveys at least as often as GWR requires. Guidance is being revised to reflect the details of evaluating and documenting all eight components, as applicable. 10/13/2009

State New York **CFR Citation** 142.16(o)(2)(iii) How the state will determine whether a CWS has an outstanding performance record in previous sanitary surveys.

State Language: New York does not plan to reduce sanitary survey frequency below currently required frequencies. Any system that has a disinfection waiver must be inspected more frequently. 9/25/2009

State	New York	CFR Citation	142.16(o)(2)(iv)	Definition and description of at least one specific significant deficiency in each of the eight sanitary survey elements.	
State Language:	An extensive list of significant deficiencies has been developed in a guidance document. The document also indicates that other deficiencies may be identified. List of deficiencies will be provided on request.				10/13/2009
State	New York	CFR Citation	142.16(o)(3)(i)	Criteria the state will use for extending the 24-hour time limit for a system to collect a ground water source sample to comply with source water monitoring requirements.	
State Language:	Consistent with current TCR requirements, extension of 24 hour time limits may be made when it is impractical because of lab availability, distance or weather or other conditions to collect samples within 24 hours of notification of a total coliform positive sample. Systems must consult with the state for time extensions. Systems are encourage to collect routine samples early in the week to avoid lab access issues.				9/25/2009
State	New York	CFR Citation	142.16(o)(3)(ii)	Criteria the state will use for determining whether the cause of a total-coliform positive sample is directly related to the distribution system.	
State Language:	Criteria for invalidation of total coliform positive samples is the same as is required under the total coliform rule. If a sample is invalidated, a replacment sample must be collected and further samples collected if it is positive. The state must be notified of the sample invalidation and records of any sample invalidation must be retained for at least 5 years. This should be easier to track once electronic data reporting becomes routine.				9/25/2009
State	New York	CFR Citation	142.16(o)(3)(iii)	Criteria the state will use for determining whether to invalidate a fecal indicator positive source water sample.	
State Language:	Similar to invalidation of distribution samples, the state must be notified and the record of the reason for invalidation must be retained for at least five years. A replacement sample/samples must be collected. In general, only quality control issues at a lab would be likely to be grounds for invalidation of a fecal indicator positive source water sample.				10/13/2009
State	New York	CFR Citation	142.16(o)(3)(iv)	Criteria the state will use to allow source water microbial monitoring at a location after treatment.	
State Language:	No plans to allow microbial monitoring after treatment. If a system that has a TC+ in distribution is unable to provide a raw water sample, they would be required to implement 4-log treatment and process compliance monitoring.				10/13/2009

State	New York	CFR Citation	142.16(o)(4)(i)	Process the state will use to determine that a system achieves 4-log treatment because the system has informed the state that it provides 4-log treatment in lieu of being subjected to source water monitoring requirements.	
State Language:	A form has been developed for evaluating existing treatment configurations for CT. Unless a system declares 4-log treatment, they will be required to perform triggered raw source water sampling.			9/25/2009	
State	New York	CFR Citation	142.16(o)(4)(ii)	Process the state will use to determine minimum required residual disinfectant concentrations for systems that use chemical disinfection.	
State Language:	Form has been developed to assist systems in determining minimum required disinfectant concentrations. Most existing systems will not have to demonstrate 4-log treatment unless sources are added.			9/25/2009	
State	New York	CFR Citation	142.16(o)(4)(iii)	State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve 4-log disinfection at or before the first customer.	
State Language:	Alternative technologies will be allowed if pilot testing or other methods demonstrates that the process can reliably meet treatment requirements.			10/13/2009	
State	New York	CFR Citation	142.16(o)(4)(iv)	Monitoring and compliance requirement the state will require for ground water systems treating to at least 4-log for approved alternative technologies.	
State Language:	If alternate methods are used, process compliance monitoring requirements must be part of the approval process. The requirements must be appropriately documented and all required maintenance must also be documented.			9/25/2009	
State	New York	CFR Citation	142.16(o)(4)(v)	Monitoring, compliance and membrane integrity testing requirements the state will require to demonstrate virus removal for ground water systems using membrane filtration technologies.	
State Language:	Required as part of the approval process for the site-specific design plan. The PWS and/or its consultant will demonstrate that the proposed technology is effective and the accompanying operations and monitoring plan will demonstrate ongoing effectiveness of the treatment process.			10/13/2009	

State New York **CFR Citation** 142.16(o)(4)(vi) Criteria the state will use to determine if a system may discontinue 4-log treatment.

