



**The Long Term 1 Enhanced  
Surface Water Treatment  
Rule (LT1ESWTR)  
Implementation Guidance**





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### ***Disclaimer***

This document provides guidance to states, tribes, and U.S. Environmental Protection Agency (EPA) Regions exercising primary enforcement responsibility under the Safe Drinking Water Act (SDWA) and contains EPA's current policy recommendations for complying with the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). Throughout this document, the terms "state" or "states" are used to refer to all types of primacy agencies including U.S. territories, Indian tribes, and EPA Regions. The statutory provisions and EPA regulations described in this document contain legally binding requirements. This document is not a regulation itself, nor does not it change or substitute for those provisions and regulations. Thus, it does not impose legally binding requirements on EPA, states, or public water systems. This guidance does not confer legal rights or impose legal obligations upon any member of the public.

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## Abbreviations

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CCR	Consumer Confidence Rule
CFE	Combined Filter Effluent
CPE	Comprehensive Performance Evaluation
CT	Contact Time
CTA	Comprehensive Technical Assistance
DBPP	Disinfection Byproduct Precursor
DE	Diatomaceous Earth
FBRR	Filter Backwash Recycling Rule
GAC	Granular Activated Carbon
GWUDI	Ground Water Under the Direct Influence
HAA5	Haloacetic Acids
HAV	Hepatitis A Virus
IESWTR	Interim Enhanced Surface Water Treatment Rule
IFE	Individual Filter Effluent
LT1ESWTR	Long Term 1 Enhanced Surface Water Treatment Rule
M/R	Monitoring/Reporting
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NTU	Nephelometric Turbidity Units
SDWA	Safe Drinking Water Act
SDWIS	State Drinking Water Information System
SNC	Significant Non-Compliance
SWTR	Surface Water Treatment Rule
TT	Treatment Technique
TTHM	Total Trihalomethanes
UV	Ultraviolet

## Purpose

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This document provides guidance to EPA Regions and states exercising primary enforcement responsibility under the Safe Drinking Water Act (SDWA) concerning how EPA interprets the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). It also provides guidance on how EPA intends to exercise its discretion in implementing the statute and regulations. This guidance articulates national policy on these issues.

The SDWA provisions and EPA regulations described in this document contain legally binding requirements. This document does not substitute for those provisions or regulations, nor is it a regulation itself. It does not impose legally-binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA and state decision-makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. Any decisions regarding a particular facility will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation, and EPA will consider whether the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations. EPA may change this guidance in the future.

Please note that, in several sections, the guidance makes suggestions and offers alternatives that go beyond the minimum requirements indicated. EPA does this to provide information and/or suggestions that may be helpful to implementation efforts. Such suggestions are prefaced by “may” or “should” and are to be considered advisory. They are not required elements of the LT1ESWTR.

Section I discusses the LT1ESWTR and presents timetables and timelines of important dates of this rule. Section II contains references for further information and guidance. Section III provides information for states to communicate the requirements of this rule to systems. Section IV covers state primacy revision requirements, including a detailed time frame for application review and approval. This section also contains guidance and references to help states adopt the new special primacy requirement included in this rule. Section V addresses violation determination and associated reporting requirements, including a violation table to assist states in their compliance activities. Section VI provides examples of language that can be used to comply with the requirements of the Public Notification Rule (PN Rule) and Consumer Confidence Reporting Rule (CCR).

The Appendices of this document also provide information that will be useful to states and EPA Regions throughout the primacy revision application process. Appendix A contains the primacy revision crosswalk for the rule. Appendix B contains the LT1ESWTR regulatory language. Appendix C contains a fact sheet, a quick reference guide, and a rule summary for systems. Appendix D contains flowcharts of rule requirements. Appendix E contains the *LT1ESWTR Data Entry Instructions with Examples*.



## **Section I**

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### **Rule Requirements**

community systems using a disinfected and protected ground water) for every system that collects fewer than five routine total coliform samples per month (typically systems that serve less than 4,100 people).

### *Surface Water Treatment Rule*

Public water systems using surface water or ground water under the direct influence of surface water are prone to microbial contamination of their source water. Pathogenic microorganisms contaminating source water are removed during the water treatment plant sedimentation and/or filtration processes. Disinfection is effective for some but not all pathogens which may be present. EPA issued the SWTR in response to Congress' mandate requiring disinfection, and filtration where necessary, of systems that use surface water sources. The SWTR applies to all systems that use surface water or ground water under the direct influence of surface water (GWUDI). The rule sets MCLGs for *Legionella*, *Giardia lamblia*, and viruses at zero since any exposure to these contaminants presents some level of health risk. The SWTR applies a treatment technique requirement for inactivation, or removal and inactivation, of these organisms.

Specifically, the SWTR rule requires that a surface water system have sufficient treatment to reduce the source water concentrations of *Giardia lamblia* by at least 99.9 percent (3-log) and viruses by at least 99.99 percent (4-log). In addition, a disinfection residual must be maintained throughout the distribution system. For systems that filter, the adequacy of the filtration process is determined by the treatment technology used and the turbidity of the treated water, since high levels of turbidity often indicate that the filtration process is not working properly. The goal of the SWTR is to reduce the public health risk for infection by *Giardia lamblia*, *Legionella* or viruses to less than one infection per year per 10,000 people. However, the SWTR does not account for systems with high pathogen concentrations in source water that, when treated at the levels required under the rule, still may not meet this health goal. The SWTR also does not specifically control for the protozoan *Cryptosporidium*, as sufficient information about its removal or disinfection was not available at the time the SWTR was finalized. Over the past 10 years, much has been learned about this organism. Most notably, *Cryptosporidium* is particularly resistant to disinfection practices commonly employed by public water systems. Therefore, physical removal of *Cryptosporidium* is the most effective method of public health protection.

### *1996 SDWA Amendments*

In 1990, EPA's Science Advisory Board, an independent panel of experts established by Congress, cited drinking water contamination as one of the most important environmental risks and indicated that disease-causing microbial contaminants (*e.g.*, bacteria, protozoa, and viruses) are probably the greatest remaining health-risk management challenge for drinking water suppliers. Data from the Centers for Disease Control (CDC) confirm this concern and indicate that between 1980 and 1996, 401 waterborne disease outbreaks were reported, with over 750,000 cases of disease (Craun 1998, 1997; Kramer et al. 1996). During this period, a number of agents were implicated as the cause, including protozoa, viruses, bacteria, and several chemicals. Most of the cases (but not the outbreaks) were associated with surface water, including a single outbreak of over 400,000 cases of cryptosporidiosis in Milwaukee (MacKenzie et al. 1994).

The SDWA was further amended in 1996 to improve public health protection. The 1996 Amendments incorporated new data on the adverse health effects of contaminants, the occurrence of contaminants in public water systems, and the estimated reduction in health risks that would result from further regulation. The amendments provided for use of best available peer-reviewed science in decision making and for risk reduction and cost analyses in the regulatory decision process.

Following the 1996 SDWA Amendments, the Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1 DBPR) and Interim Enhanced Surface Water Treatment Rule (IESWTR) were published in December

1998. These rules expand on the foundation of the TCR, SWTR, and TTHM standards to target health risks unaddressed by prior regulations.

### *Stage 1 DBPR*

All systems using surface water or GWUDI, and many systems using groundwater rely on a chemical disinfectant to inactivate pathogens. The public health benefits of common disinfection practices are significant and well-recognized; however, disinfection poses risks of its own. While disinfectants are effective in controlling many harmful microorganisms, they react with organic and inorganic matter (disinfection byproduct precursors) in the water and form DBPs, some of which pose health risks at certain levels. Since the discovery of chlorination byproducts in drinking water in 1974, numerous toxicological studies have been conducted that show some DBPs to be carcinogenic and/or cause reproductive or developmental effects in laboratory animals. Additionally, exposure to high levels of disinfectants over long periods of time may cause health problems, including damage to blood and kidneys. While many of these studies have been conducted at high contaminant doses, the weight-of-evidence indicates that DBPs present a potential public health problem that must be addressed, even at low levels. One of the most complex questions facing water supply professionals is how to reduce risks from disinfectants and DBPs while providing adequate protection against microbial contaminants. Much of the population is exposed to these risks; therefore, a substantial concern exists.

To address this concern, the Stage 1 DBPR updates and supersedes (as of December 2003) the 1979 TTHM standard. The Stage 1 DBPR lowers the MCL for TTHMs and establishes maximum residual disinfection level (MRDL) limits for chlorine, chloramines, and chlorine dioxide and new MCLs for chlorite, bromate, and five haloacetic acids (HAA5). It applies to all community water systems (CWSs) and nontransient noncommunity water systems (NTNCWSs) that add a chemical disinfectant for either primary or residual treatment. In addition, the Stage 1 DBPR requires conventional filtration systems to remove specified percentages of organic materials measured as total organic carbon (TOC) that may react with disinfectants to form DBPs.

### *IESWTR/FBRR/LT1ESWTR*

The IESWTR builds on the SWTR by adding protection from *Cryptosporidium* through strengthened combined filter effluent turbidity performance standards and individual filter turbidity provisions. It applies to systems that serve greater than 10,000 people. For unfiltered systems, *Cryptosporidium* must be included in watershed control requirements. In addition, the IESWTR builds on the TCR by requiring sanitary surveys for all public water systems using surface water or ground water under the direct influence of surface water. The IESWTR also requires covers for all new finished water storage facilities and includes disinfection profiling and benchmarking provisions to ensure systems provide continued levels of microbial protection while taking the necessary steps to comply with the DBP standards.

The provisions in the Long Term 1 Enhanced Surface Water Treatment Rule address the concerns covered by the IESWTR as they apply to small systems (i.e., systems serving fewer than 10,000 people) using surface water or ground water under the direct influence of surface water (GWUDI). Collectively, the SWTR, IESWTR, and LT1ESWTR place stringent treatment requirements on systems using surface water (or GWUDI) as a source.

The Filter Backwash and Recycling Rule (FBRR) complements the surface water rules by reducing the potential for microbial pathogens, particularly *Cryptosporidium* oocysts, to pass through the filters into the finished water of systems that use conventional and direct filtration. The FBRR requires affected systems to report recycle practices to the state, maintain specific records, and return spent filter backwash,

thickener supernatant, or liquids from dewatering processes through all the processes of a system's existing conventional or direct filtration system or to an approved alternate location.

By building on the foundation set forth by the original SDWA, subsequent amendments to the Act have improved the quality of drinking water and increased public health protection. The LT1ESWTR is part of a series of rules which expand on the foundation of prior rulemaking efforts. By encompassing previously unaddressed health risks from microbials and disinfection byproducts, the M-DBP Cluster continues to maximize drinking water quality and public health protection.

### **1.1.2 Development of the LT1ESWTR**

1412(b)(2)(c) of the 1996 SDWA Amendments required EPA to develop rules to balance the risks between microbial pathogens and disinfection byproducts. In 1997, a Federal Advisory Committees Act (FACA) process was implemented with the Microbial-Disinfectants/Disinfection Byproducts (M-DBP) Advisory Committee. The M-DBP Committee Negotiations resulted in:

- An Information Collection Rule (ICR) to collect information necessary to reduce many key uncertainties prior to subsequent negotiations for the M-DBP rules;
- A companion Enhanced Surface Water Treatment Rule (proposed in three stages) and the FBRR; designed to improve control of microbial pathogens and prevent inadvertent reductions in microbial safety as a result of DBP control efforts; and,
- A staged approach to regulation of DBPs (referred to as the Stage 1 and Stage 2 DBPRs) incorporating Maximum Contaminant Levels (MCLs), Maximum Residual Disinfectant Levels (MRDLs), and treatment technique requirements.

EPA began outreach efforts to develop the LT1ESWTR in the summer of 1998. In addition, several formal and informal meetings on the LT1ESWTR were held with stakeholders, trade associations, and environmental groups. Small entity representatives also contributed valuable input as part of the Small Business Regulatory Enforcement Fairness Act (SBREFA) panel process. In early June 1999, EPA mailed an informal draft of the LT1ESWTR preamble to approximately 100 stakeholders. EPA received valuable suggestions and stakeholder input from 15 state representatives, trade associations, environmental groups, and individual stakeholders. The proposed LT1ESWTR was published in the *Federal Register* on April 10, 2000 (65 FR 19046). EPA held a public meeting in Washington, DC on April 14, 2000 to discuss the proposed rule. Additionally, the proposed rule was either presented or discussed in nearly 50 meetings across the U.S., including a May 30, 2000 meeting in Washington, DC. Finally, EPA requested comments by mailing approximately 200 copies of the proposed rule to stakeholders. These comments were reviewed and evaluated while developing the final rule. Responses to all of the comments are found in EPA's *Public Comment and Response Summary for the Long Term 1 Enhanced Surface Water Treatment Rule* (EPA Doc #815-R-01026, October 26, 2001).

### **1.1.3 Benefits of the LT1ESWTR**

The LT1ESWTR will improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through filtration improvements at small water systems. Based on the risk assessment performed for the Regulatory Impact Analysis, the LT1ESWTR is expected to reduce the mean annual number of endemic illnesses (constant, low-level



presence of a disease or infection) from *Cryptosporidium* by 12,000 to 41,000 cases. Based on these values, the mean estimated annual benefits of reducing the illness range from \$9.5 million to \$58.3 million per year. This calculation is based on a valuation of \$796 to \$1,411 per incidence of cryptosporidiosis prevented. The LT1ESWTR will also reduce the risk of more severe health impacts on sensitive populations, including the risk of mortality. Additionally, the LT1ESWTR will reduce the likelihood of outbreaks of giardiasis and its associated costs by providing a larger margin of safety against such outbreaks in some systems.

## **1.2 Comparing LT1ESWTR, IESWTR and the SWTR**

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The LT1ESWTR builds upon the framework established by the IESWTR (subpart P); many of the two rules' provisions are identical. In turn, both rules supplement the requirements of the SWTR (subpart H), by modifying some provisions. Although LT1ESWTR and IESWTR are similar, they target different population categories and there are some other differences between the two which affect system and state responsibilities.

State staff dealing with all three of the surface water treatment rules may want to know how the rules complement each other and the areas that differ. Knowing the differences will enhance the effectiveness of technical assistance, record review, follow-up, and enforcement issues. Table 1.1 provides an overview of sections of the three rules which have comparable, but not identical, provisions. Comparisons are also included as a footnote at the end of the table for the new DBP MCL, disinfectant MRDL and related monitoring requirement provisions of the Stage 1 DBPR (subpart L).

OVERVIEW OF SWTR, IESWTR, & LTIESWTR PROVISIONS				
APPLICABILITY: All public water systems that use surface water or ground water under the direct influence of surface water (Subpart H)		SWTR 1989	IESWTR 1998	LTIESWTR 2002
Population Served	≥10,000	✓	✓	N/A
	<10,000	✓	N/A (except for sanitary survey provisions)	✓
Type of Filtration	Conventional	✓	✓	✓
	Direct	✓	✓	✓
	Slow Sand	✓	✓	✓
	Diatomaceous Earth	✓	✓	✓
	Alternative (e.g., membranes, cartridges, etc.)	✓	✓	✓
Filtered Systems-- Turbidity Performance Standards	Combined Filter Effluent	✓	✓	✓
	Individual Filter Effluent (Conventional & Direct Filtration Only)	N/A	✓	✓
Unfiltered System Requirements	Avoidance Criteria	✓	Regulated under SWTR	Regulated under SWTR
	--Watershed Control Program	✓	✓ (includes Crypto)	✓ (includes Crypto)
Regulated Pathogens	99.99% (4-log) removal/inactivation of viruses	✓	✓	✓
	99.9% (3-log) removal/inactivation of <i>Giardia lamblia</i>	✓	✓	✓
	99% (2-log) removal of <i>Cryptosporidium</i>	N/A	✓	✓
Disinfection Residual Requirements	Entrance to distribution system (>0.2 mg/L)	✓	Regulated under SWTR	Regulated under SWTR
	Detectable in the distribution system	✓	Regulated under SWTR	Regulated under SWTR
Disinfection Profiling & Benchmarking	Certain systems must profile inactivation levels and generate benchmark	N/A	✓	✓
Sanitary Surveys	CWS: Every 3 years NCWS: Every 5 years	N/A	✓	Regulated under IESWTR
Covered Finished Reservoirs/Water Storage Facilities		N/A	✓	✓
Operated by qualified personnel as specified by state		✓	Regulated under SWTR	Regulated under SWTR

☐ Tightens already existing requirements in the 1989 SWTR

☐ New requirements in addition to the 1989 SWTR

**Table 1.1: Comparison of Provisions of the SWTR, IESWTR and LT1ESWTR**

Subject	SWTR	IESWTR	LT1ESWTR
General Requirements and Compliance Dates	<p>Subpart H - Filtration and Disinfection</p> <p>Applicable to all public water systems using surface water or ground water under the direct influence of surface water (subpart H systems).</p> <p>Systems must comply beginning December 30, 1991.</p> <p>[§141.70 and §141.71]</p>	<p>Subpart P - Enhanced Filtration and Disinfection.</p> <p>Applicable to SW and GWUDI systems serving at least 10,000 people and are in addition to the requirements of subpart H.</p> <p>Systems must comply beginning January 1, 2002, unless otherwise specified.</p> <p>[§141.170]</p>	<p>Subpart T - Enhanced Filtration and Disinfection - Systems Serving Fewer Than 10,000 People.</p> <p>Applicable to SW and GWUDI systems serving fewer than 10,000 people and are in addition to requirements of subpart H.</p> <p>Systems must comply with most requirements beginning January 1, 2005* unless otherwise specified.</p> <p>[§141.500 - 141.502]</p>
Watershed Control Requirements to Avoid Filtration	<p>Criteria address <i>Giardia</i>, HPC, <i>Legionella</i> and viruses.</p> <p>[§141.71]</p>	<p>Watershed control programs for unfiltered systems must take any additional steps necessary for minimizing the potential for contamination by <i>Cryptosporidium</i>, identify watershed characteristics and activities, and monitor the occurrence of activities that may have an adverse effect on source water quality</p> <p>[§141.171]</p>	<p>Same requirements as IESWTR</p> <p>[§§141.520-522]</p>

Subject	SWTR	IESWTR	LTIESWTR
<p>Combined Filter Effluent Turbidity Provisions -</p> <p>Conventional or Direct Filtration Treatment</p>	<p>System's filtered water must be less than or equal to 0.5 NTU in at least 95 percent of the measurements taken each month; at no time must turbidity exceed 5 NTU.</p> <p>State may set a higher 95<sup>th</sup> percentile limit not to exceed 1 NTU in more than 5 percent of the samples.</p> <p>[§141.73(a)]</p> <p>Measurements are recorded at least every 4 hours. For systems serving 500 or fewer people the state may reduce this frequency to once per day.</p> <p>[§141.74(c)(1)]</p>	<p>Combined filter effluent requirements change from 0.5 to 0.3 NTU and at no time may exceed 1 NTU.</p> <p>No provisions for allowing states to set a higher 95<sup>th</sup> percentile limit.</p> <p>Individual filter turbidity provisions apply.</p> <p>[§141.173]</p> <p>No new frequency provisions.</p>	<p>Same requirements as IESWTR</p> <p>[§141.551]</p> <p>No new frequency provisions.</p>
<p>Combined Filter Effluent Turbidity Provisions -</p> <p>Slow Sand Filtration</p>	<p>System's filtered water must be less than or equal to 1 NTU in at least 95 percent of the samples taken each month. State may allow a higher limit. At no time must turbidity exceed 5 NTU.</p> <p>[§141.73(b)]</p> <p>Measurements are recorded at least every 4 hours. The state may reduce this frequency to once per day.</p> <p>[§141.74(c)(1)]</p>	<p>No new requirements</p> <p>No individual filter turbidity provisions.</p> <p>No new frequency provisions.</p>	<p>No new requirements</p> <p>No individual filter turbidity provisions.</p> <p>No new frequency provisions.</p>

Subject	SWTR	IESWTR	LT1ESWTR
Combined Filter Effluent Turbidity Provisions -  Diatomaceous Earth Filtration	<p>System's filtered water must be less than or equal to 1 NTU in at least 95 percent of the samples taken each month. At no time must turbidity exceed 5 NTU.</p> <p>[§141.73(c)]</p> <p>Measurements are recorded at least every 4 hours. The state may reduce this frequency for systems serving <math>\leq 500</math>.</p> <p>[§141.74(c)(1)]</p>	<p>No new requirements</p> <p>No individual filter turbidity provisions.</p> <p>No new frequency provisions.</p>	<p>No new requirements</p> <p>No individual filter turbidity provisions.</p> <p>No new frequency provisions.</p>
Combined Filter Effluent Turbidity Provisions -  Alternative Filtration Technologies	<p>Turbidity limits for slow sand filters apply once the system has demonstrated to the state the technology meets the 99.9 percent <i>Giardia</i> removal and/or inactivation and 99.99 percent virus removal and/or inactivation.</p> <p>[§141.73(a)]</p> <p>Measurements are recorded at least every 4 hours. The state may reduce this frequency to once per day for systems serving fewer than 500 persons.</p> <p>[§141.74(c)(1)]</p>	<p>The state determines the combined filter effluent requirement value that must be met in 95 percent of the measurements taken each month, and a value that may not be exceeded at any time.</p> <p>These values are to be based on a performance demonstration or other means to show consistent achievement of 99 percent removal of <i>Cryptosporidium</i>, in addition to 99.9% removal and/or inactivation of <i>Giardia</i> and 99.99% removal and/or inactivation of viruses.</p> <p>No new frequency provisions.</p> <p>[§141.173(b)]</p>	<p>As for IESWTR, but the rule specifies the 95<sup>th</sup> percentile value cannot exceed 1 NTU.</p> <p>As for IESWTR, but the rule specifies the state-determined maximum combined filter effluent value cannot be greater than 5 NTU.</p> <p>No new frequency provisions.</p> <p>[§141.551]</p>

Subject	SWTR	IESWTR	LTIESWTR
Individual Filter Effluent (IFE) Turbidity Provisions -  Conventional or Direct Filtration Treatment Only	Not applicable	<p>Systems must continuously monitor individual filter effluent turbidity and record the values at least every 15 minutes.</p> <p>If turbidity monitoring equipment fails, grab sampling every four hours may be performed, but for not more than 5 <i>working days</i>.</p> <p>[§141.174]</p> <p>System must report that they have conducted IFE monitoring by the 10<sup>th</sup> of the next month.</p> <p>[§141.175(b)]</p>	<p>If the system has two or fewer filters, continuous monitoring of the combined filter effluent may be performed in lieu of individual filter effluent monitoring.</p> <p>If turbidity monitoring equipment fails, systems must conduct grab sampling until the turbidimeter is back online. A system has 14 <i>days</i> to resume continuous monitoring before a violation is incurred.</p> <p>[§§141.560-562]</p> <p>Same as IESWTR.</p> <p>[§141.570(b)]</p>
IFE Follow-up Action -  If the turbidity of an individual filter <sup>1</sup> exceeds 1.0 NTU in 2 consecutive recordings 15 minutes apart	Not applicable	<p>The system must report the date(s), filter number, and turbidity values that exceeded 1.0 NTU by the 10<sup>th</sup> of the next month.</p> <p>The system must also either produce a filter profile for the filter within 7 days of the exceedance and report that it has been produced, or report the obvious reason for the exceedance if the profile is not produced.</p> <p>[§141.175(b)(1)]</p>	<p>Reporting as for IESWTR, <i>and</i> the system must report the cause of the turbidity exceedance, if known</p> <p>A filter profile is <i>not</i> required.</p> <p>[§141.563(a)]</p>

Subject	SWTR	IESWTR	LTIESWTR
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter<sup>1</sup> exceeds 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has been backwashed or otherwise taken off line.</p>	Not applicable	<p>The system must report the filter number, turbidity value and dates(s) in which the exceedance occurred by the 10<sup>th</sup> of the next month. The system must also either produce a filter profile within 7 days of the exceedance and report that it has been produced, or report the obvious reason for the exceedance if the profile is not produced.</p> <p>[§141.175(b)(2)]</p>	No requirement
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter<sup>1</sup> exceeds 1.0 NTU in 2 consecutive recordings 15 minutes apart for 3 months in a row</p>	Not applicable	<p>The system must report the filter number, turbidity measurements and dates(s) on which the exceedance occurred by the 10<sup>th</sup> of the next month.</p> <p>The system must conduct a self-assessment of the filter within 14 days of the exceedance and report that it was conducted.</p> <p>[§141.175(b)(3)]</p>	<p>As for IESWTR, <i>and</i> the self-assessment must be on both filters if CFE is used in lieu of individual filter turbidity monitoring.</p> <p>[§141.563(b)]</p>

Subject	SWTR	IESWTR	LTIESWTR
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter<sup>1</sup> exceeds 2.0 NTU in 2 consecutive readings 15 minutes apart at the same filter for two consecutive months</p>	Not applicable	<p>The system must report the filter number, turbidity and dates(s) in which the exceedance occurred by the 10<sup>th</sup> of the next month and arrange to have a CPE conducted no later than 30 days after the filter exceeded 2.0 NTU for the second straight month. The CPE must be completed and the report submitted within 90 days of the exceedance</p> <p>[§141.175(b)(4)]</p>	<p>Reporting and self-assessment as for IESWTR <i>but</i> the CPE must be arranged not later than <i>60 days</i> after the filter exceeded 2.0 NTU for the second straight month, <i>and</i> must be completed and the report submitted within <i>120 days</i> after the final exceedance.</p> <p>[§141.563(c)]</p>
Disinfection Profile Applicability <sup>2</sup>	Not applicable	<p>Applies to all subpart H systems, including community, nontransient noncommunity and transient noncommunity systems, that serve at least 10,000 people.</p> <p>[§141.172(b)]</p>	<p>Applies to subpart H community or nontransient noncommunity water systems that serve fewer than 10,000 persons; does <u>not</u> apply to transient noncommunity systems.</p> <p>[§141.530]</p>
Determining if a Disinfection Profile is Unnecessary	Not applicable	<p>If a system's annual average TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively.</p> <p>The annual average is calculated as the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.</p> <p>[§141.172(a)]</p>	<p>Same TTHM and HAA5 values specified in IESWTR.</p> <p>To determine these levels, samples must be collected after January 1, 1998 during the month with the warmest water temperature and at the point of maximum residence time in the distribution system. The state may approve a more representative TTHM and HAA5 data set to determine these levels.</p> <p>[§141.531]</p>



Subject	SWTR	IESWTR	LTIESWTR
Developing a Disinfection Profile - Monitoring Frequency and Compliance Dates	Not applicable	Daily monitoring, for a period of 12 consecutive months or may use 3 years of existing operational data.  Systems must begin monitoring no later than April 1, 2000.  [§141.172(b)]	Weekly monitoring, on the same calendar day, over 12 consecutive months.  Systems serving 500 to 9,999 persons must begin no later than July 1, 2003; systems serving fewer than 500 must begin no later than January 1, 2004.  [§141.532-533]
Developing a Disinfection Profile - Calculating the Log Inactivation for Viruses	If required by the state when a system uses a disinfectant other than chlorine.  [§141.72(a)(1) and (b)(1)]	Required for systems using either chloramines or ozone for primary disinfection.  [§141.172(b)(5)]	Required for systems using either chloramines or ozone or <i>chlorine dioxide</i> for primary disinfection.  [§141.535]
Additional Reporting Requirements for Single Exceedance of the Maximum Allowable Turbidity Limit	If at any time the turbidity exceeds 5 NTU, the system must consult with the primacy agency as soon as practical but no later than 24 hours after the exceedance is known, in accordance with the public notification requirements under §141.203(b)(3)  [§141.75(b)(3)(ii)]	If at any time the turbidity exceeds the maximum turbidity level (1 NTU for conventional or direct filtration systems of state-set level for alternative filtration systems), the system must inform the state as soon as possible, but no later than the end of the next business day.  [§141.175(c)]  *§141.203(b)(3) of the PN Rule supercedes this reporting requirement.	Reporting requirement as per §141.203(b)(3) of the PN Rule applies.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

1. Where reference to the turbidity of an individual filter is made, this also applies to the turbidity of the combined filter effluent for subpart T conventional or direct filtration systems that have 2 or fewer filters and continuously monitor the CFE from those filters in lieu of individual filter monitoring.
2. Compliance dates for new DBP MCLs, disinfectant MRDLs, and related monitoring requirements are specified in the Stage 1 DBPR. They are:
  - Subpart H community and non-transient non-community systems serving 10,000 or more people must comply beginning January 1, 2002.
  - All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004.
  - Subpart H transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002.
  - Subpart H transient non-community systems serving fewer than 10,000 persons and transient non-community systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

## 1.3 Summary of Action Dates

### 1.3.1 Applicability and Compliance Dates

The Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) was published in the *Federal Register* on January 14, 2002 [67 FR 1812]. It applies to public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI) as a source (also known as Subpart H systems) and serve fewer than 10,000 people. The LT1ESWTR is the small system counterpart to the Interim Enhanced Surface Water Treatment Rule (IESWTR) which applies to systems serving 10,000 or more people. Most LT1ESWTR provisions become effective three years after publication of the final rule or by January 1, 2005\*, except where noted below. Table 1.2 summarizes key compliance dates required by the LT1ESWTR or existing regulations (in bold) as well as suggested action dates for certain implementation activities (shaded).

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

**Table 1.2: Summary of Action Dates for the LT1ESWTR**

Date	LT1ESWTR Action
January 14, 2002	Rule is published in <i>Federal Register</i> .
March 15, 2002	<b>If a system begins construction of a finished water reservoir on or after this date the reservoir must be covered [40 CFR §§141.503(a) and 141.511].</b>
March 2002	States are encouraged to communicate LT1ESWTR requirements to affected systems.
June 2002- October 2002	Systems have the option to collect TTHM <u>and</u> HAA5 samples in the month with the warmest water temperature and at the point of maximum residence time in the distribution system to determine whether they are qualified to forgo disinfection profiling. (Systems with warmest water temperature other than late summer/early fall should collect their samples in the corresponding month.)
July 1, 2003	<b>No later than this date systems serving between 500 and 9,999 persons must begin developing a disinfection profile – and notify the state to this effect – unless the system has adequately demonstrated that their TTHM and HAA5 levels are less than 0.064 mg/L and 0.048 mg/L, respectively, or a more representative data set has been approved by the state [40 CFR §141.530-141.532].</b>
June 2003- October 2003	Systems serving fewer than 500 persons have the option to collect TTHM <u>and</u> HAA5 samples in the month with the warmest water temperature and at the point of maximum residence time in the distribution system to determine whether they are qualified to forgo disinfection profiling. (Systems with warmest water temperature other than late summer/early fall should collect their samples in the corresponding month.)
October 2003	States are encouraged to submit final primacy applications or extension requests to EPA.
January 1, 2004	<b>No later than this date systems serving fewer than 500 persons must begin developing a disinfection profile – unless the system has demonstrated that their TTHM and HAA5 levels are less than 0.064 mg/L and 0.048 mg/L, respectively. States may approve a more representative data set for the disinfection profile [40 CFR §§141.530 - 141.532].</b>
January 14, 2004	<b>Final primacy applications must be submitted to EPA unless granted an extension [40 CFR §142.12(b)(1)].</b>

Date	LT1ESWTR Action
June, 2004	Systems using alternative filtration technology are encouraged to begin early submissions of required data confirming that their system consistently achieves adequate removal of <i>Cryptosporidium</i> , and adequate removal and/or inactivation of <i>Giardia lamblia</i> and viruses as specified by 40 CFR §141.552.
June, 2004	Unfiltered systems are encouraged to begin developing appropriate watershed control provisions to limit potential contamination by <i>Cryptosporidium</i> oocysts.
July, 2004	Conventional and direct filtration systems are encouraged to have the appropriate individual turbidimeters in place to ensure compliance with IFE monitoring requirements.
October, 2004	States are encouraged to complete reviews of demonstration data for systems using alternative filtration and make determinations regarding combined filter effluent limits.
January 1, 2005*	<p>Systems that are required to filter and use conventional/direct filtration must:</p> <ul style="list-style-type: none"> <li>• Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)]; and</li> <li>• Meet the combined filter effluent (CFE) turbidity requirements of 40 CFR §141.551: <ul style="list-style-type: none"> <li>▶ ≤0.3 NTU CFE 95 percent of the time; and</li> <li>▶ At no time exceed 1 NTU</li> </ul> </li> </ul>
January 1, 2005*	<p>Systems using slow sand or diatomaceous earth filtration must:</p> <ul style="list-style-type: none"> <li>• Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)]; and</li> <li>• Continue to meet the CFE turbidity requirement limits in 40 CFR §141.73 of the SWTR: <ul style="list-style-type: none"> <li>▶ ≤1 NTU CFE 95 percent of the time; and</li> <li>▶ At no time exceed 5 NTU</li> </ul> </li> </ul>
January 1, 2005*	<p>Systems using alternative filtration technologies (other than conventional, direct, slow sand, or diatomaceous earth filtration) must:</p> <ul style="list-style-type: none"> <li>• Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)];</li> <li>• Demonstrate the technology consistently achieves 99 percent removal of <i>Cryptosporidium</i> oocysts, 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts, and 99.99 percent removal and/or inactivation of viruses [§141.552 (a)(1)-(3)]; and</li> <li>• Meet state-established alternative CFE turbidity requirements based on a demonstration by the system as described in §141.552.</li> </ul>
January 1, 2005*	Systems using conventional or direct filtration must conduct continuous monitoring of turbidity (recorded at least every 15 minutes) for each individual filter in the system [40 CFR §141.560]. Systems with two or fewer filters may conduct continuous monitoring of CFE turbidity in lieu of individual filter effluent (IFE) turbidity monitoring.

Date	LT1ESWTR Action
January 1, 2005*	Systems must comply with the reporting and recordkeeping requirements of 40 CFR §141.570 associated with the CFE, IFE, and disinfection profile and benchmark requirements when applicable.
January 1, 2005*	Subpart H systems that do not provide filtration must take any additional steps necessary to minimize the potential for contamination by <i>Cryptosporidium</i> oocysts in the source water, identify watershed characteristics and activities, and monitor the occurrence of activities that may have an adverse effect on source water quality [40 CFR §141.521].
October 2005	States with approved 2-year extension agreements are encouraged to submit final primacy applications to EPA.
January 14, 2006	Final primacy revisions applications from states with approved 2-year extension agreements must be submitted to EPA [40 CFR §142.12(b)(2)].

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

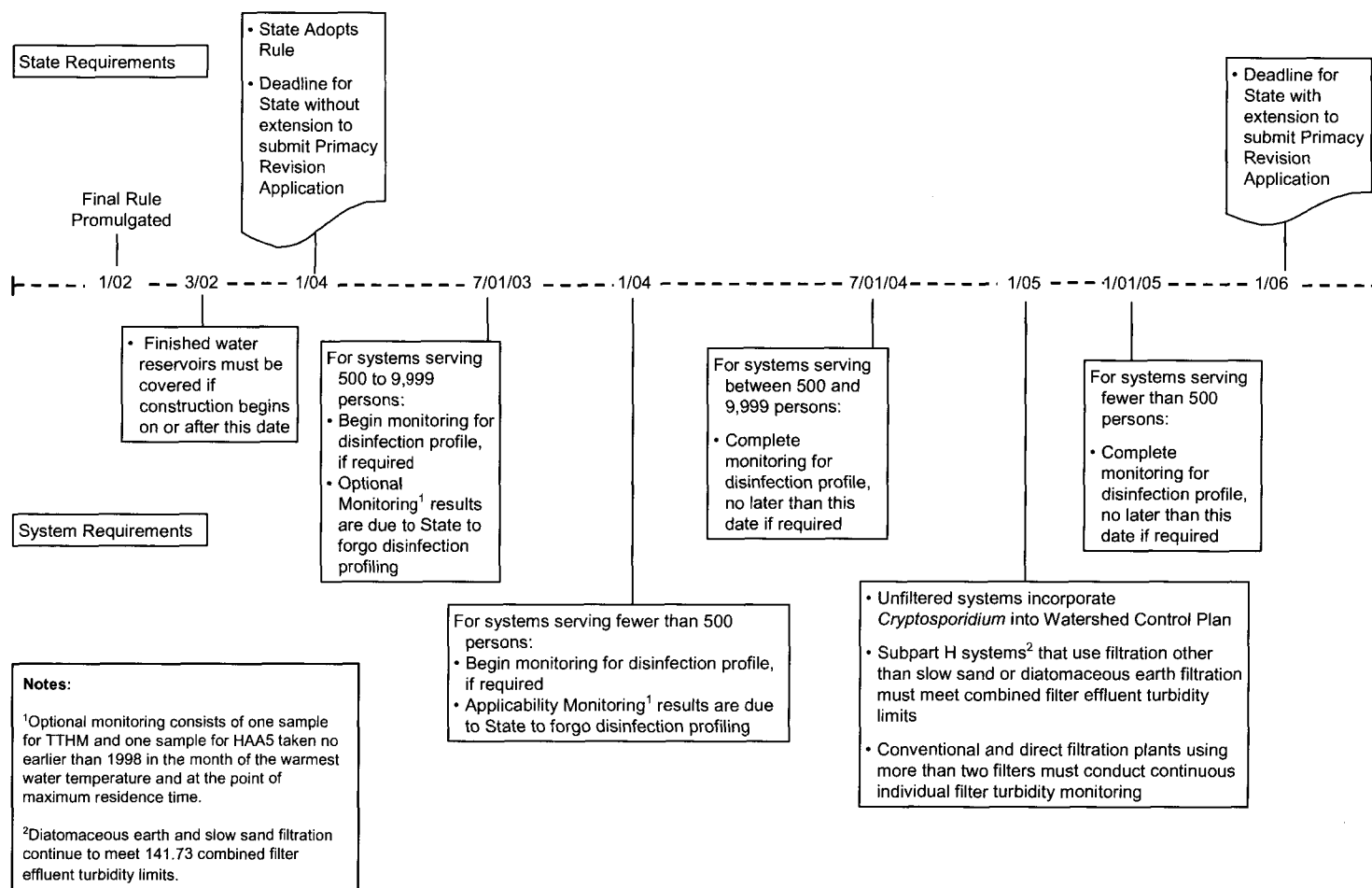
Please note: to completely forgo profiling, systems must collect samples of TTHM and HAA5 after January 1998 and before they are required to begin profiling. Systems serving between 500 and 9,999 persons must begin profiling no later than July 1, 2003. Systems serving fewer than 500 persons must begin profiling no later than January 1, 2004.

### 1.3.2 Timeline for the Long Term 1 Enhanced Surface Water Treatment Rule

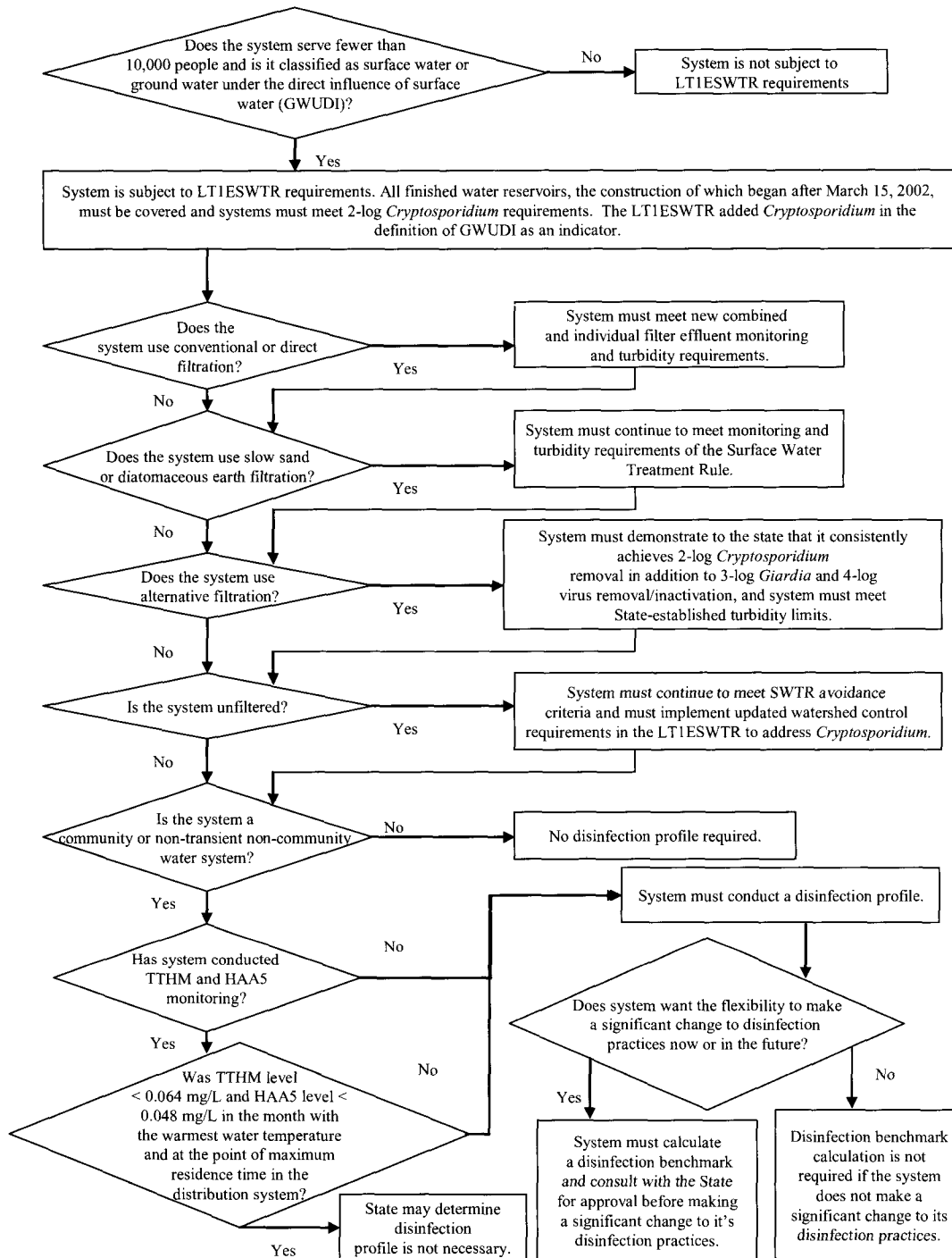
Figure 1.1, below, depicts the LT1ESWTR requirements and implementation timeline for states and systems. The flowchart on the next page (Figure 1.2) shows the requirements of the LT1ESWTR.