State Language: On a case by case basis, if the system is able to demonstrate that there is no fecal contamination of the source, on a routine or on a periodic basis. 9/25/2009

State New York **CFR Citation** Alternative Technologies Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding alternative technologies.

State Language: Our guidance provides that alternate technologies may be used to provide or contribute to 4-log treatment. Effectiveness of treatment must be demonstrated using pilot studies or other means. 9/25/2009

State New York **CFR Citation** Assessment Monitoring Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the assessment source water monitoring.

State Language: Assessment source monitoring will typically be used when a system would like to install a new well without the ability to complete 4-log treatment prior to the first customer and would like to justify a lower contact time based on outstanding source water quality. We expect that this option will be utilized rarely. 10/13/2009

State New York **CFR Citation** Fecal Indicator Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding your state's choice of a fecal indicator.

State Language: While no fecal indicator is foolproof, E. coli will be used as the fecal indicator in most cases. To date, we find it to be a useful indicator. 9/25/2009

State New York **CFR Citation** Triggered Source Water M Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the triggered source water monitoring requirements.

State Language: Most ground water systems in New York State provide treated water to their customers. While our general design requirements for years have aimed at 4-log treatment or greater, not all systems achieve it. Most systems will be subject to triggered monitoring. Systems with multiple wells may prepare sampling plans to sample fewer than all raw water after a trigger, and after approval, may sample according to the plans. 9/25/2009

State Oregon **CFR Citation** 142.16(o)(2)(i)and(ii) How the state will implement a sanitary survey program that meets the required schedule (with possibility of a phased schedule) and includes the 8 required elements.

State Language: The sanitary survey report shall be completed by staff and sent to the water system following the site visit. The content of the sanitary survey report shall address, at a minimum, the following components of a water system: source of supply; treatment; distribution system; finished water storage; pumps, pump facilities and controls; monitoring, reporting and data verification; system management and operations; and operator certification compliance. 12/18/2009

Oregon will not use a phased review process.

State Oregon **CFR Citation** 142.16(o)(2)(iii) How the state will determine whether a CWS has an outstanding performance record in previous sanitary surveys.

State Language: The criteria for outstanding performance are: 12/22/2009

- 1) No Maximum Contaminant Level (MCL) or Treatment Technique violations in the last 5 years;
- 2) No more than one Monitoring and Reporting violation in the last 3 years. The one violation must be resolved (results submitted);
- 3) No significant deficiencies identified during the current water system survey; and
- 4) Has not had a waterborne disease outbreak attributable to the water system in the last 5 years.

State Oregon **CFR Citation** 142.16(o)(2)(iv) Definition and description of at least one specific significant deficiency in each of the eight sanitary survey elements.

State Language: A complete list of deficiencies is available here: 12/22/2009

http://www.oregon.gov/DHS/ph/dwp/docs/sansurveys/Deficiency_List.pdf

State Oregon

CFR Citation 142.16(o)(3)(i)

Criteria the state will use for extending the 24-hour time limit for a system to collect a ground water source sample to comply with source water monitoring requirements.

State Language:

Background: Similar to the existing requirement in OAR 333-061-0036 (5)(c) for the repeats under the Total Coliform Rule, the GWR requires the source samples to be collected within 24 hours of being notified by the laboratory of the positive in the distribution system. Also, as in 0036 (5)(f) (TCR), that Department is allowed the discretion to extend the 24 hour requirement for circumstances beyond the control of the water system.

12/22/2009

Policy & Procedure: Following are factors that will be considered in extending the 24 hour requirement. The Dept. must specify the amount of time the system has to collect the sample. Both the extension of the 24-hour time limit, and the specified amount of time the system has to collect the sample, need to be developed through consultation with the water system.

Lab availability: If the original positive came back at the end of the week, on Friday for example, and the lab is closed for the weekend, the water system may have until the next working day, when it is reasonable for appropriate transportation to be secured to get a follow up sample to the lab. For this reason, we recommend that TCR samples be collected on Monday or Tuesday.

Remote access: There needs to be some consideration for water systems that are remotely located from a certified lab. In some instances, it may not be feasible to arrange for overnight courier service so that a triggered source sample may be collected, and delivered to the lab within the 30 hour window between when the sample is collected, and lab test needs to be initiated.