**Figure 1.1: LT1ESWTR Requirements and Implementation Timeline**

(Dates are not to scale with the calendar year)



**Figure 1.2: General Requirements of the LT1ESWTR**



## 1.4 Requirements of the Rule: Public Water Systems

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The following rule requirements are from the LT1ESWTR published in the *Federal Register* on January 14, 2002 [67 FR 1812]. For a copy of the actual rule language, see Appendix B, or visit EPA's website at [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html) for a copy of the *Federal Register* notice.

### 1.4.1 Applicability and Compliance Dates

#### 1.4.1.1 Who does this rule apply to?

The LT1ESWTR applies to any public water system (PWS) that uses surface water or ground water under the direct influence of surface water (GWUDI) as a source, also known as a Subpart H system, and serves fewer than 10,000 people.

#### 1.4.1.2 What are the compliance dates?

Systems must comply with the turbidity and monitoring requirements no later than January 1, 2005\*. In addition, PWSs are required to develop an evaluation of their existing disinfection practices—referred to as a *disinfection profile*—unless the state determines that a system's profile is unnecessary (see Section 1.4.2.3). Systems serving between 500 and 9,999 people must begin collecting data for the disinfection profile no later than July 1, 2003. Systems serving less than 500 people must begin to collect data for the disinfection profile no later than January 1, 2004. Finally, if a system begins construction of new finished water reservoirs on or after March 15, 2002, the reservoir must be covered.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

### 1.4.2 Disinfection Profiling and Disinfection Benchmarking Requirements

Disinfection profiling and benchmarking helps to ensure that systems do not jeopardize microbial protection when making changes in disinfection practices to comply with the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR).

#### 1.4.2.1 Who must develop a disinfection profile?

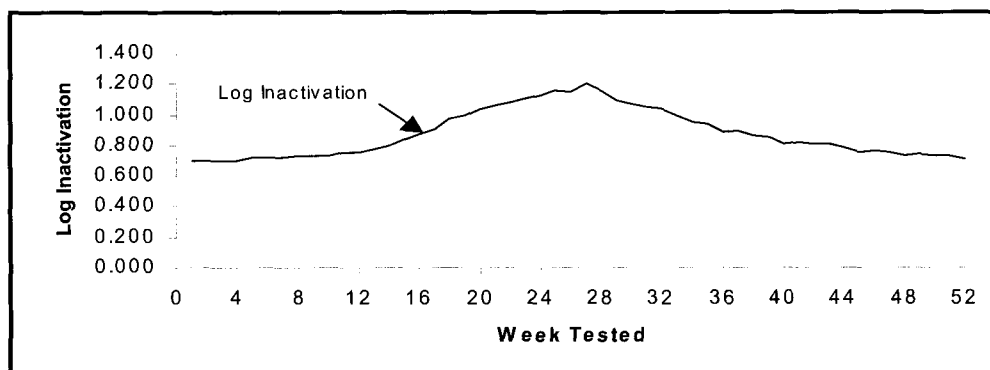
Under the LT1ESWTR, surface water or GWUDI (i.e., subpart H) community or non-transient non-community systems serving fewer than 10,000 people must develop a *disinfection profile*, unless the state determines that the system's profile is unnecessary consistent with the §141.531.

#### 1.4.2.2 What is a disinfection profile?

A disinfection profile is a graphic representation of a system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. Figure 1.3 depicts an example profile. For systems serving fewer than 10,000 people, it is a compilation of weekly log inactivation of *Giardia lamblia* (and viruses for systems using chloramines, ozone, or chlorine dioxide for primary disinfection). The log inactivation values are calculated from operational data that affect the disinfection process. (Systems should use the Surface Water Treatment Rule CT Tables.) Each log inactivation serves as a data point in the disinfection profile.



**Figure 1.3: Example Disinfection Profile**



The following data must be collected over the period of one year (52 weeks) on the same calendar day each week during peak hourly flow:

- ☐ The disinfectant residual concentration (“C”, in mg/L) collected before or at the first customer and prior to each additional point of disinfection;
- ☐ Contact time (“T,” in minutes); AND
- ☐ Data collected at each residual disinfectant concentration sampling point:
  - ▶ Water temperature (in degrees Celsius) and
  - ▶ pH (for systems using chlorine).

#### **1.4.2.3 When might a state determine that disinfection profiling is unnecessary?**

40 CFR §141.531 allows the state to determine that a disinfection profile is unnecessary only if the system adequately demonstrates that its TTHM level is  $<0.064$  mg/L and HAA5 level is  $<0.048$  mg/L by collecting one TTHM and one HAA5 sample after January 1, 1998. Both of these samples must be taken during the month with the warmest water temperature and at the point of maximum residence time in the distribution system. These levels represent 80 percent of the TTHM and HAA5 MCLs systems are required to meet as part of the Stage 1 DBPR. Systems which have TTHM or HAA5 concentrations above these levels are likely to consider changes to their disinfection practices to maintain compliance with the Stage 1 DBPR. These changes may impact their current level of microbial protection. Systems which can demonstrate that their DBPs are under the levels described above are less likely to make changes to their disinfection practices and thus, are not required to create a profile.

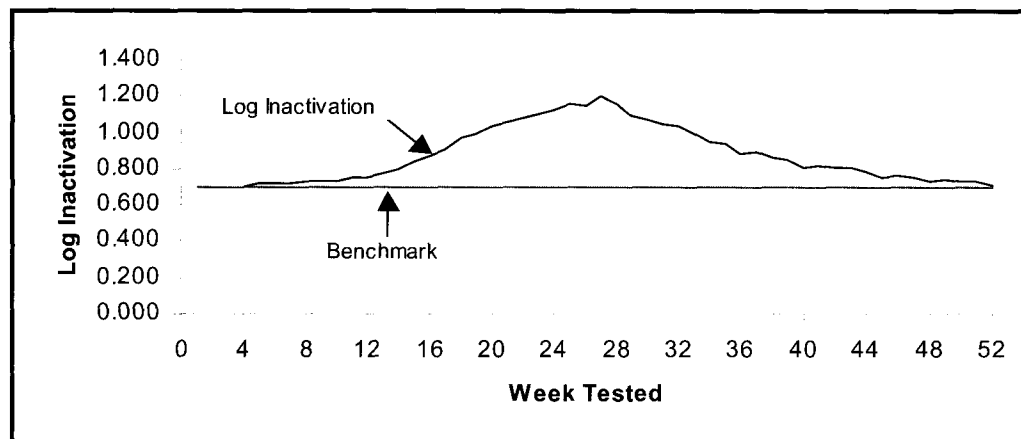
#### **1.4.2.4 When could a state approve a more representative data set for disinfection profiling?**

The state may determine whether a more representative data set for disinfection profiling could be used. One example of when a system may request to use a more representative data set is if they have been collecting the data necessary as described in Section 1.4.2.2, but they collect the data daily rather than weekly. The system may wish to base their profile on the daily data collected rather than just the weekly data. States should examine the requests on a case-by-case basis and ensure that the profile that results from the more representative data set accurately represents the operating conditions of the system and the level of microbial inactivation achieved.

#### 1.4.2.5 What is a disinfection benchmark?

If a system that was required to profile subsequently wishes to make a significant change to its disinfection practices, it must establish a *disinfection benchmark* and consult with the state for approval prior to implementing such modifications. A disinfection benchmark is calculated by averaging the *Giardia lamblia* inactivation (and if necessary, virus inactivation) for each month from the disinfection profile. The lowest monthly average inactivation becomes the disinfection benchmark. This is the lowest level of inactivation achieved by the system over the course of the year. Figure 1.4 is an illustration of a disinfection profile with the benchmark identified.

**Figure 1.4: Disinfection Profile with Benchmark**



The disinfection benchmarking provisions provide a process whereby a PWS and the state, working together, assure that there will be no significant reduction in microbial protection as a result of significant disinfection practice changes systems may make to meet the more restrictive maximum contaminant levels (MCLs) for disinfection byproducts established in the Stage 1 DBPR.

#### 1.4.2.6 What are considered significant changes to disinfection practices?

Significant changes to disinfection practices include:

- ▶ Changes to the point of disinfection;
- ▶ Changes to the disinfectant(s) used in the treatment plant;
- ▶ Changes to the disinfection process; or
- ▶ Any other modification identified by the state.

For example, changes may occur because of operational or treatment modifications to reduce disinfection byproducts in order to comply with the Stage 1 DBPR.

#### 1.4.2.7 What information must be submitted to the state if a system wishes to make a significant change to its disinfection practices?

In addition to the disinfection profile and disinfection benchmark, the system must submit the following information to the state as part of the consultation and approval process:

- A description of the proposed change;

- An analysis of how the proposed change will affect the current levels of disinfection; and
- Any additional information requested by the state.

#### **1.4.2.8 What are the disinfection profiling and benchmarking recordkeeping requirements?**

PWSs must keep the disinfection profile and disinfection benchmark (including raw data and analysis) on file indefinitely for the state to review during their sanitary surveys.

#### **1.4.2.9 What if the disinfection profile and/or benchmark is not developed?**

Failure to develop a disinfection profile and/or benchmark, when required, is a treatment technique (TT) violation and will require Tier 3 notification (See Section 1.4.8 below).

### **1.4.3 Requirements for *Cryptosporidium* Control**

The LT1ESWTR extends the requirements of the Interim Enhanced Surface Water Treatment Rule (IESWTR) to systems serving fewer than 10,000 people. In addition to the requirements for *Cryptosporidium* under the Rule, a maximum contaminant level goal (MCLG) of zero is established for the protozoan *Cryptosporidium* and the definition of ground water under the direct influence of surface water (GWUDI) [§141.2] now includes *Cryptosporidium* as an additional indicator that a ground water source is under the direct influence of surface water.

#### **1.4.3.1 What are the requirements for *Cryptosporidium* control for filtered systems?**

The LT1ESWTR establishes a requirement for 2-log removal of *Cryptosporidium* for subpart H systems. Systems that use conventional or direct filtration are assumed to meet this requirement if they are in compliance with the strengthened turbidity performance standards for combined filter effluent in the LT1ESWTR (see Section 1.4.4.1). Systems that use slow sand or diatomaceous earth filtration are assumed to meet the 2-log removal requirement if they are in compliance with the existing turbidity performance standards under the SWTR. Systems that use alternative filtration technologies must comply with state-determined turbidity performance standards (see Section 1.4.4.3).

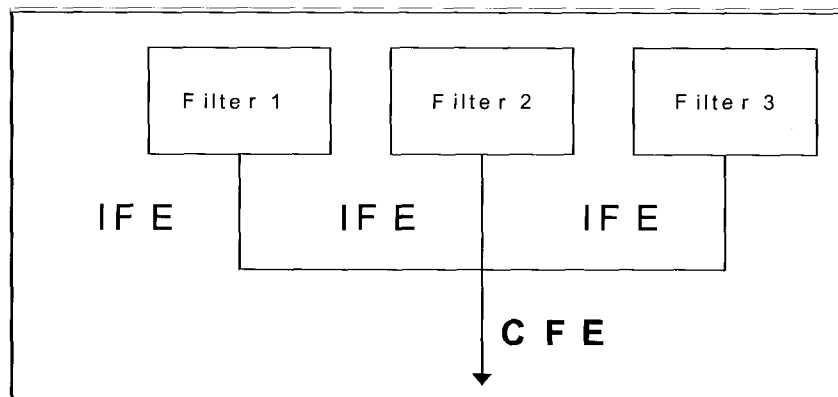
#### **1.4.3.2 What are the requirements for *Cryptosporidium* control for unfiltered systems?**

The LT1ESWTR also expands the existing watershed control requirements for unfiltered small systems to minimize the potential for contamination by *Cryptosporidium* in the source water. A system's watershed control plan must address *Cryptosporidium* by identifying watershed characteristics and activities, and monitoring the occurrence of activities which may have an adverse affect on source water quality. The state must review the adequacy of the watershed control program during annual on-site inspections. Failure of unfiltered systems to minimize the potential for *Cryptosporidium* contamination in the source water is a treatment technique (TT) violation and the system will be required to install filtration.

### **1.4.4 Combined Filter Effluent (CFE) Turbidity Requirements**

The LT1ESWTR includes a series of requirements related to turbidity. They apply to both combined filter effluent (CFE) and individual filter effluent (IFE) turbidity. Figure 1.5 illustrates the difference between CFE and IFE. Individual filter effluent turbidity monitoring requirements are described in Section 1.4.5. The sample location for IFE monitoring is at a point that represents an individual filter's effluent turbidity prior to mixing flow with the effluent from other filters. IFE should not include water produced during a filter-to-waste interval. The CFE sample location is representative of the combined effluent of all filters in use at any given time. CFE also should not include filter-to-waste intervals.

**Figure 1.5: CFE and IFE Locations**



The CFE requirements of the LT1ESWTR strengthen current SWTR requirements for systems that use conventional or direct filtration and may strengthen combined filter effluent for systems using alternative filtration. Systems that use slow sand or diatomaceous earth filtration must continue to meet the CFE turbidity requirements in 40 CFR §141.73 of the SWTR. Measurements of CFE must be taken on representative samples of the system's filtered water at least every 4 hours that the system serves water to the public, unless the state has determined under SWTR that a reduced frequency is sufficient for systems using slow sand filtration or for systems serving 500 people or fewer using any type of filtration (40 CFR §141.73-141.74).

#### **1.4.4.1 What are the CFE requirements for systems using conventional and direct filtration?**

The turbidity level of a conventional or direct filtration system's combined filtered effluent must be less than or equal to 0.3 nephelometric turbidity units (NTUs) in at least 95 percent of the measurements taken each month. In addition, the turbidity level of a system's combined filtered effluent must at no time exceed 1 NTU (under the 1989 SWTR, these turbidity requirements were 0.5 NTU and 5 NTU, respectively).

#### **1.4.4.2 What are the CFE requirements for systems using slow sand and diatomaceous earth filtration?**

The CFE requirements indicated in the SWTR still apply. Systems using slow sand and diatomaceous earth filtration must have a CFE that is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month. The CFE must at no time exceed 5 NTU (40 CFR §141.73(b)-(c)).

#### **1.4.4.3 What are the CFE requirements for systems using alternative filtration?**

The CFE turbidity requirements for systems that use alternative filtration will be determined by the state based on demonstration data submitted by the system (but cannot exceed 1 NTU in at least 95 percent of the measurements taken each month or a 5 NTU maximum turbidity value).

In order for the state to designate appropriate turbidity limits for systems using alternative filtration, the system must demonstrate to the state, using pilot plant studies or other means, that the alternative filtration methodology, in combination with disinfection treatment, consistently achieves 2-log removal of *Cryptosporidium* in addition to 3-log removal and/or inactivation of *Giardia lamblia* cysts, and 4-log removal and/or inactivation of viruses.

#### 1.4.4.4 What is the procedure for measuring combined filter effluent if lime softening is used?

If a system uses lime softening, representative combined filter effluent turbidity samples may be acidified prior to analysis using a protocol approved by the state. Additional guidance is provided in Chapter 2 of the *LT1ESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004).

#### 1.4.4.5 What happens if more than 5 percent of the measurements taken each month exceeds the designated 95<sup>th</sup> percentile turbidity limit?

If more than 5 percent of monthly combined filter effluent samples exceed 0.3 NTU for conventional and direct filtration systems, 1 NTU for slow sand and diatomaceous earth systems, or the state-determined 95<sup>th</sup> percentile level for alternative filtration, then a treatment technique (TT) violation is incurred.

#### 1.4.4.6 What happens if the maximum CFE limits are exceeded?

The exceedance of maximum combined filter effluent turbidity limits is a treatment technique (TT) violation. In addition, the system must notify the state within 24 hours in accordance with the Public Notification (PN) Rule (40 CFR §141.202(a)). Figure 1.6 provides a summary of the CFE turbidity limits prescribed by the LT1ESWTR and the SWTR.

**Figure 1.6: Summary of the LT1ESWTR and SWTR Combined Filter Effluent Turbidity Limits**

Filtration Type	CFE 95 <sup>th</sup> percentile turbidity limit	CFE Maximum turbidity limit
Conventional & Direct Filtration	≤0.3 NTU	1 NTU
Slow Sand & Diatomaceous Earth	≤1 NTU (same as SWTR)	5 NTU (same as SWTR)
Alternative Technologies • Membranes • Cartridges • Other	Established by state (not to exceed 1 NTU)	Established by state (not to exceed 5 NTU)

#### 1.4.4.7 What are the combined filter effluent turbidity reporting requirements?

By the 10<sup>th</sup> of the following month, systems must report for the prior month:

- The total number of CFE turbidity measurements taken;
- The number and percentage of CFE turbidity measurements which are less than or equal to the system's required 95<sup>th</sup> percentile limit; and
- The date and value of any CFE turbidity measurements which exceed the maximum turbidity value allowed for the system.

#### **1.4.4.8 What if combined filter effluent turbidity samples are not collected and/or reported?**

Failure to collect and/or report required combined filter effluent turbidity samples is a monitoring and reporting (M/R) violation.

### **1.4.5 Individual Filter Effluent (IFE) Turbidity Requirements**

#### **1.4.5.1 Who must conduct IFE turbidity monitoring under the LT1ESWTR?**

The LT1ESWTR IFE turbidity monitoring requirements apply only to surface water and GWUDI systems using conventional or direct filtration serving less than 10,000 people.

#### **1.4.5.2 Why is individual filter effluent turbidity monitored?**

Poor performance of one filter can be masked by the optimal performance of the remaining filters even when the system is still in compliance with CFE turbidity limits. Therefore, to address poorly performing filters and provide system operators with information concerning individual filter performance problems, the LT1ESWTR requires that surface water and GWUDI systems serving less than 10,000 people using conventional or direct filtration conduct continuous turbidity monitoring on the effluent of each individual filter. Systems consisting of two or fewer filters may conduct continuous monitoring of CFE in lieu of IFE turbidity monitoring.

#### **1.4.5.3 What are the individual filter monitoring requirements?**

Individual filter effluent monitoring must be conducted continuously with results recorded at least every 15 minutes, except that systems with two filters have the option to continuously monitor the combined filter effluent instead of monitoring each individual filter. Systems with one filter must conduct continuous monitoring of the one filter.

Continuous turbidity monitoring must be conducted using an approved method in 40 CFR §141.74(a). In addition, calibration of turbidimeters must be conducted using procedures specified by the manufacturer.

#### **1.4.5.4 What happens if the turbidity monitoring equipment fails?**

If, for some reason, the continuous turbidity monitoring equipment fails, the system must conduct grab sampling every four hours until the turbidimeter is back on-line. If continuous monitoring is not resumed by 14 days after the failure, the system will receive a monitoring and reporting (M/R) violation.

#### **1.4.5.5 What are the IFE turbidity monitoring and reporting requirements?**

Systems must report to the state by the 10<sup>th</sup> of the following month that individual filter turbidity monitoring was conducted. Failure to report that individual filter monitoring has been conducted is a monitoring and reporting (M/R) violation.

Systems must also report certain instances of poor filter performance to the state and, based on performance triggers in 40 CFR §141.563, must take prescribed actions to identify and correct the cause(s). The required follow-up and reporting actions are based on the frequency and level of consecutive individual filter effluent turbidity exceedances and are discussed below:

***A. What if the same filter exceeds 1.0 NTU in two consecutive recordings 15 minutes apart?***

- ☐ If the turbidity of an individual filter (or the turbidity of CFE for systems with 2 filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart, the system must report to the state by the 10<sup>th</sup> of the following month:
  - The filter number(s);
  - Corresponding date(s);
  - Turbidity value(s) which exceeded 1.0 NTU; and
  - The cause (if known) for the exceedance(s)

***B. What if the same filter exceeds 1.0 NTU in two consecutive recordings 15 minutes apart for three months in a row?***

- ☐ If the system exceeds 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or the turbidity of CFE for systems with 2 filters that monitor CFE in lieu of individual filters) for three months in a row, the system must conduct a **self-assessment** of the filter(s) within 14 days of the exceedance occurring in the third month unless a CPE as specified in §141.563(c) was required. Systems with 2 filters that monitor CFE instead of individual filters must conduct a self-assessment on both filters. The self-assessment must consist of at least the following:
  - Assessment of filter performance;
  - Development of a filter profile;
  - Identification and prioritization of factors limiting filter performance;
  - Assessment of the applicability of corrections;
  - Preparation of a filter self-assessment report;
  - Date self-assessment was triggered; and
  - Date self-assessment was completed
- In addition, the system must report to the state by the 10<sup>th</sup> of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month):
  - The date the self-assessment was triggered; and
  - The date the self-assessment was completed

See the *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004) for further information on performing a self-assessment.

***C. What if the same filter exceeds 2.0 NTU in two consecutive recordings 15 minutes apart for two months in a row?***

- ☐ If the system exceeds 2.0 NTU in two consecutive recordings 15 minutes apart at the same filter for two months in a row, the system must arrange to have a **comprehensive performance evaluation (CPE)** conducted by the state or a third party approved by the state. A CPE is also triggered if the turbidity of CFE for systems with 2 filters that monitor CFE in lieu of individual filters exceeds 2.0 NTU in two consecutive recordings 15 minutes apart. The CPE is the evaluation phase of the Composite Correction Program (CCP) and is a thorough review and analysis of a facility's design capabilities and associated administrative, operational, and maintenance practices as they relate to achieving optimum performance from the facility. The CPE must be:

- Conducted within 60 days following the day of the second exceedance occurring in the second month.
- Completed and submitted to the state no later than 120 days following the second exceedance trigger occurring in the second month.