Sample collector Endangerment: The 24-hour limit may be extended if certain conditions (severe weather, natural disaster-fire, flood) would put the sample collector in danger.

State Oregon

CFR Citation 142.16(o)(3)(ii)

Criteria the state will use for determining whether the cause of a total-coliform positive sample is directly related to the distribution system.

State Language:

Background: The purpose of the triggered source requirement as mentioned above, is to protect public health from fecally contaminated ground water sources. The Dept. may waive the triggered source requirement if the Dept. determines and documents that the original positive is due to a distribution system deficiency, rather than source deficiencies. 12/22/2009

Policy & Procedure: Following are the criteria that are acceptable to make this argument that a TC+ is due to distribution system conditions. It should be noted, that the documentation of distribution deficiencies should have been well noted before the original distribution sample returned total coliform positive.

Biofilm in distribution: If there are recurring documented biofilm issues within the distribution, and the TC+ is convincingly related to this biofilm growth. Such documentation would include visual inspections, or recurring water quality complaints that have documented slime or biofilm causes.

Storage tank contamination: After a storage tank inspection where contamination is evident. This could include observing floating material or debris in the storage reservoir, or obvious cracking/ leaking in the tank housing material.

After a main repair or repair of a storage tank. Following a repair job on distribution system infrastructure, such as a main leak, or leak in the tank, it would be normal to expect to see some contamination evident in a general assay such as the total coliform test. This would be expected to be due to the recent breach in system infrastructure.

Low pressure: In a zone of the distribution system where water pressure is negative or low, for example less than 20 psi, according to survey criteria. Such a low pressure could be cause for backsiphonage or back pressure from a source of non-potable water back into the potable waterline.

Cross-connection: When it likely appears that the result is due to a recent cross-connection observed and documented in the distribution system. This may become more applicable in the future when and if, the Department has a method or approach to formally document cross-connection or backflow incidents that would induce contamination into the distribution system, and potentially cause a TC+ there.

State Oregon

CFR Citation 142.16(o)(3)(iii)

Criteria the state will use for determining whether to invalidate a fecal indicator positive source water sample.

State Language:

Background: The GWR allows for the invalidation of a triggered ground water source sample that is fecal indicator-positive if either the lab indicates that improper sample analysis occurs, or the Department feels that the ground-water source sample does not reflect true source water quality. The Dept. will need to document its decision and rationale that the source sample does not reflect source quality in writing. An invalidated sample requires, the collection of a follow-up source sample within 24 hours using the same fecal indicator as the original sample. Again, the Dept. may extend the 24-hour requirement to take follow-up source samples based on the criteria outlined in item 1.

12/22/2009

Policy & Procedure: Below are the criteria for invalidating a source-fecal positive gw sample. [Note that, the Department needs to document its decision to invalidate a sample, along with the rationale for the decision, in writing. The decision needs to be approved and signed by the supervisor of the Department official who recommended the decision, and the document be made available to the public. The written documentation needs to state the specific cause of the fecal indicator-positive sample, and what action was taken by the system in response. The fecal-positive ground water sample should not be invalidated solely because repeat samples were negative.]

Improper lab analysis:

Criteria for invalidating a fecal-indicator positive sample may not be solely based on a belief that improper sample collection procedures were used. Inadequate sample collection techniques are not considered adequate rationale to invalidate a positive, because improper collector handling error is rarely determined to be a cause of fecal contamination.

While the laboratory should not run a test that exceeds holding time or other analytical requirements, the following items would necessitate invalidating the total coliform-positive ground water sample:

The lab would need to establish that an improper sample analysis caused the positive result. This would be an excursion of the 30 hour time frame from sample collection to initiation of analysis. Additionally, if the quality control parameters (including method and trip blanks, and appropriate positive and negative controls included with the sample) are not meeting adequate method-specific requirements, the sample may be invalidated.

Additionally, if one of the approved e.coli methods are not used, the samples would need to be invalidated.

Sample not representative of source: The Department would need to have substantial basis to state that a fecal indicator-positive source sample is not accurately representing source conditions. Only an extraordinary circumstance, such as finding a dead animal in the well, would be considered adequate justification for invalidating the sample.

State Oregon

CFR Citation 142.16(o)(3)(iv)

Criteria the state will use to allow source water microbial monitoring at a location after treatment.