☐ In addition, the system must report to the state by the 10<sup>th</sup> of the following month:

- That a CPE is required; and
- The date that the CPE was triggered.

NOTE: A new CPE is not required if a CPE was previously completed by the state or a third party approved by the state within the past 12 months or if the system and state are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system. The CTA is the second component of the Composite Correction Program and is implemented with the goal of achieving and sustaining optimized performance goals from the existing facility.

For further information regarding CPEs and CTAs, see the handbook entitled *Optimizing Water Treatment Plant Performance Using the Composite Correction Program* (EPA, 1998).

#### **1.4.5.6 What is the procedure for measuring individual filter turbidity effluent if lime softening is used?**

If a system uses lime softening, the system can apply to the state for an alternative turbidity exceedance level for the triggers specified in Section 1.4.5.5. The system must be able to demonstrate to the state that the higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.

#### **1.4.5.7 What if IFE follow-up activities are not conducted or reported?**

Failure to conduct and report follow-up activities triggered by individual filter turbidity exceedances is a monitoring and reporting (M/R) violation.

#### **1.4.5.8 How long must the results of individual filter monitoring be maintained?**

Results of individual filter monitoring must be maintained for at least 3 years. Failure to do so is a recordkeeping violation.

### **1.4.6 Uncovered Finished Water Reservoirs**

Uncovered finished water storage facilities are open to the environment and outside influences and can be subject to the reintroduction of contaminants which the treatment plant was designed to remove. To be more protective of public health, factors which may compromise the quality of finished water should be minimized. Therefore, the LT1ESWTR prohibits small PWSs from building any uncovered finished water reservoirs on or after March 15, 2002 (60 days after publication). Construction of an uncovered finished water storage facility on or after this date is a treatment technique (TT) violation.

### **1.4.7 Public Water System Recordkeeping Requirements**

In addition to the recordkeeping requirements under §141.75, affected systems must maintain records of individual filter turbidity monitoring measurements for at least 3 years. Results from disinfection profiling and benchmarking (including raw data and analysis) must be kept indefinitely.



#### **1.4.8 Public Notification of Drinking Water Violations**

A Tier 1 public notification of a treatment technique (TT) violation is required for a single exceedance of the maximum allowable turbidity limit where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation.

Tier 1 public notification may be warranted whenever the state determines that an acute public health risk is involved. For example, a state may determine that a new modification in coagulation chemistry triggered a turbidity exceedance well beyond the maximum allowable NTU and, as a result, issued a Tier 1 public notice.

A Tier 2 public notification of a treatment technique (TT) violation is required for a single exceedance of the maximum allowable turbidity limit, unless the system does not consult the state within 24 hours of the violation or the primacy agency determines a Tier 1 public notice is required and for all treatment technique violations other than those resulting from single exceedance of the maximum turbidity level including exceedance of the 95th percentile CFE turbidity limits.

A Tier 3 public notification of a monitoring and reporting (M/R) violation is required for failure to monitor and test, including profiling and benchmarking monitoring requirements.

More information on public notification requirements can be found at <http://www.epa.gov/safewater/pn.html>.

##### **More information can be obtained from:**

- A. The Long-Term 1 Enhanced Surface Water Treatment Rule  
67 FR 1812 (January 14, 2002); and  
<http://www.epa.gov/safewater/mdbp/lt1eswtr.html>
- B. The EPA Safe Drinking Water Hotline, Telephone: 1.800.426.4791

#### **1.4.9 Consumer Confidence Report Requirements**

The LT1ESWTR does not specifically modify the Consumer Confidence Reporting Rule (CCR) requirements. However, consumer confidence reports must contain any violations of National Primary Drinking Water Regulation (NPDWR) requirements, which include violations of treatment technique (TT) requirements (40 CFR §141.153(d)(6) and 40 CFR §141.153(f)). This includes any such violations of the LT1ESWTR.

More information on consumer confidence report requirements can be found at <http://www.epa.gov/safewater/ccr1.html>.

## **1.5 Requirements of the Rule: States or Other Primacy Agents**

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### **1.5.1 Special Primacy Requirements**

In order to receive primacy for the LT1ESWTR, states must adopt regulations no less stringent than this rule. States must submit revisions to their programs, regulations, or authorities no later than January 14, 2004 (2 years after rule publication), although states can request an extension of up to 2 years (January 14, 2006).

In addition, states are required to show in their primacy application that they have the authority to implement the following key provisions of the rule by describing:

- How the state will consult with the system and approve significant changes to disinfection practices;
- How the state will approve a more representative data set for optional TTHM and HAA5 monitoring and profiling;
- How existing rules, adoption of appropriate rules or other authority require systems to participate in a Comprehensive Technical Assistance (CTA) activity and the performance improvement phase of the Composite Correction Program (CCP), to assure that PWSs implement any follow-up recommendations that result from the CCP;
- How the state will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, chlorine dioxide, or ozone for primary disinfection; and
- How the state will determine that a PWS may use an alternative filtration technology based on demonstration data and a description of how the state will set turbidity performance requirements for the 95th percentile and maximum turbidity levels.

More information on how to address these special primacy conditions can be found in Section 4.4 of this document.

### **1.5.2 Records Kept by States**

States must keep records of:

- PWS turbidity measurements for not less than one year;
- Disinfection residual measurements and other parameters necessary to document disinfection effectiveness for not less than one year;
- Decisions made on a system-by-system and case-by-case basis including decisions for PWSs calculating log inactivation for viruses, PWSs that choose the option to conduct TTHM and HAA5 monitoring, PWSs conducting profiling and approval of an alternative data set for monitoring or profiling;
- Records of systems consulting with the state concerning a significant modification to their disinfection practice (including the status of the consultation);

- Records of decisions that a system using alternative filtration can consistently achieve a 99.9% removal and/or inactivation of *Giardia lamblia* cysts, 99.99% removal and/or inactivation of viruses, and 99% removal of *Cryptosporidium* oocysts, including state-set turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised and the state must provide a copy of the decision to the system; and
- Records of those systems required to perform filter self-assessments, CPE or CCP.

### 1.5.3 State Reporting Requirements

There are no additional reporting requirements under the LTIESWTR, but states are required to report violations, variances and exemptions, enforcement actions, and general operations of state public water supply programs related to this rule under section 142.15.

### References

Craun G F (1998). Waterborne outbreaks 1995-1996. Memorandum to Valerie Blank, USEPA, OGWDW, June 20, 1998.

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MacKenzie W R and N J Hoxie, M E Proctor, M S Gradus, KA Blair, DE Peterson, J J Kazmierczak, DA Addiss, K R Fox, J B Rose, and J P Davis (1994). A massive outbreak in Milwaukee of *Cryptosporidium* infection transmitted through the public water supply. New England Journal of Medicine 331(3): 161-167.

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## **Section II**

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# **Frequently Asked Questions (FAQs)**

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## 2.1 Long Term One Enhanced Surface Water Treatment Rule

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### 2.1.1 *Cryptosporidium*

Citation (40 CFR)	Part Title
141.500(a)	General Requirements
141.520 - 522	Additional Watershed Control Requirements for Unfiltered Systems

1. **Q:** *Why do filtered systems have a *Cryptosporidium* removal requirement and unfiltered systems do not?*  
**A:** Systems that have met the SWTR filtration avoidance criteria must now take additional steps to minimize the potential for *Cryptosporidium* oocysts in the source water in their watershed control programs. If a system meeting the SWTR avoidance criteria fails to address *Cryptosporidium* under the LT1ESWTR, it will be required to filter within 18 months to meet the removal requirements. According to 40 CFR 141.71 of the SWTR, any failure to meet the SWTR avoidance criteria requires filtration within 18 months. More stringent requirements may be placed on unfiltered systems in future regulations.
2. **Q:** *Can a system use ultraviolet (UV) light for *Cryptosporidium* inactivation and receive credit for it under the LT1ESWTR?*  
**A:** A system may use UV; however, it cannot use UV to meet the requirements of the LT1ESWTR since a system must physically remove 99 percent of oocysts, which means using filtration alone (unless the system is meeting the filter avoidance criteria).
3. **Q:** *Is an oocyst that is not viable considered to be *Cryptosporidium* or not?*  
**A:** Since the rule requires systems to measure turbidity, not the viability of oocysts, it is not relevant to the enforceable requirements of the rule. Present analytical methods cannot reliably distinguish between oocysts that are infective or viable and those that are not.
4. **Q:** *What does EPA have in mind for unfiltered systems in terms of *Cryptosporidium* controls on the watershed?*  
**A:** The same types of prevention measures that have been taken to address *Giardia* may be used to address *Cryptosporidium*. In terms of *Cryptosporidium*, each water system must identify watershed characteristics and identify and monitor activities that may have an adverse effect on the source water quality in order to minimize the potential for contamination by *Cryptosporidium* oocysts. An onsite assessment of each watershed, currently conducted by the states on an annual basis, may determine that additional steps are needed. Each water system should assess potential sources of *Cryptosporidium* in its watershed and identify and carry out measures to control the potential adverse impacts on water quality from these sources. Ultimately, monitoring should help determine if these measures have been successful in controlling the sources, but monitoring is not currently required by the regulations due to limitations of the analytical methods.
5. **Q:** *Does the *Cryptosporidium* MCLG of zero apply to all species or just *Cryptosporidium parvum*?*  
**A:** The MCLG was set at the genus level, therefore it applies to all species. It was set this way because EPA believes that adequate data are not available to determine that only *Cryptosporidium parvum* infects humans.

## 2.1.2 Disinfection Profiling And Benchmarking

Citation (40 CFR)	Part Title
141.530 - 536	Disinfection Profile
141.540 - 544	Disinfection Benchmark

### 2.1.2.1 Applicability

6. **Q:** *If a system served fewer than 10,000 people after the IESWTR became effective but now serves more than 10,000, which profiling and benchmarking requirements apply?*

**A:** According to 141.170(d), Subpart H systems that did not conduct TTHM and HAA5 monitoring under the IESWTR 141.172 because they served fewer than 10,000 when such monitoring was required, but serve more than 10,000 prior to January 1, 2005\*, must consult with the state to establish a disinfection benchmark and must consult with the state prior to making a significant change to its disinfection practice. Although the requirement to develop a disinfection profile is not specifically required, the state has the discretion to require a disinfection profile or any additional data in order for the system to establish an acceptable disinfection benchmark. The Agency believes that systems should be encouraged to conduct disinfection profiling if possible since it provides an informative look at disinfection practices.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

7. **Q:** *If a system served greater than 10,000 when the IESWTR became effective but now serves fewer than 10,000, does the system have to comply with the disinfection profiling and benchmarking requirements under the LTIESWTR?*

**A:** The state has the authority to accept the TTHM and HAA5 data set or disinfection profiling conducted under the IESWTR as "more representative" under LTIESWTR. The state should consider whether the conditions at the plant under which the TTHM and HAA5 data or the profile was conducted have changed in determining whether previously collected data are "more representative" than the data set required under the LTIESWTR.

8. **Q:** *Do new systems serving fewer than 10,000 have to do a disinfection profile?*

**A:** New systems coming on line after the deadline for disinfection profiling and serving fewer than 10,000 should be designed to meet all SDWA rules, including Stage 1 DBPR MCLs, so profiling should not be necessary, unless required by the state.

### 2.1.2.2 Profiling

9. **Q:** *What is the format of an acceptable filter profile?*

**A:** EPA does not specify a particular format; therefore, it is up to the state to determine what should be provided in the filter profile. More information is provided in the *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004).

10. **Q:** *What is the consequence of "failure to develop a profile"?*

**A:** If a system is required to develop a disinfection profile under the provisions of 40 CFR 141.530 - 141.536 and fails to do so, this failure would constitute a treatment technique violation.



11. **Q:** *Can states require systems to use a different method to calculate a disinfection profile?*  
**A:** States always have the option to adopt rules that are equally stringent to or more stringent than those of EPA. This option offers the possibility that states might develop alternative procedures that EPA could find to be equally or more stringent and protective of public health.
12. **Q:** *May a system use data from many years ago (e.g., 7 or 8 years ago) to develop a disinfection profile under the LT1ESWTR?*  
**A:** The rule does not specify which years of data states can approve as a more representative data set for disinfection profiling. However, a state should carefully review older data to determine if it is still representative of normal operating conditions. Keep in mind that if changes have been made to the treatment train, the data may not represent current conditions, and therefore would not qualify as “more representative.”
13. **Q:** *If a system does not normally operate during the month of warmest water temperature, when should the system collect the optional monitoring data for TTHM and HAA5 to determine whether the system may forgo the profile?*  
**A:** Seasonal systems should collect samples for the month of warmest water temperature during their operation and at the point of maximum residence time and base the determination on these sample data.
14. **Q:** *If a system that is profiling collects TTHM and HAA5 data in the month of warmest water temperature and the results are below 0.064 mg/L and 0.048 mg/L, respectively, can the state allow the system to stop profiling?*  
**A:** If the system is able to demonstrate low levels of TTHM and HAA5 after beginning the profile, the state has the discretion to allow the system to discontinue profiling.
15. **Q:** *Will TTHM and HAA5 data generated by samples collected after January 1, 1998, from a non-certified laboratory satisfy LT1ESWTR's criteria for determining that a profile is unnecessary?*  
**A:** EPA recommends the use of certified labs. Under the Stage 1 DBPR, certified labs must be used for TTHM and HAA5 analyses beginning January 1, 2004. However, the LT1ESWTR did not specify that a laboratory had to be certified for optional TTHM and HAA5 monitoring under the disinfection profiling requirements.
16. **Q:** *Should TTHM and HAA5 samples be collected at the same time?*  
**A:** Yes, they should. However, the LT1ESWTR does not specify that TTHM and HAA5 samples must be taken at the same time. The system has to specify schedules for collecting samples in its monitoring plan.
17. **Q:** *Can states limit the time of year that monitoring is required for the disinfection profile, to focus on the worst case, in order to reduce the burden on systems?*  
**A:** No. The rule requires systems to develop a 1-year disinfection profile (unless the system does not operate year-round; then the profile is developed for the months the seasonal system is operational). The full year is necessary to examine the maximum possible disinfection, water use, and water quality scenarios. In addition, the full year of data will provide information to the systems on seasonal strategies to achieve compliance.

18. **Q:** *How should a system develop a disinfection profile under the LT1ESWTR if it experiences emergency conditions requiring addition of high levels of disinfectants while gathering data?*
- A:** As part of the consultation with the state, the system should note any effect on the benchmark caused by the emergency. An emergency that is only a few hours or days in duration will likely be averaged out, since weekly results are used in developing the profile. The system and state should put any unusual situation in proper perspective when consulting over the benchmark and make decisions accordingly.
19. **Q:** *If a system does not have to submit its profile to the state upon completion, how can the state determine if the system is in compliance with this provision?*
- A:** A state will determine system compliance with this provision during the system's sanitary survey.
20. **Q:** *Under 40 CFR 141.534(b), a system with more than one point of disinfection must conduct monitoring at each disinfection segment to measure pH, temperature, and CT values. Can a system use data from a worst case scenario (maximum flow) to satisfy this requirement?*
- A:** The rule requires that monitoring be performed at each disinfection segment. The *Disinfection Profiling and Benchmarking Guidance Manual* contains more detailed information.
21. **Q:** *Is there any difference in the requirements for calculation of *Giardia lamblia* and virus inactivation between the LT1ESWTR's disinfection profiling requirements and the SWTR's requirements?*
- A:** The Surface Water Treatment Rule requires Subpart H systems to show they meet a minimum level of inactivation for *Giardia lamblia* and viruses. However, many systems exceed the minimum requirements by a large margin. The LT1ESWTR, on the other hand, requires systems to show the inactivation achievable through the entire treatment plant (from point(s) of disinfectant application to the first user). When systems are considering changes to disinfection practices, this showing of full inactivation potential is important for ascertaining the full impact of those changes on microbial protection.
22. **Q:** *There is a note in the Guidance Manual for Compliance With the Filtration and Disinfection Requirements for PWSs Using Surface Water Sources that the CT values for inactivation of viruses by chloramines expressed in Table E-13 are suitable for use only with systems that add chlorine prior to ammonia. Is this true and, if so, why?*
- A:** The above referenced guidance manual was specifically designed to aid systems in complying with the SWTR, not the LT1ESWTR. As explained in the guidance, the CT values in Table E-13 were based directly on experimental data developed using preformed chloramines to determine inactivation of Hepatitis A Virus (HAV). HAV is less resistant to preformed chloramines than are some other viruses including rotavirus. Rotavirus is, on the other hand, very sensitive to free chlorine and, in field practices where chlorine is added prior to ammonia, it was assumed there would be sufficient contact time with free chlorine to inactivate the rotavirus. When preformed chloramines are used or when ammonia is added prior to chlorine, the free chlorine will not be available for inactivation of rotavirus. For these reasons, Table E-13 should not be used to determine compliance with the inactivation requirements of the SWTR when ammonia is added prior to chlorine or when preformed chloramines are used. The guidance manual suggests that inactivation studies be performed in these cases to ensure adequate inactivation of viruses.

The LT1ESWTR, however, requires development of a virus disinfection profile for a system using chloramines so a disinfection benchmark can be calculated. Changes in disinfection practices are then to be measured against the benchmark to ensure that there is no unintended reduction in microbial protection when systems change disinfection practices to comply with the

Stage 1 DBPR. For the purpose of developing a disinfection profile, the state must approve methods that are acceptable to calculate the logs of inactivation for viruses.

**23. Q:** *Is an electronic template for calculating CT values available?*

**A:** An electronic template has been developed and is available with other technical assistance materials related to these rules on EPA's Website ([www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html)).

### **2.1.2.3 Benchmarking and Changes to Disinfection Practices**

**24. Q:** *Can a state approve a treatment change while the profiling requirement is in place but before profiling is complete? What about treatment changes already approved?*

**A:** Once the profiling requirement has been triggered, no significant changes can be made to the system's disinfection practices without consultation with the state. After this consultation, the state can allow changes they determine to be appropriate prior to beginning or completing the disinfection profile. EPA recognizes that it may not always be practical to postpone necessary changes in disinfection practices until completion of the profile.

**25. Q:** *What exactly is meant by consultation and approval with the state for systems making significant changes to their disinfection process?*

**A:** EPA believes that states will consult relatively extensively with systems making significant changes to disinfection practices. Most states have existing procedures in place for approval of water system modifications. The rule does not require the consultation to be a specific process or require specific types of documentation; however, the rule requires that a consultation occur and that states describe "how they will consult and approve" with systems in their primacy revision application (40 CFR 142.16(p)(2)(iii)).

**26. Q:** *Is switching from gas to liquid (or vice versa) chlorine considered a "significant change" for the purposes of setting a benchmark and consulting with the state?*

**A:** No, switching from gas to liquid chlorine or liquid to gas chlorine typically would not be considered a significant change by a state under the LT1ESWTR. States may require notification of such change, or approval prior to making the change, through other state rules.

**27. Q:** *Will systems be required to calculate another disinfection benchmark after implementation of enhanced coagulation under the Stage 1 DBPR begins?*

**A:** Benchmarking is a one-time provision under the LT1ESWTR. It does not have to be repeated each time processes are changed. However, EPA believes that this process can be helpful if carried out for every change in disinfection.

**28. Q:** *If a system is planning to switch to ozone for protozoan control and will, as a result, decrease virus inactivation, should the state discourage the system from making this switch?*

**A:** Not necessarily. The state should carefully examine the treatment operations of the system and the source water quality. The ultimate determination should be made on a case-by-case basis. The *Disinfection Profiling and Benchmarking Guidance Manual* contains more detailed information.

### 2.1.3 Turbidity Standards – Combined Filter Effluent (CFE)

Citation (40 CFR)	Part Title
141.74(a)&(c)	Analytical and Monitoring Requirements
141.550 - 553	Combined Filter Effluent

**29. Q:** *In terms of compliance with the combined filter effluent turbidity levels, does 0.3 NTU and 1 NTU mean that ranges between 0.300 and 0.349 NTU and 1.00 and 1.49 NTU are acceptable?*

**A:** Yes, in terms of compliance, 0.349 NTU is rounded to 0.3 NTU due to rounding of significant figures.

**30. Q:** *Can a system substitute continuous turbidity monitoring of combined filter effluent grab sample monitoring every four hours? If so, which results of the continuous monitoring would the system report?*

**A:** A system may substitute continuous turbidity monitoring for grab sampling if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the state. The system is required to record results of combined filter effluent every four hours. Each month, the system must report the total number of filtered water turbidity measurements recorded, the number and percentage of the recorded measurements taken which are less than or equal to the system's required 95<sup>th</sup> percentile limit (in most cases 0.3 NTU), and the date and value of recorded measurements greater than the maximum turbidity value for the system (in most cases 1 NTU).

**31. Q:** *A system has individual filter turbidimeters but due to design, is not able to effectively install a CFE turbidimeter prior to or immediately following the clearwell. Flow is equalized across all active filters. Can the system calculate the CFE turbidity by averaging the individual filter turbidities?*

**A:** Yes, the *Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources* (March 1991) on page 5-2 indicates that one of the possible ways to satisfy the turbidity (CFE) requirement in the SWTR is to calculate average measurements from each filter effluent every four hours to determine CFE representative of a system's filtered water. Systems may use this method to satisfy the turbidity (CFE) requirements of the LT1ESWTR.