State Language:

Background: Source water samples are to be collected at a location prior to any treatment. If the Department determines that sampling before treatment is not feasible and if the treatment is unlikely to have an adverse effect on sample analysis, collecting a sample after chemical treatment may be allowed. 12/22/2009

Policy & Procedure: Sampling locations after treatment will only be allowed if a system meets the following conditions: 1) the treatment will have no impact on microbial quality of the water, and 2) it is not possible to directly sample the untreated water. Not having a raw water sample tap is a significant deficiency, and one will need to be installed within 120 days after receiving written notice of the deficiency.

State Oregon

CFR Citation 142.16(o)(4)(i)

Process the state will use to determine that a system achieves 4-log treatment because the system has informed the state that it provides 4-log treatment in lieu of being subjected to source water monitoring requirements.

State Language:

Background: GW systems that provide 4-log treatment for viruses and wish to perform compliance monitoring of the treatment process instead of triggered source water monitoring must notify the Department in writing before December 1, 2009. Supporting information that confirms that the system provides 4-log treatment must be submitted by the GWS and reviewed by DWP staff. 12/22/2009

Policy & Procedure: Department staff will review the submittal from the GWS, using EPA developed virus CT tables that are included in the GWR Implementation Guidance. The review will include a determination of the of the appropriate treatment technology, treatment design and specifications constituting sufficient inactivation and or removal, the minimum contact time required for compliance to be achieved at the minimum disinfectant residual. Records of contact time calculations or records documenting maintenance of a minimum disinfectant residual will be reviewed as part of the water system survey (sanitary survey).

Effective contact times will be determined using guidelines presented in EPA's 1991 edition of Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources and also Appendix D in EPA's Disinfection Profiling and Benchmarking Guidance Manual which provide information on baffling factors, tracer studies and other related issues. Hydropneumatic pressure tanks and storage tanks that "float" on the system should not typically be considered for provision of contact time.

Department staff will consider a recently approved treatment plan review as documentation of 4-log treatment of viruses.

State Oregon

CFR Citation 142.16(o)(4)(ii)

Process the state will use to determine minimum required residual disinfectant concentrations for systems that use chemical disinfection.

State Language:

Background: GW systems that will conduct compliance monitoring instead of triggered source water monitoring must maintain a minimum disinfectant residual concentration at or before the first customer.

12/22/2009

Policy & Procedure: The Department proposes making the determination on a system-by-system basis. The GW System will need to submit documentation that clearly demonstrates 4-log treatment for viruses is achieved. Information that will need to be provided for the review will include contact volume, tank baffling (if any), maximum demand flow rates, coldest water temperature, pH, contact time calculations, and CT calculations. The preliminary deadline for submittals is December 1, 2009. The submittal will be reviewed by DWP staff for approval. A minimum disinfectant concentration capable of inactivating 4-log viruses using EPA's CT tables will be set for each system as part of the review process.

State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve 4-log disinfection at or before the first customer.

State Language:

Background: The provision to use any alternative technologies is provided under the GWR to allow the use of any technology other than chemical disinfection, or membrane filtration to meet the 4-log treatment requirement. It is also allowed to use an alternative technology in combination with chemical disinfection or membrane filtration, as long as the combined treatment meets the 4-log treatment requirement. It is staff's opinion that this provision is also included to allow for treatment technologies that may become available in the future to meet 4-log treatment, that do not currently exist for groundwater.

12/22/2009

Policy & Procedure:

At this time, staff do not recommend ground water systems utilize alternative treatment technologies, such as UV disinfection, to meet the 4-log treatment requirement in the GW Rule. Following are the reasons for this recommendation to not use technologies beyond the identified chlorine disinfection and membrane filtration technologies currently mentioned in the rule to meet the treatment requirement:

☐☐ Limitations of UV to treat viruses: The treatment level of 4-log treatment of viruses before or at the first user is based on the treatment of all viruses, including the adenovirus in the GWR. This particular virus is very difficult to treat with the use of ultraviolet light disinfection. The adenovirus is much more difficult to treat with uv light than certain parasites. For example, with the use of uv light, the uv dose required for 4-log inactivation of giardia and cryptosporidium is 22 millijoules per square centimeter (mJ/cm²), while the uv dose required for 4-log inactivation of viruses is 186 mJ/cm². See table 4-8 from EPA's January 2009 Ground Water Rule Implementation Guidance.

There currently are no known and commercially available uv disinfection treatment units available to meet this dose design criteria, and thus achieve 4-log treatment of viruses as a stand-alone technology. It is anticipated that with the implementation of the Ground Water Rule that additional uv technologies will be developed to achieve this dose to treat target organisms.