**32. Q:** *CFE turbidity readings are recorded at 12:00, 16:00, 20:00 and so forth, but several readings (not coinciding with any of these set intervals) are recorded between these times. Are these excursions reportable and considered in the monthly compliance determination, or do we take only the readings occurring at the 4th hours? If additional non-required samples are collected and analyzed, do they count for the monthly readings and/or if 0.3 NTU is exceeded must they be noted both for 95 percent and for any exceedances of 0.5 NTU or 1.0 NTU?*

**A:** 40 CFR 141.74(c)(1) only requires CFE monitoring/recordings every 4 hours, which is the same frequency as the 1989 Surface Water Treatment Rule. However, the primacy agency can establish more stringent requirements. The addition of individual filter monitoring is required for systems using conventional and direct filtration addresses the concern of exceedances (spikes) that are occurring between those 4-hour periods.

## 2.1.4 Individual Filter Provisions

Citation (40 CFR)	Part Title
141.560 - 564	Individual Filter Turbidity Requirements

**33. Q:** *The LTIESWTR requires conventional and direct filtration plants to continuously monitor individual filters and record results every 15 minutes. If there is a failure in equipment the system must conduct grab samples every four hours, but the system has no longer than 14 days following the equipment failure to resume continuous monitoring. Compliance with the individual filter requirements is based on consecutive 15-minute measurements. How will a system conducting grab sampling every four hours because of failed equipment determine compliance with the individual filter requirements?*

**A:** The Rule does not specify how to determine compliance in the scenario described above. EPA recommends using the following strategy to determine compliance with the individual filter requirements if a system is conducting grab sampling every four hours because of failed equipment: If a 4-hour grab sample exceeds the trigger level, then the system should collect a grab sample 15 minutes after the 4-hour exceedance. If the first 15-minute sample exceeds the trigger level again, then the follow-up action under §141.563 is required.

**34. Q:** *As a system brings filters on line at different times, do they each need separate timers or can they all take readings on the quarter hour (i.e., 3:00, 3:15, 3:30, etc.)?*

**A:** Taking all readings on the quarter hour would meet the intent of the rule.

**35. Q:** *When a system is required to record turbidity data every 15 minutes after the startup of the filter, is that actual minutes or the quarters of the hour. In other words, if the filter is returned to service at 2:05, should the 15-minute reading be at 2:20 or 2:15? If we say 2:20 (actually 15 minutes), then can recording devices do this or are they set up to record on the quarters of the hour?*

**A:** The time of plant startup is considered as 0:00 and no initial reading needs to be taken at that time. Readings should be collected at regular 15-minute intervals after that point. So, if the above system places a filter into service at 2:05, the first reading should be at 2:20. However, for simplicity, if this same system chooses to record its initial reading at 2:15 instead of 2:20, this is acceptable because this initial interval did not exceed 15 minutes. All subsequent readings should be at regular 15-minute intervals (2:30, 2:45, etc). However, if this same system were to wait until 2:30 to record its first reading, this would not be acceptable, because the interval between the time of plant startup and the initial reading would be 25 minutes, which exceeds the 15-minute maximum interval.

**36. Q:** *Is particle counting an adequate substitute for continuous turbidity monitoring?*

**A:** No, particle counting may not be used as a substitute for continuous turbidity monitoring.

**37. Q:** *Do the individual filter monitoring requirements apply to a secondary filter (such as GAC) whose primary function is other than particulate removal (i.e. taste and odor control), or only to the "primary" filter?*

**A:** The intent of the rule is for IFE monitoring to be performed on filters used for particulate removal. This is because the purpose of the IFE requirements is to capture turbidity spikes in individual filters that may be masked in the combined filter effluent. If the secondary filter is located after the point of CFE monitoring, then the IFE requirements would not apply. This is because the purpose of the IFE requirements is to capture turbidity spikes in individual filters that

may be masked in the CFE. In this scenario, since the streams are already combined, measuring IFE of the secondary filter would not further distinguish individual filter turbidity spikes.

**38. Q:** *Some package plants and/or filters are constructed so that it is not possible to install the continuous turbidimeters on each filter bed and perform this monitoring. How do I resolve this issue?*

**A:** Individual filter monitoring is a requirement of the rule for all Subpart H systems serving fewer than 10,000 persons that use conventional or direct filtration. This is to ensure consistency of treatment through the plant's filtration process. Configurations that do not allow for such plumbing, such as a Greenleaf Filter Plant or certain automatic backwash filters, can be considered one filter and can monitor the combined effluent from the unit every 15 minutes to determine compliance with the individual filter requirements. Systems that believe they fall in this category should consult with the state. However, it is likely that some of these plants/filters are built such that the system can install turbidimeters on individual filters, and therefore would be required to conduct monitoring of them.

**40. Q:** *What if a plant exceeds a turbidity trigger for an individual filter while performing filter-to-waste? Does this need to be reported? Is it a violation?*

**A:** The IFE turbidity requirements apply only to water that will become part of the combined filter effluent of the plant. Filter-to-waste water turbidity does not need to be measured or reported and should not have violations associated with it.

**41. Q:** *Does each filter need its own turbidimeter or can several filters be connected to one turbidimeter?*

**A:** The rule doesn't preclude the use of a single turbidimeter to measure and record the turbidity of multiple filters. A state would have to find that this would be an appropriate methodology for measuring and recording compliance with the individual filter reporting and recordkeeping requirements.

**42. Q:** *If the continuous turbidimeter goes down, when does 4-hour grab sampling start?*

**A:** The clock starts with the last recorded turbidity data point.

**43. Q:** *Does a turbidimeter set to show continuous running average satisfy the continuous monitoring requirement? If so, what duration of the sensor signal averaging should be used?*

**A:** The intent of the IFE is to provide an "instantaneous" reading every 15 minutes. Turbidimeters should be calibrated according to the specifications of the manufacturer, using an approved method in 40 CFR 141.74(a) and analytical test procedures contained in *Technical Notes on Drinking Water Methods*, EPA-600/R-94-173, October, 1994.

**44. Q:** *Systems with 3 or more individual filters must monitor effluent turbidity at each individual filter. Is there any specific requirement regarding where the meter sampling point must be?*

**A:** There is no specific requirement regarding the location of the meter sampling point, but as a practical matter, the individual filter sample tap must be installed prior to combined filter effluent in order to monitor IFE.

**45. Q:** *The effluent turbidity must be monitored at each individual filter, at least every 15 minutes. If on-line monitoring fails, systems are required to conduct grab sampling every 4 hours until the equipment is repaired (not to exceed 14 days). For systems that do not have 24 hour coverage, is it necessary to have someone there at the plant collecting the grab samples, until the on-line equipment is back up and running?*

**A:** Yes, it is necessary to ensure that grab samples are collected every 4 hours.

46. **Q:** *When a system exceeds the rule-established individual filter turbidity trigger levels in two consecutive measurements taken 15 minutes apart, certain corrective actions are required to be completed within designated time frames. When does the clock start running on those time limits?*  
**A:** The time for completing the necessary corrective actions begins immediately after the second of the two measurements that exceed the “trigger” level.
47. **Q:** *When backwashing a filter, how soon after the filters are put back on-line should the readings start to be recorded again?*  
**A:** Readings should begin as soon as filters are producing water that will be served to the public.
48. **Q:** *Do readings need to be taken during the backwashing process?*  
**A:** No. Readings do not need to be taken during the backwashing process.
49. **Q:** *How should a system deal with spiked turbidimeter readings for hours (sometimes as many as 12 hours) after the turbidimeter (not the filter it is monitoring) has been cleaned?*  
**A:** EPA believes that the duration of these kinds of spiked readings should normally be a matter of minutes, not hours. A turbidimeter returning inaccurate readings for more than a few minutes should be overhauled or replaced. In the event that inaccurate spikes last for a longer period of time, the system could measure and record turbidity using a bench top turbidimeter by conducting grab sampling every 4 hours until the continuous turbidity monitoring equipment returns to normal or is repaired (not to exceed 14 days).
50. **Q:** *If a system is required to have a Comprehensive Performance Evaluation (CPE) conducted by the state or a third party, is the system in violation if the state or third party does not conduct the CPE within 120 days following the individual filter effluent exceedance that triggered the requirement (and the delay is clearly the fault of the state or third party, not the system)?*  
**A:** Yes, if the Comprehensive Performance Evaluation is not completed and the report submitted to the state within 120 days, a violation is triggered and must be reported. However, the state can exercise its discretion on what enforcement action is taken.
51. **Q:** *Is there a limit to the number of CPEs that can be triggered by ongoing compliance problems?*  
**A:** The rule does not specify a limit to the number of CPEs that are required in response to turbidity limits that trigger Section 141.563(c) on an ongoing basis (turbidity levels of > 2.0 NTU in two consecutive measurements in each of two consecutive months). However, if a CPE has been completed by the state or a third party approved by the state within the 12 prior months or the system and state are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required.
52. **Q:** *What is the difference between a filter self-assessment and a filter assessment?*  
**A:** A filter assessment is one component of a filter self-assessment (and also of a CPE). A self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report. More information can be found in the guidance manual for the LT1ESWTR (available from: <http://www.epa.gov/safewater/mdbp/lt1eswtr.html>).
53. **Q:** *Under the IESWTR, if there is an IFE exceedance greater than 1.0 NTU for two consecutive recordings 15 minutes apart, a filter profile must be produced if the system is not able to identify an obvious reason for the abnormal filter performance. Is this a requirement in the LT1ESWTR?*  
**A:** No, this is not a requirement in the LT1ESWTR. Under LT1ESWTR, the system must report the exceedance and the cause for the exceedance (if known), but a filter profile is not required.

However, states may request that the system perform a filter profile if the cause of the exceedance cannot be determined. The Agency believes that filter profiles should be encouraged when there is uncertainty about filter performance. The intent of producing a filter profile is to allow the system to interpret this profile and identify all potential causes (not just an obvious reason) for the elevated turbidity. The system can then take actions to correct these cases and prevent future exceedances.

54. Q: *If a plant has continuous recording equipment and a filter is started at 1 pm and there is an exceedance at 1:13 and again at 1:20, but the readings taken at 1:15 and 1:30 are less than 1.0 NTU. Do the exceedances between the 15 minute interval readings trigger any follow-up activity?*
- A: No. Compliance is based on the 15-minute interval readings. Exceedances at the 15-minute interval readings would trigger follow-up actions but exceedances between the 15-minute interval readings would not.

### 2.1.5 Alternative Filtration Technologies

Citation (40 CFR)	Part Title
141.552	Combined Filter Effluent Requirements

55. Q: *Why are diatomaceous earth and slow sand filtration systems not required to meet the same turbidity requirements as conventional systems under the LT1ESWTR?*
- A: Slow sand and DE systems, because of their filtration effectiveness, are assumed to already meet the 2-log removal for *Cryptosporidium* under the existing requirements of the SWTR.
56. Q: *Will a state have to demonstrate that its alternative filtration technologies previously approved under the 1989 SWTR satisfy the *Cryptosporidium* removal requirements of the LT1ESWTR?*
- A: Yes, states will have to demonstrate that their alternative filtration technologies previously approved under the SWTR are capable of 2-log removal of *Cryptosporidium* cysts (e.g., evaluation pore size).
57. Q: *How will a State approve an alternative filtration technology and establish turbidity limits?*
- A: It depends on your state's requirements. States are required by §142.16(j)(iv) to include information in their primacy application that explains how they plan to approve alternative technologies and establish turbidity performance requirements for such technologies that would ensure appropriate inactivation/removal of *Giardia lamblia* and viruses and removal of *Cryptosporidium* (not to exceed 1 NTU as a 95<sup>th</sup> percentile or 5 NTU as a maximum level).
58. Q: *Are contact absorption clarifiers and dissolved air flotation considered sedimentation in the conventional filtration process as defined in 141.2?*
- A: Sedimentation is defined in 40 CFR 141.2 as a process for removal of solids before filtration by gravity or separation. The state has the flexibility to consider absorption clarifiers and dissolved air flotation as part of the sedimentation process in the conventional filtration process. However, once the process has been categorized, the state should be consistent in implementation for all their systems.



## 2.2 General Program Requirements

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### 2.2.1 Primacy

**59. Q:** *If the state has a blanket letter from the Attorney General that covers all regulations, does it have to get a new letter specifically for the LT1ESWTR?*

**A:** Yes, unless EPA waives the Attorney General statement requirement. States would not be able to use a letter from the Attorney General that provided certification of rules not in existence at the time the certification letter was written. The certification should also confirm that there are no state audit laws preventing enforcement of the rules.

**60. Q:** *When is a state eligible to receive interim primacy for the LT1ESWTR?*

**A:** A state is eligible for interim primacy for the LT1ESWTR provided it has submitted a complete and final primacy revision application to EPA, AND it has primacy or interim primacy for all existing regulations. At a time when multiple regulations are being promulgated, a state qualifies for interim primacy for each rule as the rules are adopted by the state as long as the time period allowed for adoption (2 years plus up to a 2-year extension, if applicable) has not expired. For example, even though the FBRR was promulgated before the LT1ESWTR, a state can obtain interim primacy for the LT1ESWTR before the FBRR, as long as the deadline to adopt the FBRR has not passed. However, if the time period allowed for adoption of the FBRR has passed and the state has not adopted the FBRR, then the state would not be eligible for interim primacy for the LT1ESWTR.

**61. Q:** *Are states going to have to revisit their GWUDI determinations due to the addition of Cryptosporidium to the definition of GWUDI and the Cryptosporidium removal requirements of the LT1ESWTR?*

**A:** No, *Cryptosporidium* was only added to the definition of GWUDI as an additional example of the type of large diameter pathogen that the state would examine in determining whether the system is GWUDI. State determinations are based on criteria established by the state and may be based on site-specific measurements of water quality and/or other documentation.

**62. Q:** *Can states "bundle" regulations in their primacy revision package?*

**A:** Yes, states may combine two or more rules in one primacy revision package.

**63. Q:** *May a state adopt the LT1ESWTR by reference?*

**A:** Yes, if state law allows this. However, the state will still need to address the special primacy requirements that give the state flexibility and discretion in meeting certain requirements.

**64. Q:** *Our state's Attorney General does not have the authority to approve regulations. Will this be a problem for us in terms of obtaining primacy for new rules?*

**A:** EPA does not require the state's Attorney General to provide approval of regulations adopted for purposes of the state achieving primacy under these rules. The requirement is for a statement by the Attorney General, or the primacy agency's attorney if it has independent legal counsel, that the laws and regulations adopted by the state were duly adopted and are enforceable.

**65. Q:** *If a state is adopting Rule Language by reference, do they still need to include 141.2 (definitions) in their citations? In other words, does adopting the "use" of the term infer that the definitions are adopted as well?*

**A:** The state must adopt the definition or adopt 141.2 by reference.

## 2.2.2 Violations, SDWIS Reporting, and SNC Definitions

- 66. Q:** *If a system receives 2 treatment technique violations in 1 month, how are they counted toward SNC? How frequently are SNC determinations made? Can a system potentially receive a SNC designation every month? Every quarter? Every year?*
- A:** Both violations are counted toward Significant Non-Compliance (SNC). SNC determinations for all rules, including the LT1ESWTR and the Stage 1 DBPR, are made once per quarter, compounding over a rolling four-quarter period. SDWIS guidance states that these determinations are made on the first day of the month following the end of the quarter that covers the 12-month compliance period which ended the previous quarter.
- 67. Q:** *Are non-transient non-community water systems that normally serve fewer than 10,000 people but seasonally serve more than 10,000 people responsible for complying with the IESWTR or the LT1ESWTR?*
- A:** At a minimum, whenever a system serves at least 10,000 people, the system must comply with all regulatory requirements for systems serving at least 10,000 (i.e., IESWTR and Stage 1 DBPR). However, a state can adopt more stringent requirements to be more protective and require the system to comply with the requirements for systems serving more than 10,000 year round. Whether a state adopts more stringent requirements is a matter of state law.
- 68. Q:** *If a system fails to get a broken continuous turbidity monitor on an individual filter back up and running within 14 days, what type of violation is that? Do we have a SDWIS reporting code for this violation?*
- A:** It would be a M/R violation (SDWIS Code 38-0300 - Failure to report all individual filter monitoring has been conducted) and public notice would be required. See pages 5-7 of the Implementation Guidance.
- 69. Q:** *If a system can receive an SNC designation for failure to conduct disinfection profiling under the LT1ESWTR, how can the system return to compliance if profiling is a one-time provision?*
- A:** Failure to develop a disinfection profile during the required timeframe is a treatment technique violation. A system can return to compliance by developing a disinfection profile. Once completed, the system must retain the disinfection profile data in an acceptable format for review as part of the sanitary surveys and consult with the state before making a significant change to its disinfection practice.
- 70. Q:** *Can states use the authority in SDWA to grant up to two additional years for systems to comply with the turbidity provisions of LT1ESWTR? Does the extension apply to an old plant which will be replaced by a new one (currently under construction) or does the system have to incur capital expenditures on the old plant to be eligible for the extension? What happens if the new plant is not finished and the old plant does not meet the turbidity standards?*
- A:** The SDWA (Section 1412(b)(10)) does allow states to grant an extension up to 2 years to comply with MCLs or treatment techniques but only if the state determines that additional time is necessary for capital improvements. This extension for the turbidity provisions could apply to the entire system to the extent that the state determines that additional time is necessary for capital improvements to both the old and new plants. If a systems "capital improvements" consist of replacing an old plant with a new plant and retiring the old system, the extension would apply only to the old plant. Although not required by SDWA, an extension agreement should be negotiated with the system to identify measures the system could take with the old plant to be protective of public health while the new plant is being built. Between January 1, 2005\* through the extension deadline, the system is not in violation of the TT of the LT1ESWTR. However, the

system still has to comply with the turbidity limits established by the SWTR and the system must monitor and comply with the CCR (systems must include in the CCR the highest single turbidity measurement and the lowest monthly percentage of turbidity samples meeting the turbidity limits. Systems should also notify the public that it has received an extension for the TT). After the extension deadline has passed, the system is responsible for complying with all aspects of the rule and would be in violation if it did not comply.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

### 2.2.3 Data Reporting and Recordkeeping

**71. Q:** *How long must systems keep CFE data on file?*

**A:** The LTIESWTR does not specify system recordkeeping requirements for CFE data (although systems would have to retain it long enough to comply with the monthly reporting requirements at 40 CFR 141.570). States may consider turbidity measurements as bacteriological indicators, similar to heterotrophic plate count. If a state does so, then in accordance with 40 CFR 141.33(a), the records of bacteriological analyses would be required to be kept for at least 5 years. States have the discretion to require longer recordkeeping periods. Individual filter turbidity monitoring results must be kept on file by the system for at least 3 years.

**72. Q:** *States are required to maintain records of systems consulting with the state concerning modifications to disinfection practices — including the status of the consultation. How long must the records be kept?*

**A:** Section 142.14(a)(7)(i) requires states to maintain records of systems consulting with the state concerning modifications to the disinfection practice and status of consultation but does not specify a timeframe. Since no timeframe is specified, these records should be kept indefinitely.

**73. Q:** *Has EPA developed a standard format for the monthly reporting of individual filter monitoring?*

**A:** EPA does not have a standard format for monthly reporting. However, most primacy agencies have their own format for reporting. A few examples are also included in the Rule Implementation Guidance.

**74. Q:** *Does the highest individual filter result need to be reported in the CCR at the end of the year?*

**A:** No. Systems are not required to report individual filter monitoring data in their CCR. However, systems must report violations that are related to a failure to respond to an individual filter exceedance (e.g., failure to conduct a self-assessment).

**75. Q:** *Are the filter self-assessment reports required to be submitted?*

**A:** Filter self-assessments are not required to be submitted. However, they must be completed within 14 days of the exceedance that triggered the requirement, and kept on file for 3 years.

**76. Q:** *With the individual filter monitoring, what happens if exceedances of turbidity limits trigger actions more than twice (i.e. two separate sets of two consecutive readings) in one day? Are all of these measurements reported in the monthly report if an obvious reason is available, or do we just report once for that day regardless of how many times two consecutive exceedances occur?*

**A:** All of the measurements would be reported.

# Key Words by Question Number

15-Minute Measurements Q33, 35, 38, 43, 45, 46, 53, 54	FBRR Q61	pH Q20
Alternative Filtration Technologies Q55-59	Filter Assessment Q52	Population Q6-8, 38, 68
Alternative Procedures Q11	Filter Profile Q9, 52-53	Primacy Q61, 64-65, 74
Ammonia Q22	Filter Self-Assessment Q52, 75-76	Primacy Revision Package Q25, 61, 63
Attorney General Q60, 65	Filter-To-Waste Q40	Profiling and Benchmarking Requirements Q6, 7, 20, 28
Backwashing Q47-48	GAC Q37	Profiling Requirement Q15, 21, 24
Bundle Q63	<i>Giardia</i> Q4, 21, 57-58	Protozoan Control Q28
Capital Improvements Q71	Grab Sample Q30, 33, 45	Quarter Hour Q34-35
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## **Section III**

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# **State Implementation**

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### 3.1 Overview of Implementation

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When conducting implementation activities for LT1ESWTR, states should be mindful of the resource limitations and related compliance burdens of small systems. Monitoring, reporting, performance, and follow-up requirements should be clearly defined to assist system understanding of how the rule will affect them and what they must do to comply. The main implementation activities expected to face all primacy agencies include the following:

- Identify affected systems.
- Identify system-specific requirements.
- Communicate LT1ESWTR requirements to affected systems.
- Update data systems.
- Assess optional TTHM and HAA5 monitoring data and more representative profiling data.
- Identify practices and procedures for approving alternative filtration technologies and establishing turbidity limits for those systems.
- Evaluate the adequacy of watershed control programs for *Cryptosporidium* for unfiltered systems.
- Ensure training opportunities are available - how to perform filter self-assessments and report results.
- Obtain and maintain expertise to perform CPEs.
- Evaluate monthly filter performance reports.
- Evaluate reports of filter self-assessments.
- Evaluate CPE reports.
- Track system compliance and implement enforcement action.
- Review disinfection profiles during sanitary surveys.
- Consult with systems regarding changes in disinfection practices.
- Other implementation concerns - sanitary surveys.
- Area-Wide Optimization Programs Offer Proactive Approaches for LT1ESTWR Implementation

Each of these items is discussed in more detail later in this Section. In addition, an overview of the Area Wide Optimization Program, an implementation tool for both the IESWTR and LT1ESWTR is included.