☐☐ Challenges of UV tracking and monitoring for small ground water systems: Unlike disinfection with chlorine, there is no residual concentration to monitor for after uv exposure to water to ensure that adequate parameters are met for the appropriate level of disinfection. This increases the complexity of monitoring and compliance for systems using uv, particularly for the smaller ground water systems. Many of the smaller ground water systems are not currently required to have certified operators with a Water Treatment or Water Distribution 1 classification. These smaller systems fall under 'small system' classification for operator certification, and have lower operator certification educational and experience requirements than a WD 1 or WT 1.

The tracking and monitoring requirements for systems utilizing UV focus on the ground water system monitoring their UV units daily to ensure that they are operating within validated conditions. That is, to ensure that they are meeting the required dose necessary to remove or inactivate to a 4-log level. The parameters to be monitored to verify that 4-log treatment is occurring with UV treatment alone or in combination with another technology, include, but are not limited to, UV intensity as measured by a sensor, flow rate, and lamp status. Additionally, UV reactors should be monitored regularly to diagnose operating problems, determine when maintenance is necessary, and maintain safe operation. In addition to monitoring these physical and

operational parameters, GWSs should also verify the calibration of the UV sensors. This is all required to ensure that the UV units are being operated at an adequate intensity and under adequate conditions to treat viruses to the 4-log required level. It is believed by staff that the frequent (daily) monitoring of UV parameters as outlined above, and the calculation of flow volumes where the UV criteria are not met, is more involved than many small ground water systems are currently set up to monitor for, to determine compliance.

It should be noted that Department staff are currently identifying a strategy to review UV system challenge studies which will attempt to identify a procedure for criteria to examine to review the study. It is anticipated that the monitoring and reporting of many of the parameters mentioned above will be more clearly outlined to systems choosing to disinfect with UV in the near future.

State Oregon

CFR Citation 142.16(o)(4)(iv)

Monitoring and compliance requirement the state will require for ground water systems treating to at least 4-log for approved alternative technologies.

State Language:

Oregon does not currently allow alternative treatment technologies. See response to item 142.16(o)(4)(iii)

12/22/2009

State Oregon

CFR Citation 142.16(o)(4)(v)

Monitoring, compliance and membrane integrity testing requirements the state will require to demonstrate virus removal for ground water systems using membrane filtration technologies.

State Language:

Background: Membrane filters exclude viruses primarily through a size exclusion mechanism. The integrity of the membranes must be maintained and verified by direct integrity testing.

12/22/2009

Policy & Procedure: The Department proposes to require pressure testing daily to verify that the removal efficiency is being achieved. This will match LT2 ESWTR requirements, outlined in OAR 333-061-0050(4)(c)(J)(vi), p. 264 of the rules.

State Oregon

CFR Citation 142.16(o)(4)(vi)

Criteria the state will use to determine if a system may discontinue 4-log treatment.

State Language: Background: A GWS may discontinue 4-log treatment of viruses if the Department determines and documents in writing that 4-log treatment of viruses is no longer necessary for that ground water source. 12/22/2009

Policy & Procedure: The Department proposes to allow discontinuation of 4-log treatment if one year of monthly source water monitoring demonstrates the absence of both total coliforms and fecal indicators (E. coli). The Department would also allow discontinuation of 4-log treatment if the contaminated source is replaced by a source that is free from contamination based on source water monitoring. It should be noted that a system that discontinues 4-log treatment, will be subject to the triggered source monitoring requirements outlined in OAR 333-061-0036(6).

State Oregon

CFR Citation Alternative Technologies

Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding alternative technologies.

State Language: Oregon does not currently allow alternative treatment technologies. See response to item 142.16(o)(4)(iii) 12/22/2009

State Oregon

CFR Citation Assessment Monitoring

Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the assessment source water monitoring.

State Language:

All groundwater systems that chlorinate or treat with ultraviolet and do not conduct compliance monitoring will be required to collect at least one source water sample annually. Some water systems identified through Source Water Assessments as being susceptible to fecal contamination will need to collect twelve monthly source samples during 2010. The assessment monitoring is designed to identify fecally contaminated sources which are being masked by ultraviolet treatment or a chlorine residual within the distribution system. One or more of the following must be true in order to require the twelve months of sampling:

12/22/2009

- The well or spring draws from what we consider to be a fecally contaminated aquifer; or
- The well is inadequately constructed with respect to current Water Resources Department construction standards and there is a fecal contaminant source within the 2-year Time-of-Travel Zone / Outreach Area around the well; or
- The spring is inadequately constructed with respect to current Drinking Water Program construction standards and there is a fecal contaminant source within the nearest recharge zone (i.e., Zone 1); and/or
- The aquifer that the well/spring draws water from is considered highly sensitive to contamination, and there is a fecal contaminant source within the 2-year Time-of-Travel Zone / Outreach Area (well) or within the nearest recharge zone (spring).

State Oregon

CFR Citation Fecal Indicator

Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding your state's choice of a fecal indicator.

State Language:

Oregon will use E. coli as the fecal indicator

12/22/2009

State Oregon

CFR Citation Triggered Source Water M Enter any ideas or thoughts your state has (that may be helpful to other states in the planning stage) regarding what and how you will implement the triggered source water monitoring requirements.

State Language:

OAR 333-061-0036(6)

1/4/2010

(q) Beginning on December 1, 2009, groundwater systems must conduct triggered source water monitoring if the conditions identified in paragraphs (6)(q)(A) and (6)(q)(B) of this rule exist.

(A) The groundwater system does not provide at least 4-log treatment of viruses before or at the first customer for each groundwater source; and

(B) The groundwater system is notified that a sample collected as prescribed in subsection (6)(b) of this rule is total coliform-positive and the sample is not invalidated as prescribed in subsection (6)(k) of this rule.

(r) If a groundwater system is notified, after November 30, 2009, that a sample collected in accordance with subsection (6)(b) of this rule is total coliform-positive, the water system must collect at least one source water sample, within 24 hours of the notification, from each groundwater source in use at the time the total coliform-positive sample was collected, except as provided in paragraph (6)(r)(B) of this rule.

(A) The Department may extend the 24-hour time limit on a case-by-case basis if the water system cannot collect the groundwater source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department must specify how much time the water system has to collect the sample.

(B) The Department may extend the 24-hour time limit on a case-by-case basis if the water system cannot collect the groundwater source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department must specify how much time the water system has to collect the sample.

(C) A groundwater system serving 1,000 people or less may use a repeat sample collected from a groundwater source to meet the requirements of subsections (6)(c) and (6)(r) of this rule for that groundwater source. If the repeat sample collected from the groundwater source is E. coli positive, the system must comply with subsection (6)(s) of this rule.

(D) Any groundwater source sample required by this subsection must be collected at a location prior to any treatment of the groundwater source, unless the Department approves an alternative sampling location. If the water system's configuration does not allow for sampling at the groundwater source, the water system must collect a sample at a Department-approved location representative of source water quality.

State South Carolina **CFR Citation** 142.16(o)(2)(i)and(ii) How the state will implement a sanitary survey program that meets the required schedule (with possibility of a phased schedule) and includes the 8 required elements.

State Language: Sanitary survey guidance manual is being revised to more closely reflect the 8 elements required by the GWR and how the State will determine and document significant deficiencies. A copy of the revised guidance will be sent to EPA once complete. 5/8/2009

For CWS, the frequency of sanitary surveys will be not less than once per 3 years. However, South Carolina maintains a goal of conducting sanitary surveys annually for all CWS. For NCWS, the frequency will be not less than once per 5 years.

A phased approach to sanitary surveys is not planned.

State South Carolina **CFR Citation** 142.16(o)(2)(iii) How the state will determine whether a CWS has an outstanding performance record in previous sanitary surveys.

State Language: Reduction in frequency of sanitary surveys to less than once per 3 years for CWS is not planned. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(2)(iv) Definition and description of at least one specific significant deficiency in each of the eight sanitary survey elements.

State Language: Definitions and examples for the 8 survey elements: 5/8/2009

- Source = condition of well pad, piping, or equipment causes potential for contamination.
- Treatment = inadequate application of treatment chemicals or chemicals not certified through NSF.
- Distribution = health-related water quality problems in the distribution system. Ex: TCR violations or persistent chemical MCL violations.
- Storage = condition of tanks(s) cause potential for contamination. Ex: improper or missing vent screens; inadequate hatch seals; inadequate internal cleaning or maintenance.
- Pumps and Controls = inadequate pump capacity to adequately maintain system flows and pressures.
- Monitoring/Reporting/Data Verification = system not adequately monitored or not meeting recordkeeping requirements
- Management and Operation = system does not correct previously identified deficiency associated with health risks.
- Operator Compliance = system is not in compliance with the state op cert requirements. Ex: operators failing to make daily facility visits; improper grade operators; operating without a license.