There are two technical guidance documents prepared for the LT1ESWTR which will be useful to state agencies and water systems and are noted in Section 2. They are:

*LT1ESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004), and

*LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual* (EPA Doc # 816-R-03-004, May 2003)

These documents are written with smaller water system operators and managers as the intended audience, but contain information explaining and interpreting implementation requirements for LT1ESWTR.

## **3.2 Identify Affected Systems**

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### **3.2.1 New Construction of Finished Water Reservoirs**

Under the LT1ESWTR all subpart H systems serving fewer than 10,000 persons must cover all new finished water reservoirs for which construction began prior to March 15, 2002. The effective date for this provision in the IESWTR was February 16, 1999. All subpart H public water systems serving fewer than 10,000 people should be notified of this requirement.

Implementation and enforcement of this requirement should be addressed (if it is not already) through state-specific engineering design and specification plan review and approval processes. State agencies responsible for the plan review and approval process, consulting engineers and water system owners, operators and managers should be informed of the change and its effective date. Care should be taken to ensure any plans and specifications currently in the design or review process accommodate this provision as the deadline applies to the date the system began construction, not the design submission date.

### **3.2.2 Affected Surface Water or GWUDI Systems**

The Surface Water Treatment Rule (SWTR) addresses treatment technique and monitoring requirements for all systems using surface water or GWUDI. The Interim Enhanced Surface Water Treatment Rule affects the subset of those systems which serve 10,000 or more people. The LT1ESWTR fills in the gap by affecting all remaining surface water or GWUDI systems serving fewer than 10,000 people. Because the treatment technique requirements imposed by the SWTR were based on the type of filtration technology employed, and the IESWTR and LT1ESWTR follow the same treatment technology categories, state databases should contain the appropriate information to identify systems affected by LT1ESWTR. Each of these systems should receive information on the rule's requirements.

States may choose to develop information packages that are targeted toward specific system requirements as much as possible. For example, the following table identifies the different types of treatment systems and the specific provisions on which the information packages may focus:



**Table 3.1 - Treatment Systems and Information Package Focus Issues**

System Type	System Focus
Unfiltered	<ul style="list-style-type: none"> <li>Watershed Control Program Addresses <i>Cryptosporidium</i></li> <li>Disinfection Profiling &amp; Benchmarking*</li> </ul>
Slow Sand/Diatomaceous Earth Filtration	<ul style="list-style-type: none"> <li>Combined Filter Effluent Turbidity</li> <li>Disinfection Profiling &amp; Benchmarking*</li> </ul>
Conventional/Direct Filtration	<ul style="list-style-type: none"> <li>Combined Filter Effluent Turbidity</li> <li>Installation of Individual Filter Effluent Turbidimeters</li> <li>Individual Filter Effluent Turbidity</li> <li>Follow-Up Actions required for Individual filter Effluent Turbidity Exceedances</li> <li>Filter Self-assessment Procedures</li> <li>CPE Contact Information</li> <li>Disinfection Profiling &amp; Benchmarking*</li> </ul>
Alternative Filtration	<ul style="list-style-type: none"> <li>Inactivation/Removal Demonstration Data</li> <li>Combined Filter Effluent Turbidity with state-determined Turbidity Limits</li> <li>Disinfection Profiling &amp; Benchmarking*</li> </ul>
Reclassified systems now serving over 10,000 people	<ul style="list-style-type: none"> <li>Disinfection Profiling under IESWTR</li> <li>Compliance with other IESWTR Requirements</li> </ul>

\* Disinfection profiling and benchmarking requirements apply only to community and non-transient, non-community water systems.

While materials EPA has prepared to address the requirements of the rule are all-inclusive, efforts to clearly identify which aspects pertain to each system may be helpful to small system understanding and compliance. Efforts may be limited to discussion in a cover letter or extend to the development of technology-specific materials.

### 3.3 Identify System-Specific Requirements

Some provisions of the LT1ESWTR allow state discretion in establishing treatment technique or monitoring requirements. The special primacy requirements for LT1ESWTR address these discretionary items and are discussed in Section 4.4 of this guidance. Although that section describes how a state might satisfy the requirements and obtain primacy, states should also inform the systems what their specific requirements will be. Systems should know their requirements with sufficient lead time to meet the compliance dates of each aspect of the rule.

The two main provisions for which states should make a timely decision on what they will require of systems are:

1. Review of alternative filtration demonstration data to establish state-determined 95<sup>th</sup> and maximum turbidity limits for alternative filtration technologies (which the system must meet beginning January 1, 2005\*), and

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

2. What constitutes a more representative data set for optional TTHM and HAA5 monitoring and disinfection profiling (which will affect system monitoring as early as July 1, 2003).

States should refer to the section in this document on Special Privacy Requirements. The state's privacy application for the LT1ESWTR is also a good resource since these issues may also have been addressed in the implementation of that rule.

### **3.4 Communicate LT1ESWTR Requirements to Affected Systems**

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#### **3.4.1 Target Notification Time Frames**

##### **Disinfection Profiling Requirements**

States should consider notifying CWSs and NTNCWSs of the disinfection profiling requirements as soon as possible. This would allow systems an opportunity to have their water analyzed for TTHM and HAA5 levels and possibly qualify to forgo the disinfection profiling and benchmarking requirements. This optional monitoring must occur during the month with the warmest water temperature and at the point of maximum residence time in the distribution system. Disinfection profiling must begin no later than July 1, 2003 for systems serving 500 to 9,999 people and no later than January 1, 2004, for systems serving fewer than 500.

##### **Strengthened Turbidity Provisions**

States should establish a target implementation timeframe for notifying systems of the strengthened turbidity requirements may fall within the same period. While the turbidity requirements are not effective until January 1, 2005\*, this lead-time would enable systems to improve treatment performance, purchase and install equipment and implement any changes necessary to begin continuous monitoring of individual filter turbidity. In addition, this lead time would allow states the option to conduct on-site visits to ensure that turbidimeters/data recorders are properly installed and operating prior to the compliance date.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

#### **3.4.2 Written Notification for Affected Systems**

##### **Benefits of Written Notification**

States should provide public water systems written notice of a final rule. This serves two purposes: 1) the receiving system obtains a formal notice of upcoming regulatory requirements and timeline for compliance (in addition to EPA's publication of the rule in the *Federal Register*), and 2) if the privacy agency chooses to keep a record of sending the notice, it provides a hard-copy document the privacy agency may file and use in subsequent compliance tracking efforts.

Written notification of rule requirements should be accompanied by a letter from the state which directs the reader to an appropriate contact if questions arise. An example cover letter is provided as Figure 3.1 and is also included in Appendix C. In this example, a single letter is used for the mailing to all affected systems. As discussed in Section 3.3.2, states may wish to tailor the letter to accommodate those systems for which the provisions are either limited or unique. An example letter notifying system of the LT1ESWTR disinfection profiling exemption requirements through TTHM/HAA5 sampling is included in Appendix C.

### Figure 3.1: Example System Notification Letter

State Letterhead

John Smith, Supt.  
Town Water System, PWSID XXXXXXXX  
Town, ST 12345

RE: Long Term 1 Enhanced Surface Water Treatment Rule

Dear Mr. Smith:

On January 14, 2002, the Long Term 1 Enhanced Surface Water Treatment Rule was published in the *Federal Register*. This letter is being provided to notify you that your public water system may be affected by this rule.

The Long Term 1 Enhanced Surface Water Treatment Rule (abbreviated LT1ESWTR) applies to public water systems that meet both of the following criteria:

1. Use surface water or ground water under the direct influence of surface water, and
2. Serve fewer than 10,000 people

You are receiving this letter as our data shows your system uses surface water or ground water under the direct influence of surface water.

If you are an unfiltered system, you must take additional steps necessary to minimize potential for contamination by *Cryptosporidium*. If you are a filtered system using conventional, direct, or an alternative filtration technology, the rule will impact the performance and monitoring of your filtration plant beginning January 1, 2005\*, by revising turbidity limits for combined filter effluent. In addition, for systems using conventional or direct filtration, individual filter effluent monitoring will now be required. Systems using alternative filtration technologies are required to demonstrate removal and inactivation capabilities prior to January 1, 2005\* in order for this agency to establish turbidity limits. Whether filtered or not, the rule requires monitoring and reporting related to microbial inactivation (referred to as a disinfection profile), for which you may need to take specific action by July 1, 2003 [or January 1, 2004] unless optional TTHM and HAA5 monitoring is conducted and this agency has determined a profile is unnecessary.

A Quick Reference Guide and Fact Sheets for the LT1ESWTR are enclosed. The guide provides more information on this regulation and the Fact Sheet explains the requirements for disinfection byproduct profiling and benchmarking in more detail.

Please contact this office at XXX-XXXX if you have any questions about this letter or the LT1ESWTR and its affect on your system. We appreciate your attention to this request.

Sincerely,

Enclosures: LT1ESWTR Quick Reference Guide, LT1ESWTR General Fact Sheet

LT1ESWTR Fact Sheet: Turbidity Provisions for Conventional and Direct Filtration Systems  
LT1ESWTR Fact Sheet: Turbidity Provisions for Slow Sand, Diatom. Earth and Alt. Filtration  
LT1ESWTR Fact Sheet: Disinfection Profiling and Benchmarking for LT1ESWTR  
LT1ESWTR Fact Sheet: Disinfection Profiling for the LT1ESWTR

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

## **Mailing Enclosures: LT1ESWTR Quick Reference Guide/Fact Sheets**

Appendix C of this guidance includes a Quick Reference Guide, a general LT1ESWTR Fact Sheet, a Fact Sheet for Disinfection Profiling and Benchmarking, a brochure on Comprehensive Performance Evaluations (CPEs) basics (including information on approving third party providers for CPEs), an example of the LT1ESWTR Disinfection Profiling Exemption Form, and an example System Notification Letter. The LT1ESWTR Quick Reference Guide is also available at [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html). These publications are intended to be distributed to water systems through mailings, training sessions or other educational forums and may be a beneficial enclosure with the initial written notification sent to systems. They provide overviews of the LT1ESWTR to enable systems to determine which of the rule's provisions apply to their system. One or more of these publications in an initial mailing would save state effort for summarizing key requirements.

In addition to summarizing LT1ESWTR requirements, these resources describe benefits and general implications of the rule but are not a substitute for actual regulatory language. Once affected systems are identified, actual rule provisions are a more appropriate reference. Final rule language including changes from the minor corrections rule is provided in Appendix B. Copies of the Quick Reference Guide and Fact Sheets, as well as example forms and letters, may be copied from Appendix C and are available from the EPA web site at <http://www.epa.gov/safewater/mdbp/lt1eswtr.html>.

### **3.4.3 Other Communication**

#### **Slide Presentation**

Adult education training emphasizes that people respond differently to written, verbal and visual educational techniques. For some audiences, written presentation of the rule alone will not result in comprehension of system requirements. Slide presentations of the LT1ESWTR may be used by state staff and other technical assistance or training providers to present the background of the rule, rule requirements and its benefits.

The EPA Drinking Water Academy has developed a training session on the LT1ESWTR (available in PowerPoint format). Copies of the presentation may be used to train other state personnel and technical assistance resources, water system personnel and the public. EPA's Drinking Water Academy slides are available electronically by accessing the EPA Web Site at <http://www.epa.gov/safewater/mdbp/lt1eswtr.html>.

#### **Guidance Documents and Seminars**

Materials developed for the LT1ESWTR technical guidance documents are useful for conveying rule requirements and to discuss specific implementation aspects of the regulation. These aspects may include how to perform and report a filter profile, a filter self-assessment, a disinfection profile or a disinfection benchmark. Proper completion of data reporting forms could be used as a critical component of system compliance. The guidance documents could be used as participant materials in LT1ESWTR-specific training events.

### 3.5 Update Data Systems

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EPA recognizes state data management systems vary to suit state-specific requirements and needs. It is recommended, however, that state data systems be updated to enable efficient tracking of affected systems, compliance status and other information of use in implementing the rule.

Records to be kept by states, as required under §142.14, include: turbidity measurements, disinfectant residual measurements and other parameters necessary to document disinfection effectiveness, decisions made on a case-by-case or system-by-system basis, consultations regarding changes to disinfection practices, alternative filtration technology decisions, systems required to do filter self-assessments or CPEs, and others. While many of these records may be maintained through hard-copy files, data systems which easily identify systems for which these records exist may also be helpful. Data systems able to identify IFE follow-up action triggers may be particularly useful to track and identify systems having performance problems.

### 3.6 Assess Optional TTHM and HAA5 Monitoring Data and More Representative Profiling Data

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The LT1ESWTR requires systems to develop a disinfection profile unless the state determines that a system's profile is unnecessary. The state may determine the profile is unnecessary if all of the following conditions are met:

- the system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively,
- the samples were collected after January 1, 1998, and
- the samples were collected during the month with the warmest water temperature and at the point of maximum residence time in the distribution system.

This monitoring is optional and this provision was included in the rule to reduce the burden of monitoring and producing a disinfection profile on small systems as compared to large systems. This regulatory language currently does not address the use of a more representative data set for TTHM and HAA5; however, EPA is currently seeking to correct this inadvertent omission.

To assess the optional TTHM and HAA5 data, the state should have a means of determining if the samples met each of the criteria. Laboratory monitoring results can be used to document the analytical results and sample collection date. However, system-specific information may need to be submitted to show that the sample was collected during the month of the warmest water temperature and at the point of maximum residence time in the distribution system.

Water temperature data is required for unfiltered surface water systems as part of their calculation of daily total inactivation ratios for compliance with the SWTR. These systems would have data readily available to identify the month of warmest water temperature. Monitoring water temperature at entry points to the distribution system is also required for systems collecting water quality parameter data for compliance with the Lead and Copper Rule. However, this data may be collected too infrequently and may not sufficiently reflect annual changes in temperature. Although not required, systems may record raw water temperature data as part of their process control and recordkeeping practices for surface water treatment systems. Obtaining this data or a statement from the system that they have the data and they identified the

month of warmest water temperature may meet this need. Verification of the month used could be incorporated into review of records during the system's sanitary survey.

Identification of the point of maximum residence time of water in the distribution system is a requirement of the Stage 1 DBPR. Also under the Stage 1 DBPR, systems serving fewer than 10,000 persons must develop and implement a monitoring plan for monitoring locations, including the point of maximum residence time, no later than 30 days after January 1, 2004. Procedures used to identify the maximum residence time for Stage 1 DBPR compliance should be used for the LT1ESWTR.

Identifying state practices or procedures for how the state will approve a more representative data set for optional TTHM and HAA5 monitoring is a special primacy requirement of the LT1ESWTR. Guidance for this special primacy requirement is found in Section 4.4 of this document.

### **3.7 Identify Practices and Procedures for Approving Alternative Filtration Technologies and Establishing Turbidity Limits for Those Systems**

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Identifying state practices or procedures for how the state will determine that a public water system may use an alternative filtration technology and how the state will set turbidity performance requirements for those systems is a special primacy requirement of the LT1ESWTR. Guidance for this special primacy requirement is found in Section 4.4 of this document.

### **3.8 Evaluate the Adequacy of Watershed Control Programs for *Cryptosporidium* for Unfiltered Systems**

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Unfiltered systems must take any additional steps necessary to minimize the potential for contamination by *Cryptosporidium* oocysts in the source water. As a minimum, the rule requires a system's watershed control program to identify watershed characteristics and activities which may have an adverse effect on source water quality, and monitor the occurrence of activities that may have an adverse effect on source water quality. These requirements are identical to those included in the IESWTR. Therefore, the same considerations would likely be included in the watershed control programs for small systems.

In the implementation guidance document for the IESWTR, the types of prevention measures applicable to *Cryptosporidium* are discussed. These same measures should be applied to systems subject to the LT1ESWTR. For IESWTR, EPA considered the types of prevention measures that have been taken to address *Giardia* applicable for use to address *Cryptosporidium*. An onsite assessment of each watershed may be needed to determine if additional steps are needed. Additional considerations which may be appropriate for *Cryptosporidium* include:

- Standard disinfection practices and disinfectant residuals effective for inactivation of *Giardia* may not be effective against *Cryptosporidium* so minimizing the potential for their occurrence in a watershed is the main barrier providing public health protection.
- Animal agriculture as a non-point source of *Cryptosporidium* has been implicated as the source of waterborne disease outbreaks. Mitigation measures should be in place to eliminate or minimize the impacts of range cattle and other domestic animals on the watershed.
- Monitoring methods for *Cryptosporidium*, as well as for *Giardia*, are limited in precision and accuracy and may result in false-negative results in individual samples. Reliance on monitoring to

indicate that contamination is below a level of concern for finished drinking water is not warranted at this time.

As with the SWTR, any system that fails to meet the watershed control requirements for unfiltered systems must install filtration within 18 months. Systems have until January 1, 2005\* to comply with the updated watershed control requirements. The adequacy of a system's watershed control program is reviewed by the state or approved third party during annual on-site inspections required under the SWTR.

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

### **3.9 Ensure Training Opportunities are Available - How to Perform Filter Self-Assessments and Report Results**

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Filter self-assessments are triggered by certain monitoring results of individual filter effluent turbidity for conventional and direct filtration systems. For systems continuously monitoring the combined filter effluent of two filters to meet the individual filter effluent monitoring provision, both filters must undergo a self-assessment. The assessment must be completed and reported to the state as completed within 14 days of the event that triggered the requirement to do a filter self-assessment.

The *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004) has a chapter dedicated to filter self-assessments; including analysis of a typical filter profile, hydraulic loading, backwash practices, examining filter media and other issues related to the filter. A filter self-assessment worksheet is provided in that document to help ensure all applicable items are addressed. The worksheet is provided here as Table 3.3.

A training video is also available, *The LTIESWTR Filter Self-Assessment*, which demonstrates how a filter is evaluated and how conclusions are derived from the process.

While written and video-based materials are available, states may also need on-site training events where participants are able to perform the steps themselves. Providing opportunities for systems to learn proper methods is important for several reasons. They are:

- To ensure meaningful information is collected which can then be acted-on.
- To ensure the system complies with the regulatory requirements of a self-assessment.
- To ensure damage is not done to the filter during an improperly performed assessment.

Training opportunities and readily-available technical assistance providers may both be appropriate steps to ensuring self assessments are completed properly.

**Table 3.2: Sample Individual Filter Self Assessment Worksheet\***

Topic	Description	Information	
		Actual	Design
General Filter Information	Type (mono, dual, mixed, pressure, gravity)		
	Number of filters		
	Filter/rate control (constant, declining)		
	Type of flow control (influent weir, valves)		
	Surface wash type (rotary, fixed, none)/ air scour		
	Configuration (rectangular, circular, square, horizontal, vertical)		
	Dimensions (length, width, diameter, height of side walls)		
	Max depth of water above media		
	Surface area per filter (ft <sup>2</sup> )		
Hydraulic Loading Conditions	Average operating flow (mgd or gpm)		
	Peak instantaneous operating flow (mgd or gpm)		
	Average hydraulic surface loading rate (gpm/ft <sup>2</sup> )		
	Peak hydraulic surface loading rate (gpm/ft <sup>2</sup> )		
	Changes in hydraulic loading rate (gpm/ft <sup>2</sup> )		
Media Conditions	Depth, type, uniformity coefficient**, and effective size**		
	Media 1**		
	Media 2** (if applicable)		
	Media 3** (if applicable)		
	Presence of mudballs, debris, excess chemical, cracking, worn media, media coating		



Topic	Description	Information	
		Actual	Design
Support Media/Under-drain Conditions	Is the support media evenly placed (deviation <2 inches measured vertically) in the filter bed?		
	Type of underdrains		
	Evidence of media in the clearwell or plenum		
	Evidence of boils during backwash		
Backwash Practices	Backwash initiation (head loss, turbidity/particle counts, time)		
	Sequence (surface wash, air scour, flow ramping, filter-to-waste)		
	Duration (minutes) of each step		
	Introduction of wash water (via pump, head tank, distribution system pressure)		
	Backwash rate (gpm/ft <sup>2</sup> ) at each step		
	Bed expansion (percent)		
	Dose of coagulants or polymers added to wash water		
	Backwash termination (time, backwash turbidity, visual inspection, or other)		
	Backwash SOP (exists and current)		
Placing a Filter Back into Service	Delayed start, slow start, polymer addition, or filter to waste		
Rate-of-Flow Controllers and Filter Valves	Leaking valves		
	Malfunction rate of flow control valves		
	Equal flow distribution to each filter		
Other Considerations	Chemical feed problems		
	Rapid changes in raw water quality		
	Turbidimeters (calibrated)		
	Other		

\* This worksheet is designed to elicit additional information and is not required under §141.563(b).