State South Carolina **CFR Citation** 142.16(o)(3)(i) Criteria the state will use for extending the 24-hour time limit for a system to collect a ground water source sample to comply with source water monitoring requirements.

State Language: Extensions will be evaluated on a case-by-case basis with consideration given to the following: lab availability and closures (weekends), mail service, extreme danger to the sample collector, or unavoidable delays. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(3)(ii) Criteria the state will use for determining whether the cause of a total-coliform positive sample is directly related to the distribution system.

State Language: Criteria include low disinfectant residual in an area being sampled (for systems that add disinfection), a recent line break and repair in proximity to the sample, a documented backflow event in the distribution system, or a documented leak in the distribution system. 5/9/2009

State South Carolina **CFR Citation** 142.16(o)(3)(iii) Criteria the state will use for determining whether to invalidate a fecal indicator positive source water sample.

State Language: Invalidations will only be allowed where compelling evidence indicates that the sample was contaminated during collection or transport. Where available and appropriate, EPA guidance will be followed. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(3)(iv) Criteria the state will use to allow source water microbial monitoring at a location after treatment.

State Language: Will only be allowed where it is not possible or practical to collect a sample before treatment and where the treatment is not expected to significantly impact water quality. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(i) Process the state will use to determine that a system achieves 4-log treatment because the system has informed the state that it provides 4-log treatment in lieu of being subjected to source water monitoring requirements.

State Language: Systems that intent to provide 4-log treatment for viruses must submit to the State a detailed plan on the treatment. EPA guidance on removal credit and/or inactivation ratios will be followed. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(ii) Process the state will use to determine minimum required residual disinfectant concentrations for systems that use chemical disinfection.

State Language: Minimum residual disinfectant concentrations will be based on CT tables, any removal provided, and other appropriate factors. The State will evaluate and set the minimum residual disinfectant level based on worst expected case water quality parameters (temperature and pH) and assign the minimum level to ensure that 4-log treatment is provided under the full range of expected operating conditions. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(iii) State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve 4-log disinfection at or before the first customer.

State Language: The State will follow available scientific data to include EPA's environmental technology verifications (ETVs) where appropriate. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(iv) Monitoring and compliance requirement the state will require for ground water systems treating to at least 4-log for approved alternative technologies.

State Language: Monitoring and compliance requirements will be established based on type of treatment being provided. State will use available guidance and monitoring protocols to ensure minimum 4-log treatment is provided under full range of expected operating conditions. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(v) Monitoring, compliance and membrane integrity testing requirements the state will require to demonstrate virus removal for ground water systems using membrane filtration technologies.

State Language: Manufacturers recommendations and ETVs will be used to set membrane integrity testing requirements. 2/13/2009

State South Carolina **CFR Citation** 142.16(o)(4)(vi) Criteria the state will use to determine if a system may discontinue 4-log treatment.

State Language: Must be demonstrated that that the source is not subject to fecal contamination and no significant deficiencies are evident that would adversely affect source water quality. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(2)(i)and(ii) How the state will implement a sanitary survey program that meets the required schedule (with possibility of a phased schedule) and includes the 8 required elements.

State Language: Sanitary survey guidance manual revised to reflect requirements of the Ground Water Rule. Tennessee intends to maintain a minimum 3-year frequency for all CWS and 5-year frequency for NCWS and will avoid any form of a phased approach. Survey scores will be based on the 8 criteria of 40 CFR § 141.401(b). For systems failing to receive a score above an assigned threshold, follow-up surveys will be conducted annually as resources allow. When the target frequency of once per 3 years for CWS cannot be met, the priority will be systems with "unsatisfactory" scores and systems that do not provide 4-log treatment. In situations where there are inadequate resources to maintain the 3-year frequency, those CWS with scores of "approved" (outstanding performance) and those that provide 4-log treatment will be completed every 5 years. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(2)(iii) How the state will determine whether a CWS has an outstanding performance record in previous sanitary surveys.

State Language: Sanitary survey score of 95% - 100%, as measured against the 8 required elements as those elements are applicable to a given system. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(2)(iv) Definition and description of at least one specific significant deficiency in each of the eight sanitary survey elements.

State Language: Definition in keeping with TN regulatory definition of a "significant potential contaminant source," which is as follows: a facility or activity that involves the handling of materials that could readily be introduced into the water supply source via spill, leakage, intentional discharge, or other release of contaminants and presents a likely threat to drinking water quality and the public health. 2/13/2009

One example for each of the 8 survey elements:
Source = wells of improper construction;
Treatment = inadequate disinfection contact time;
Distribution = negative pressures at any time;
Storage = uncovered finished water reservoir;
Pumps and Controls = inadequate pump capacity;
Monitoring/Reporting/Data Verification = chronic TCR coliform detections with inadequate remediation;
Management and Operation = inadequate follow-up to deficiencies noted in previous inspections/sanitary surveys;
Operator Compliance with State Requirements = operator does not have the correct certification.

State Tennessee **CFR Citation** 142.16(o)(3)(i) Criteria the state will use for extending the 24-hour time limit for a system to collect a ground water source sample to comply with source water monitoring requirements.

State Language: Extending of the 24-hour time limit for collecting the triggered source water sample will be allowed only under the situation of acceptable delays such as extreme conditions that would place the sampler in danger, where there is a lab availability problem or where there are extenuating circumstances. The system will be instructed to sample as close to the 24-hour window as possible. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(3)(ii) Criteria the state will use for determining whether the cause of a total-coliform positive sample is directly related to the distribution system.

State Language: Criteria include the results of follow-up distribution system sampling or system repairs, known recurring documented biofilm problems (which may include chlorine residual dropoff), storage tanks with contamination evident, main repair or storage tank repair event, low water pressure (less than 20 psi), or the presence of or suspected presence of a cross connection. 5/20/2009

State Tennessee **CFR Citation** 142.16(o)(3)(iii) Criteria the state will use for determining whether to invalidate a fecal indicator positive source water sample.

State Language: Criteria are the same as those presented for sample invalidation in provisions of the TCR at 40 CFR § 141.21(c). 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(3)(iv) Criteria the state will use to allow source water microbial monitoring at a location after treatment.

State Language: System must show that it meets two conditions: (1) Treatment will have no impact on microbial quality of the water, and (2) it is not possible to directly sample the treated water. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(i) Process the state will use to determine that a system achieves 4-log treatment because the system has informed the state that it provides 4-log treatment in lieu of being subjected to source water monitoring requirements.

State Language: State will send letter to systems notifying them of GWR requirements. Those systems expected to achieve 4-log treatment (serving > 50 connections or > 150 persons) will be informed that they must submit a letter certifying that they are meeting the contact time required to achieve 4-log treatment and a report that shows the treatment design and specifications constituting sufficient inactivation and/or removal, and documentation that they are meeting the minimum contact time required for compliance (15 min) to include the submission of records of flow through contact time estimate calculations and/or records documenting maintenance of a minimum disinfectant residual (0.2 mg/L) in the distribution system. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(ii) Process the state will use to determine minimum required residual disinfectant concentrations for systems that use chemical disinfection.

State Language: State regulations require that 0.2 mg/L residual be maintained throughout the distribution system and 15 minutes contact time be achieved prior to the first customer. Water systems will be required to provide this documentation. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(iii) State-approved alternative technologies that ground water systems may use alone or in combination with other approved technologies to achieve 4-log disinfection at or before the first customer.

State Language: Alternative technologies identified include ozone, UV, and chlorine dioxide. However, water systems that disinfect must maintain a minimum free chlorine residual in the distribution system and meet contact time requirements, so the alternative technologies will add additional protection (beyond 4-log). 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(iv) Monitoring and compliance requirement the state will require for ground water systems treating to at least 4-log for approved alternative technologies.

State Language: Alternative technologies like ozone, UV, and chlorine dioxide will add protection above and beyond the 4-log virus treatment achieved by the required residuals and contact time when disinfection is required. No requirements for the alternative treatments presented. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(v) Monitoring, compliance and membrane integrity testing requirements the state will require to demonstrate virus removal for ground water systems using membrane filtration technologies.

State Language: Systems that disinfect must maintain minimum residual and meet minimum contact time requirements to achieve 4-log treatment. Application of membrane technology will provide "extra" protection, but no testing requirements apply. 2/13/2009

State Tennessee **CFR Citation** 142.16(o)(4)(vi) Criteria the state will use to determine if a system may discontinue 4-log treatment.

State Language: Will not allow discontinuation of treatment. No criteria presented. 2/13/2009