\*\* You may want to have a sieve analysis done on the media. Note that a sieve analysis may not be able to be completed within the 14-day time frame required for a filter self-assessment.

### 3.10 Obtain and Maintain Expertise to Perform CPEs

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The rule requires systems to arrange to have either the state or a third-party approved by the state perform a Comprehensive Performance Evaluation (CPE) if triggered by certain individual filter effluent monitoring results for conventional and direct filtration systems. The IESWTR also included this requirement so state programs may have already met this need.

A handbook is available which describes the CPE process (as part of a Composite Correction Program), *Optimizing Water Treatment Plant Performance using the Composite Correction Program*. EPA/625/6-91/027. In addition, EPA sponsors several training events each year for state and EPA Regional Staff on performing CPEs. While performance problems may affect systems of any size, the large number of small systems subject to the LTIESWTR increases the likelihood a CPE will be triggered. A larger resource pool may therefore be necessary to meet system needs once the individual filter effluent turbidity triggers are in effect.

Included in Appendix C is a pamphlet entitled *Comprehensive Performance Evaluation (CPE) - The Basics*, which can help states in approving third parties to perform CPEs for systems.

### 3.11 Evaluate Monthly Filter Performance Reports

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Because the reporting requirements for combined filter effluent and individual filter effluent turbidity are the same for both the IESWTR and LTIESWTR, states may choose to use the same data reporting forms for all systems regardless of whether they are subject to the IESWTR or LTIESWTR. It is expected states already have reporting forms or policies on reporting formats available for system use.

The *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004) includes Example Report Forms, reproduced here as Figures 3.2 and 3.3. States are not required to use these forms. Figure 3.4 provides an example of interpreting a completed form.

In the following pages are worksheets that can be used to collect data to be submitted to the State. Systems should check with the State before using these worksheets to make sure they are acceptable.

**Figure 3.2** is a monthly report for combined filter effluent in conventional and direct filtration plants. The worksheet tracks the number of samples per day, maximum daily combined filter effluent, number of turbidity measurements, number of turbidity measurements  $\leq 0.3$  NTU, and number of turbidity measurements  $> 1$  NTU. The worksheet will then total the number of turbidity measurements, the number of turbidity measurements  $\leq 0.3$  NTU, and the number of turbidity measurements  $> 1$  NTU. The worksheet then finds the percentage of turbidity measurements that meet the specified limits.

**Figure 3.3** is a monthly summary report of data for individual filter effluent in conventional and direct filtration plants. This worksheet tracks the filter #, whether or not 15 minute turbidity values were recorded, and the values of turbidity measurements where two or more consecutive 15-minute turbidity readings were greater than 1.0 NTU. It also tracks the values of turbidity measurements  $> 2.0$  NTU for two or more consecutive 15- minute readings.

**Figure 3.2: Example CFE Reporting Form for Conventional or Direct Filtration For Combined Filter Effluent**

CONVENTIONAL AND DIRECT FILTRATION PLANTS  
MONTHLY REPORT FOR COMBINED FILTER EFFLUENT

Due by the 10th of the Following Month

Check with your state or Primacy Agency to make sure this form is acceptable

Month:

System/Treatment Plant:

Year:

PWSID:

A	B	C <sup>1</sup>	D <sup>2</sup>	E	F
Day	Number of Samples Required Per Day Samples/Day	Maximum Combined Filter Effluent NTU	No. of Turbidity Measurements	No. of Turbidity Measurements ≤ 0.3NTU	No. of Turbidity Measurements >1 NTU
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
Totals:					

Number of monthly readings (Total of Column D)= \_\_\_\_\_

Number of monthly readings ≤ 0.3 NTU (Total of Column E) = \_\_\_\_\_

The percentage of turbidity measurements meeting the specified limits = (Column E/Column D) x 100= \_\_\_\_\_ %

Record the date and turbidity value for any measurements exceeding 1 NTU (Contact state within 24 hours)

If none, enter "None".

Prepared by: \_\_\_\_\_

Date: \_\_\_\_\_

Date	Turbidity Readings > 1 NTU

Was individual filter effluent monitored continuously (at least every 15 minutes) during the month?

Yes \_\_\_\_\_ No \_\_\_\_\_

Notes:

1. To complete Column B, enter the number of required samples for the day based on hours of plant operation or as allowed by the state. Systems that do not operate 24 hours per day will need to check with their state on required sampling frequency.
2. To complete Column C, report the highest combined filter effluent turbidity value of those recorded at the four-hour intervals. Sampling locations which would satisfy combined filter effluent requirements include:
  - a. A sample point which represents the combined filter effluent prior to entry into a clearwell;
  - b. The plant effluent immediately prior to entry into a distribution system; or,
  - c. Other sampling locations approved by the state.
3. To complete Column D, enter the number of turbidity measurements taken each day, not the actual turbidity values obtained.

Check with your state or Primacy Agency to make sure this form is acceptable.

System Name:

Filter Number:

[illegible]

Did this occur in two previous months? ? No Yes - Must conduct a filter self-assessment.

Did the filter exceed 2.0 NTU in two or more consecutive 15-minute readings this month? ? No Yes - Did this occur in the previous month? ? No Yes - Must arrange for a CPE.



Notes:

This worksheet can be used for multiple months as a recordkeeping tool for the system. The system may want to modify this sheet to allow daily recording of individual filter effluent turbidity monitoring and the system could use a new worksheet each month.

- A. Enter the date in this column.
- B. System must report by the 10<sup>th</sup> of the following month that the individual filter effluent turbidity was continuously monitored.
- C. Enter number of incidents where two or more consecutive 15-minute turbidity readings for an individual filter exceeded 1.0 NTU. The system must report to the state the filter number, corresponding date(s), and turbidity values(s) which exceeded 1.0 NTU for two consecutive 15-minute measurements each month by the 10<sup>th</sup> of the following month.
- D. Enter the number of incidents where two or more consecutive 15-minute turbidity readings for an individual filter exceeded 2.0 NTU.

**Figure 3.4: Example CFE Reporting Form for Conventional or Direct Filtration For Combined Filter Effluent - Completed**

EXAMPLE 4-1											
CONVENTIONAL AND DIRECT FILTRATION PLANTS											
MONTHLY REPORT FOR COMBINED FILTER EFFLUENT											
Due by the 10th of the Following Month											
Month: Sept		System/Treatment Plant: Townville						CHECK ONE			
Year: 2005		Treatment Type: Conv						<input checked="" type="checkbox"/> Community			
PWSID:		# of Filters: 4						<input type="checkbox"/> Non-Community			
A	B	C	D	E	F	G	H	I	J	K	L
	Operating	Influent				Coagulant	Coagulant	Maximum		No. of	No. of
	Time	Water Treated	Raw	Treated	Raw	Alum		Filter	No. of	Turbidity	Turbidity
Day								Effluent	Turbidity	Measur. <=	Measur.
									Measur.	0.3 NTU	>1 NTU
1	24	20000	6.0	6.0	5	2.0		0.2	6	6	0
2	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
3	24	20000	6.0	6.0	7	2.0		0.1	6	5	0
4	24	20000	6.0	6.0	5	2.0		0.4	6	5	0
5	24	20000	6.0	6.0	5	2.0		0.2	6	6	0
6	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
7	24	20000	6.0	6.0	10	2.0		0.5	6	4	0
8	24	20000	6.0	6.0	5	2.0		0.2	6	6	0
9	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
10	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
11	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
12	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
13	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
14	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
15	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
16	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
17	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
18	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
19	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
20	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
21	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
22	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
23	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
24	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
25	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
26	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
27	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
28	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
29	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
30	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
31	24	20000	6.0	6.0	5	2.0		0.1	6	6	0
Totals:								186	182		

When evaluating the monthly reporting forms, data should be reviewed for compliance with the system-specific treatment technique requirements. Systems are required to report certain CFE and IFE information to the state by the 10<sup>th</sup> of the following month. The example forms provided as Figures 3.3 and 3.4 have columns where trigger data is clearly identified. If other forms are used, states should consider how the data recorded will clearly indicate a trigger or violation.

Other actions that are not required by the rule but that states may wish to implement in the event a trigger occurs include the following:

- If individual filter turbidity exceeds 1.0 NTU in 2 consecutive recordings 15 minutes apart...

While the system must report the cause of the exceedance if known, reporting of corrective measures to prevent reoccurrence is not required, but may be requested by the state. If the cause is not known, the rule does not specify what must be done. A technical assistance visit may be conducted to help identify potential causes, or to assist with development of a filter profile. (Filter profiles are required for this trigger for systems subject to the LTIESWTR.) A filter profile is a plot of individual filter performance, based on continuous turbidity measurements or total particle counts verses time for an entire filter run, from startup to backwash inclusively, including while another filter is being backwashed. Filter profiles can provide information on mid-run interruptions. More information on filter profiles is available in the *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004).

- If an optional filter profile or turbidity data indicate an ongoing problem...

Systems need not wait for filter self-assessments to be triggered by the rule before doing one. Filter self assessments are detailed evaluations of a filter's performance and items that may affect its performance. Suggestions for completing the filter self-assessment and interpreting results is also available in the *LTIESWTR Turbidity Provisions Technical Guidance Manual* (EPA Doc # 816-R-04-007, August 2004).

### **3.12 Evaluate Reports of Filter Self-Assessments**

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Minimum required elements of a filter self assessment are:

- Assessment of filter performance;
- Development of a filter profile;
- Identification and prioritization of factors limiting filter performance;
- Assessment of the applicability of corrections; and,
- Preparation of a filter-self assessment report.

Systems are required by the rule to report to the state the date that the self-assessment was triggered and the date it was completed. However, as an option, states may want to request a copy of the report, be involved in performance of the assessment and production of the report or schedule a site visit to review the report with the system immediately after its completion. Items to evaluate would include whether the problem is correctable with modified operations practices, targeted operator training with implementation of the training concepts, or if the problem is design-related and not correctable without capital expenditures.



### **3.13 Evaluate CPE Reports**

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CPE reports convey the findings of the evaluation and the factors that limit performance of the filtration plant - not just the filters themselves. Staff assigned to evaluate these reports and devise follow-up requirements should be well versed in the operation and design considerations of surface water treatment facilities, as well as the CPE process. Additional items with a schedule for compliance may be required of the system as a result of the CPE. The comprehensive technical assistance (CTA) is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority setting techniques and maintaining long-term involvement to systematically train staff and administrators. The state must determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the state that the system is able to receive and implement technical assistance provided through the CTA. During the CTA phase, the system must identify and systematically address factors limited performance. Therefore, states may wish to implement a process to track the progress of a system in implementing follow-up actions. Significant deficiencies which affect the performance of the plant should be evaluated for their immediate risk to public health.

For more information on CPEs and CTAs and the Composite Correction Program (CCP), see Section 4.4.

### **3.14 Track System Compliance and Implement Enforcement Action**

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States may wish to use the federally reportable violations for the LT1ESWTR as the basis for development of the key elements of a tracking system. See Section 5.1.1 for more information on federally reportable violations.

### **3.15 Review Disinfection Profiles During Sanitary Surveys**

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System's disinfection profiles must be retained by the system in graphic form, such as a spreadsheet, and must be available for review by the state as part of a sanitary survey. States may choose to have systems submit the profile for review, but this is not required by the LT1ESWTR.

Unless an alternative data set is approved by the state as discussed previously, the disinfection profile is based on one year of weekly monitoring (on the same calendar day) of the following:

- The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow,
- The pH of the disinfected water (if the system uses chlorine) at each residual disinfectant concentration sampling point during peak hourly flow,
- The disinfectant contact time, and
- The residual disinfectant concentration.

Review of this data should address proper sample location, analytical methods used and the form in which the data are recorded and retained. The system may or may not have also used the data to calculate a disinfection benchmark. The review could include a determination of whether benchmark calculations and determinations were performed correctly.

### **3.16 Consult With Systems Regarding Changes in Disinfection Practices**

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States must include in their special primacy application for the LT1ESWTR a description of how the state will consult with the system and approve significant changes to disinfection practices. Guidance for this special primacy requirement is found in Section 4.4 of this document.

### **3.17 Other Implementation Concerns - Sanitary Surveys**

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Although the LT1ESWTR contains no sanitary survey provisions, the IESWTR sanitary survey provisions (142.16)(b)(3)(i) requires states to perform sanitary surveys for all surface water systems, including systems serving fewer than 10,000 people. States should consider the resource load associated with identifying and correcting significant deficiencies as a result of the sanitary surveys. Sanitary surveys must be conducted no less frequently than every three years for CWSs and every five years for noncommunity systems.

### **3.18 Area-Wide Optimization Programs Offer Proactive Approaches for LT1ESTWR Implementation**

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EPA and state drinking water programs are responsible for oversight of surface water systems which represent a variety of source water characteristics, plant capabilities, and finished water quality supplied. State drinking water program resources are often stretched thin while attempting to provide adequate oversight of public water systems in a jurisdiction. Therefore, states can benefit from implementation of a process which ensures that systems with the most need obtain the appropriate state oversight. An Area-Wide Optimization Program (AWOP) may be used to prioritize water systems for targeted regulatory oversight and possible technical assistance. AWOP may be used to provide a process to identify systems with the highest public health risk and to implement proactive measures to improve performance of lower performing systems before they fall out of compliance with the LT1ESWTR. Participation in an AWOP is voluntary, however, states and systems that use AWOPs are realizing tangible benefits.

#### **3.18.1 Overview of an Area-Wide Optimization Program**

Implementation of an area-wide optimization program utilizes processes designed to optimize performance of existing particle removal and disinfection facilities of surface water treatment plants. The program facilitates water system regulatory compliance while building an awareness of the benefit of moving beyond regulatory requirements by optimizing treatment processes and thus increasing public health protection. AWOP activities focus on optimization of existing treatment processes utilizing more effective process control, which will often limit the need for major capital expenditures.

Under AWOP, a state develops its own criteria to prioritize surface water systems relative to indicators of public health risk (e.g. turbidity removal performance, population served, violations, etc.). The state then uses the criteria to rank its surface water systems. This ranking provides a framework for effectively applying available resources and appropriate tools to the surface water treatment systems within a defined area. As an example, a state may choose its ranking criteria to assure it will focus on plants that have the greatest problems complying with the regulation. The process also includes tools that would assist the state to implement and document plant specific performance improvements, which allows for an assessment of the results of LT1ESWTR oversight activities.

### 3.18.2 Components of an Area-Wide Optimization Program

To establish an AWOP in a state, the drinking water program activities should be organized to support three interrelated functional areas of activities. These areas are:

1. Status
2. Targeted Performance Improvement
3. Maintenance

The intent of these activities is to create an ongoing, dynamic state implementation program that can respond to variations in surface water treatment plant performance requirements in a proactive and effective manner.

#### Status Activities

Status activities currently center around establishing turbidity performance goals that the state will pursue with its filtration plants. States work on developing their prioritization criteria they will use to rank and prioritize their systems. Once established, the state then uses turbidity data and other information obtained about the participating utilities to prioritize the plants based on their relative public health risk. This framework allows a state to monitor and assess these plants on a regular basis. Another benefit of the status activities is that it allows state staff to develop or strengthen relationships with the water utilities while encouraging them to pursue continuous performance improvement.

#### Targeted Performance Improvement Activities

The focus of the targeted performance improvement activities is to assess which of the various assistance tools is most appropriate to enhance the performance of each treatment plant based on their relative ranking (as determined by the status activities). In development of an AWOP the states develop new tools as well as assess how their existing activities can be used to assist plants with achieving the AWOP performance goals for the long-term.

A variety of tools are developed or utilized to improve performance at surface water plants. These can range from inspections to direct technical assistance. Options for an AWOP include, but are not limited to, enhanced inspections and surveys, comprehensive performance evaluations (CPEs), performance based training (PBT), and enforcement. States have the flexibility to incorporate the tools they find most appropriate given their skill level and resource constraints. Implementing an AWOP can help states utilize already existing information and organize it in a way to target oversight activities to achieve long-lasting improved performance on a system-by-system basis.

Other sources of assistance that do not use state personnel can also be used. Systems may be encouraged to join national programs such as the Partnership for Safe Water. States may also choose to work with third-party technical assistance providers to make sure that their assistance complements the AWOP performance goals.

#### Maintenance Activities

Maintenance activities center around taking lessons learned from implementation of the status and targeted performance improvement activities to integrate with or enhance other related state programs (e.g., design reviews, permitting, training activities, inspections, sanitary surveys, etc.). Any training of staff on new technical tools could also be included in this activity as well as efforts to sustain capability and quality control of all AWOP activities.

### 3.18.3 Benefits of Area-Wide Optimization Programs

Those regions and states that have implemented AWOPs have found benefits in three categories.

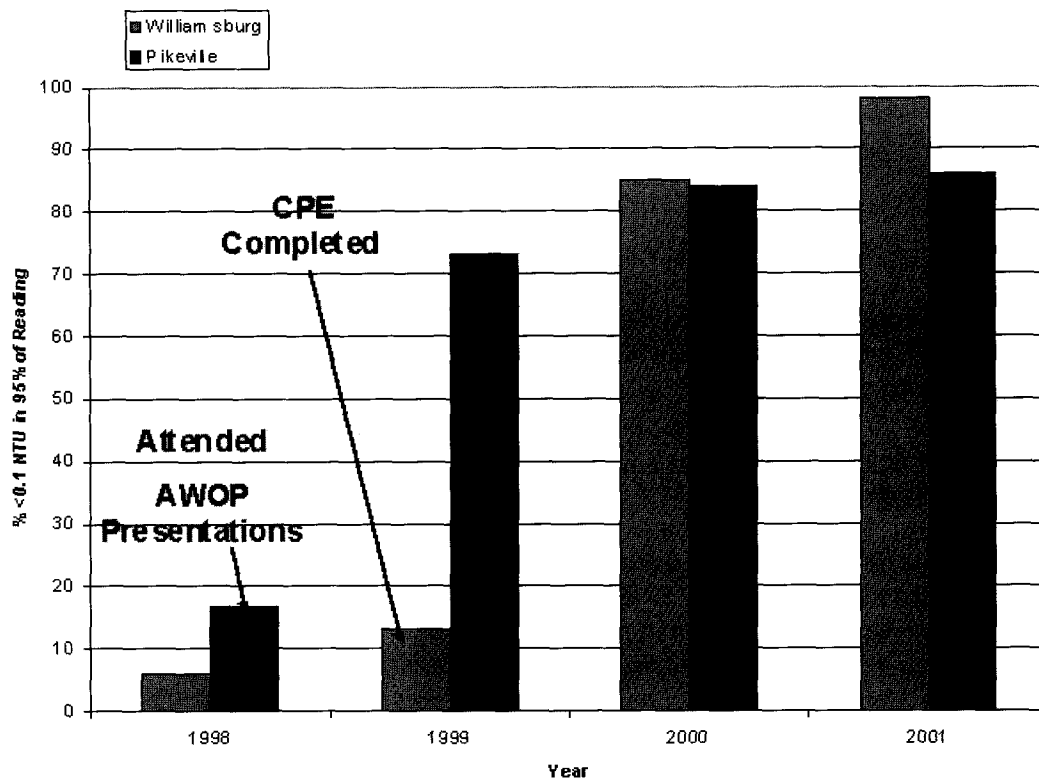
1. Benefits to the effectiveness of the state drinking water programs.
2. Impacts on the performance of individual systems.
3. Impact on the performance of systems state-wide.

The following are benefits related to the effectiveness of state drinking water programs:

1. State staff involved in AWOP have enhanced their technical capability and that of other persons with whom they interact on other drinking water program activities.
2. The tracking of system performance allows state and system staff to see the impact of their activities resulting in enhanced motivation and enthusiasm for their jobs. This also allows for adjustments to the state allocation of resources when performance is not being improved by targeted activities.
3. When systems understand the state's expectations of their role in optimization and their status relative to public health protection, they often initiate changes that result in improved performance.
4. AWOP activities provide small systems fundamental tools and knowledge that may help them comply with the LT1ESWTR.
5. The results of the AWOP activities have had a positive impact on other drinking water program activities such as operator training, operator certification, and plans review.
6. AWOP activities lead to long-term improvements in plant performance by enhancing the system operator's ability to apply new technical concepts.
7. A framework is developed that can be used to implement future regulatory requirements (e.g., LT2ESWTR, Stage 2 DBPR, etc.).

Those states that fully implement AWOPs are able to demonstrate improved performance and enhanced public health protection at filtration plants state-wide. Figure 3-5 shows how AWOP activities have dramatically improved the performance of two water systems in Kentucky.

**Figure 3-5. AWOP Impacts (Improved Plant Performance in Kentucky)**



Data obtained from:

State of Kentucky. Department of Environmental Protection, Area-Wide Optimization Annual Report for 2000.

State of Kentucky. Department of Environmental Protection, Area-Wide Optimization Annual Report for 2001.

### **3.18.4 Potential use of AWOP in LT1ESWTR Implementation**

For systems subject to the LT1ESWTR requirements, AWOP can be an effective and efficient implementation tool to prioritize assistance resources and focus on the higher risk systems.

A variety of LT1ESWTR implementation activities can be integrated into the status, targeted performance improvement, and maintenance activities of an AWOP. Some examples include the following:

#### Identify affected systems and their system-specific requirements

The status activities are designed to accomplish this activity. State specific ranking criteria can be included in the prioritization process to identify which systems need the greatest levels of support. This approach also helps to better allocate limited state resources for appropriate assistance to specific plants.

#### Communicate requirements to the affected systems

In the status activities plants are informed of performance goals, and their performance relative to the prioritization criteria on an ongoing basis. Ongoing communication of the public health implications of plant performance is also incorporated through formal and informal activities under the status and targeted performance improvement activities of an AWOP.

### Evaluate the adequacy of Watershed Control Programs for *Cryptosporidium*

The current models for status activities have focused on plant performance. However, an AWOP is flexible and states have the option of increasing the importance of this aspect of public health protection and including it in the prioritization matrix to identify those plants with problems related to watershed control.

### Ensure training opportunities are available for systems to learn how to perform filter self-assessments and report results

Under AWOP all state training could be assessed as a portion of the maintenance activity. The effectiveness of the training provided to the plants under AWOP may be assessed by evaluating those plants that received typical state training relative to impacts on the plant's performance. Modifications to the training to include AWOP defined priorities could be used to improve all types of training provided to the plants.

### Maintain a list of approved third-parties for conducting CPEs and/or develop and maintain state staff CPE expertise and availability

CPEs are one tool currently used as part of targeted performance improvement under AWOP. CPEs can also be triggered under LT1ESWTR by individual filter effluent turbidity values that exceed certain specified levels. One consideration is what the state's role will be in completing CPEs. Many states have chosen to conduct CPEs in their states, but use of third-party providers approved by the State is also an option. Third-party CPEs, however, may represent a special challenge to states in that the state staff should have a certain level of expertise to properly review and approve third-party CPEs.

### Evaluate monthly filter performance reports for combined filter effluent and individual filtered water turbidity

The current model used by most states implementing an AWOP is to collect and enter the daily maximum turbidity value for combined filter effluent and individual filter effluent. These data are entered into spreadsheets used to evaluate performance and to provide feedback as to the results of the evaluation to the water systems. With some minor modification, required reporting elements of the LT1ESWTR can also be incorporated into the AWOP monthly reports (or vice versa) so that all of turbidity data used to evaluate the system is captured in one place.

### Evaluate reports of filter self-assessments and determine if additional action is necessary

Implementation of an AWOP includes utilizing data collected through the application of optimization tools, such as filter self-assessments. Filter self-assessments can also be triggered under LT1ESWTR by individual filter effluent turbidity values that exceed certain specified levels. The results of such activities can be used to determine the appropriate level of state involvement to maximize public health protection.

### Evaluate the results of CPEs and determine what, if any, additional action is necessary to meet the CFE turbidity limits

Performance data collected during a CPE may be continually monitored in an AWOP, allowing a state to determine on an ongoing basis if the regulatory turbidity limits set by the LT1ESWTR (or more stringent performance goals) are being met. When a CPE is conducted, and post-CPE performance is not sufficient to meet the CFE turbidity limits, the State should evaluate the results of

the CPE and determine what, if any, additional action should be taken to meet the CFE requirements. AWOP provides targeted performance tools to assist in these activities.

Track regulated system compliance progress and implement LT1ESWTR enforcement action as needed

The AWOP status activities directly address the above areas. The AWOP status activities will allow this valuable information to be effectively used to make sure that the systems receive their proper relative priority with respect to the other systems and that appropriate targeted performance improvement activities are used at the priority systems.

For more information on how to implement an Area Wide Optimization Program contact Jon Bender (513-569-7227), Rick Lieberman (513-569-7604) or Gwen Wise (513-569-7874) at EPA's Technical Support Center.

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## **Section IV**

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# **State Primacy Revision Application**

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40 CFR §142 sets out requirements for states to obtain and/or retain primary enforcement responsibility (primacy) for the Public Water System Supervision (PWSS) program as authorized by §1413 of the Safe Drinking Water Act (SDWA). The 1996 SDWA Amendments update the process for states to obtain and/or retain primacy. On April 28, 1998, EPA promulgated the Primacy Rule to reflect these statutory changes (63 FR 23361).

## 4.1 State Primacy Program Revision

Pursuant to §142.12, **Revision of State Programs**, complete and final requests for approval of program revisions to adopt new or revised EPA regulations must be submitted to the Administrator no later than 2 years after promulgation of the new or revised federal regulations (see Figure 4.1). Until those applications are approved, EPA Regions have responsibility for directly implementing the LT1ESWTR. The state and EPA can agree to implement the rule together during this period. However, if a state is eligible for interim primacy, once it submits a complete and final revision package, it will have full implementation and enforcement authority. A state may be granted an extension of time, up to two years, to submit its application package. During any extension period, an extension agreement outlining the state's and EPA's responsibilities is required.

**Figure 4.1: State Rule Implementation and Revision Timetable for LT1ESWTR**

EPA/State Action	Time Frame
Rule published by EPA	January 14, 2002
State and Region establish a process and agree upon a schedule for application review and approval (optional)	March 2002 (suggested)
State, at its option, submits <i>draft</i> program revision package including: <ul style="list-style-type: none"> <li>• Preliminary Approval Request</li> <li>• Draft State Regulations and/or Statutes</li> <li>• Regulation Crosswalk</li> </ul>	July 2002 (Suggested)
Regional (and Headquarters if necessary) review of draft	Completed within 90 days of state submittal of Draft (Suggested)
State submits final program revision package including: <ul style="list-style-type: none"> <li>• Adopted State Regulations</li> <li>• Regulation Crosswalk</li> <li>• 40 <i>CFR</i> 142.10 Primacy Update Checklist</li> <li>• 40 <i>CFR</i> 142.14 and 142.15 Reporting and Recordkeeping</li> <li>• 40 <i>CFR</i> 142.16 Special Primacy Requirements</li> <li>• Attorney General's Enforceability Certification</li> </ul>	By January 14, 2004*
EPA final review and determination: <ul style="list-style-type: none"> <li>• Regional review (program and ORC)</li> <li>• Headquarters concurrence and waivers (OGWDW and OECA)***</li> <li>• Public Notice</li> <li>• Opportunity for hearing</li> <li>• EPA's Determination</li> </ul>	Completed within 90 days of state submittal of final package 45 days Region 45 days Headquarters**
Rule Compliance Date	January 1, 2005***

\* EPA suggests submitting an application by October 2003, to ensure timely approval. EPA regulations allow until January 14, 2004 for this submittal. An extension of up to 2 additional years may be requested by the state.

\*\* At least one primacy package per Region.

\*\*\* Except where otherwise noted. The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

### 4.1.1 The Revision Process

The approval of state program revisions is recommended to be a two-step process comprised of submission of a draft request (optional) and then submission of a complete and final request for program approval. Figure 4.2 diagrams these processes and their timing.

**Draft Request**—At the state's option, it may submit a draft request for EPA review and tentative determination. The request should contain drafts of all required primacy application materials (with the exception of a draft Attorney General's Statement). A draft request should be submitted by nine months after rule promulgation. EPA will make a tentative determination on whether the state program meets the applicable requirements. The tentative determination should be made within 90 days.

**Complete and Final Request**—This submission must be in accordance with §142.12(c)(1) and (2) and include the Attorney General's statement. The state should also include its response to any comments and/or program deficiencies identified in the tentative determination (if applicable). Regions should make states aware that submission of only a final request may make it more difficult for the states to address any necessary changes within the allowable time for state rule adoption.

EPA recommends that states submit their complete and final revision package within 21 months of rule promulgation. This will ensure that states will have interim primacy as soon as possible and will prevent states from becoming backlogged with revision applications to adopt future federal requirements.

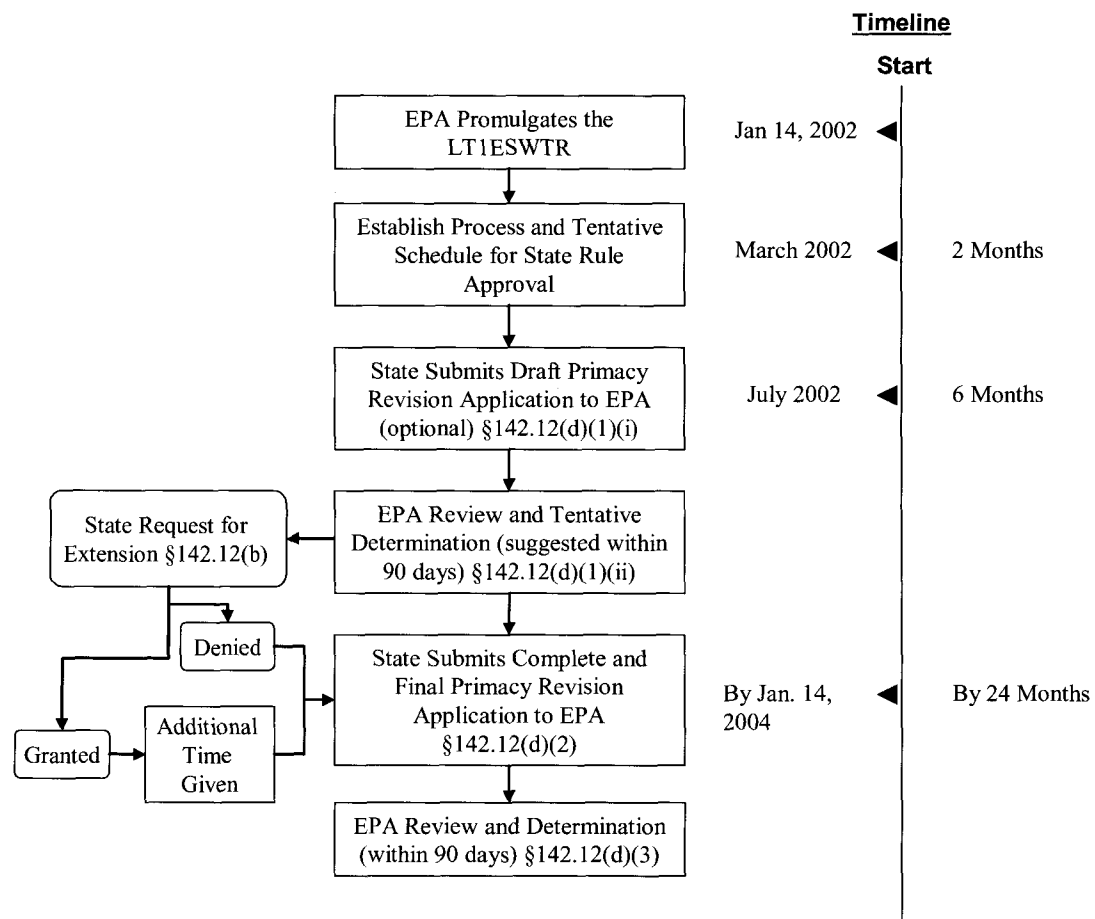
The state and Region should agree to a plan and timetable for submitting the state primacy revision application as soon as possible after rule promulgation—ideally within five months of promulgation.

### 4.1.2 The Final Review Process

Once a state application is complete and final, EPA has a regulatory (and statutory) deadline of 90 days to review and approve or disapprove of the revised program. The Offices of Ground Water and Drinking Water (OGWDW) and Enforcement and Compliance Assurance (OECA) will conduct detailed reviews of the first state package from each Region. The Region should submit their comments with the state's package for Headquarters' review. When the Region has identified all significant issues, OGWDW and OECA will waive concurrence on all other state programs in that Region, although HQ will retain the option to review additional state programs as appropriate. The Office of General Counsel (OGC) has delegated its review and approval to the Office of Regional Counsel (ORC).

In order to meet the 90-day deadline for packages undergoing Headquarters' review, the review period will be equally split giving both the Regions and Headquarters 45 days to conduct their respective reviews. For the first package in each Region, Regions should forward copies of the primacy revision applications to the Drinking Water Protection Division Director in OGWDW, who will take the lead on the review process. OGWDW will provide OECA with a copy for their concurrent review. OECA will concur on OGWDW approvals.

**Figure 4.2: Recommended Review Process for State Request for Approval of Program Revisions**



## **4.2 State Primacy Program Revision Extensions**

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### **4.2.1 The Extension Process**

Under §142.12(b), states may request that the 2-year deadline for submitting the complete and final packages for EPA approval of program revisions be extended for up to 2 additional years in certain circumstances. The extension request must be submitted to EPA within 2 years of the date that EPA published the regulation. The Regional Administrator has been delegated authority to approve extension applications. Headquarters concurrence on extensions is not required.

Therefore, the state must either adopt regulations pertaining to the LT1ESWTR and submit a complete and final primacy revision application or request an extension of up to 2 years by January 14, 2004.

### **4.2.2 Criteria that an Extension Request Must Meet**

For an extension to be granted under §142.12(b), the state must demonstrate that it is requesting the extension because it cannot meet the original deadline for reasons beyond its control, despite a good faith effort to do so. A critical part of the extension application is the state's proposed schedule for submission of its complete and final request for approval of a revised primacy program. The application must also demonstrate at least one of the following:

- (i) That the state currently lacks the legislative or regulatory authority to enforce the new or revised requirements; or,
- (ii) That the state currently lacks the program capability adequate to implement the new or revised requirements; or,
- (iii) That the state is requesting the extension to group two or more program revisions in a single legislative or regulatory action.

In addition, the state must be implementing the EPA requirements to be adopted in its program revision within the scope of its current authority and capabilities.

### **4.2.3 Conditions of the Extension**

Until the State Primacy Revision Application has been submitted, the state and appropriate EPA Regional office will share responsibility for implementing the primary program elements as indicated in the extension agreement. The state and the EPA Regional office should discuss these elements, and address terms of responsibility in the agreement.

These conditions will be determined during the extension approval process and are decided on a case-by-case basis. The conditions must be included in an extension agreement between the state and the EPA Regional office.

Conditions of an extension agreement may include:

- Informing PWSs of the new EPA (and upcoming state) requirements and that the Region will be overseeing implementation of the requirements until they approve the state program revisions or until the state submits a complete and final revision package if the state qualifies for interim primacy;

- Collecting, storing and managing laboratory results, public notices, and other compliance and operation data required by the EPA regulations;
- Assisting the Region in the development of the technical aspects of enforcement actions and conducting informal follow-up on violations (telephone calls, letters, etc.);
- Providing technical assistance to public water systems;
- For states whose request for an extension is based on a current lack of program capability adequate to implement the new requirements, taking steps agreed to by the Region and the state during the extension period to remedy the deficiency;
- Providing the Region with all the information required under §142.15 on state reporting.

Figure 4.3 provides a checklist the Region can use to review state extensions or to create an extension agreement.

Until states have primacy, EPA is the primacy enforcement authority. However, historically states have played a role in implementation for various reasons - most importantly, since states have the local knowledge and expertise and have established relationships with their systems.

The state and EPA should be viewed as partners in this effort, working toward two very specific public health-related goals. The first goal is to achieve a high level of compliance with the regulation. The second goal is to facilitate successful implementation of the regulation during the transition period before the state has primacy, including interim primacy, for the rule. In order to accomplish these goals, education, training, and technical assistance will need to be provided to water suppliers on their responsibilities under the LT1ESWTR.

### Figure 4.3: Extension Request Checklist

{Date}

{Regional Administrator}

Regional Administrator

U.S. EPA Region {Region}

{Street Address}

{City, State, Zip}

RE: Request/approval for an Extension Agreement

Dear {Regional Administrator}:

The State of {State} is requesting an extension to the date that final primacy revisions are due to EPA for the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) until {insert date - no later than January 2006}, as allowed by 40 CFR 142.12 and would appreciate your approval. Staff of the {State Department/Agency} have conferred with your staff and has agreed to the requirements listed below for this extension. This extension is being requested because the State of {State}:

- ☐ Is planning to group two or more program revisions into a single legislative or regulatory action.
- ☐ Currently lacks the legislative or regulatory authority to enforce the new or revised requirements.
- ☐ Currently lacks adequate program capability to implement the new or revised requirements.

{State Department/Agency} will be implementing the LT1ESWTR within the scope of its current authority and capability as outlined in the six areas identified in 142.12(b)(3)(i-vi):

**i) Informing PWSs of the new EPA (and upcoming state) requirements and that EPA will be overseeing implementation of the requirements until EPA approves the state revision.**

State    EPA

- |       |       |   |
|-------|-------|---|
| _____ | _____ | Provide copies of regulation and guidance to other state agencies, PWSs, technical assistance providers, associations, or other interested parties.       |
| _____ | _____ | Educate and coordinate with state staff, public water supplies (PWSs), the public, and other water associations about the requirements of this regulation |
| _____ | _____ | Notify affected systems of their requirements under the LT1ESWTR.   |
| _____ | _____ | Other   |

**ii) Collecting, storing and managing laboratory results, public notices, and other compliance and operation data required by the EPA regulations.**

State    EPA

- |       |       |   |
|-------|-------|---|
| _____ | _____ | Devise a tracking system for PWS reporting pursuant to the LT1ESWTR.                        |
| _____ | _____ | Keep states informed of SDWIS reporting requirements during development and implementation. |
| _____ | _____ | Report LT1ESWTR violation and enforcement information to SDWIS as required.                 |
| _____ | _____ | Other   |



**iii) Assisting EPA in the development of the technical aspects of the enforcement actions and conducting informal follow-up and violations (telephones calls, letters, etc.).**

State	EPA
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**iv) Providing technical assistance to public water systems.**

State	EPA
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**v) Providing EPA with all information prescribed by the State Reporting Requirements in 142.15.**

State	EPA
_____	_____
_____	_____
_____	_____
_____	_____

**vi) For states whose request for an extension is based on a current lack of program capability to implement the new or revised requirements agrees to take the following steps to remedy the capability deficiency.**

State	EPA
_____	_____
_____	_____
_____	_____
_____	_____

I affirm that the {State Department/Agency} will implement provisions of the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) as outlined above.

\_\_\_\_\_  
{Agency Director or Secretary}

\_\_\_\_\_  
Date

\_\_\_\_\_  
{Name of State Agency}

I have consulted with my staff and approve your extension for the aforementioned regulation. I affirm that EPA Region {Region} will implement provisions of the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) as outlined above.

\_\_\_\_\_  
Regional Administrator  
EPA Region {Region}

\_\_\_\_\_  
Date

This Extension Agreement will take effect upon the date of the last signature.

## 4.3 State Primacy Package

---

The Primacy Revision Application package should consist of the following sections:

- ☐ State Primacy Revision Checklist
- ☐ Text of the State's Regulation
- ☐ Primacy Revision Crosswalk
- ☐ State Reporting and Recordkeeping Checklist
- ☐ Special Primacy Requirements
- ☐ Attorney General's Statement of Enforceability

### 4.3.1 The State Primacy Revision Checklist (40 CFR 142.12(c)(1))

This section is a checklist of general primacy requirements, taken from 40 CFR 142.10, as shown in Figure 4.4. In completing this checklist, the state must identify the program elements that it has revised in response to new Federal requirements. If an element has been revised the state should indicate a "Yes" answer in the second column next to the list of program elements and should submit appropriate documentation. For elements that need not be revised, the state need only list the citation and date of adoption in the second column. During the application review process, EPA will insert findings and comments in the third column.

**Rule Bundling**—States may bundle the primacy revision packages for multiple rules. If states choose to bundle requirements, the Attorney General's Statement should reference all of the rules included.

### 4.3.2 Text of the State's Regulation

Each primacy application package should include the text of the state regulation.

### 4.3.3 Primacy Revision Crosswalk

The Primacy Revision Crosswalk, found in Appendix A, should be completed by states in order to identify state statutory or regulatory provisions that correspond to each Federal requirement. If the state's provisions differ from Federal requirements, the state should explain how its requirements are "no less stringent."

**Figure 4.4: State Primacy Revision Checklist**

Required Program Elements		Revision to State Program	EPA Findings/Comments
§142.10	Primary Enforcement ▸ Definition of Public Water System*		
§142.10(a)	Regulations No Less Stringent		
§142.10(b)(1)	Maintain Inventory		
§142.10(b)(2)	Sanitary Survey Program		
§142.10(b)(3)	Laboratory Certification Program		
§142.10(b)(4)	Laboratory Capability		
§142.10(b)(5)	Plan Review Program		
§142.10(b)(6)(i)	Authority to apply regulations		
§142.10(b)(6)(ii)	Authority to sue in courts of competent jurisdiction		
§142.10(b)(6)(iii)	Right of Entry		
§142.10(b)(6)(iv)	Authority to require records		
§142.10(b)(6)(v)	Authority to require public notification		
§142.10(b)(6)(vi)	Authority to assess civil and criminal penalties		
§142.10(b)(6)(vii)	Authority to require Consumer Confidence Reports (CCRs)		
§142.10(c)	Maintenance of Records		
§142.10(d)	Variance/Exemption Conditions (if applicable)**		
§142.10(e)	Emergency Plans		
§142.10(f)	Administrative Penalty Authority*		

\* New requirement from the 1996 Amendments. Regulations published in the April 28, 1998 *Federal Register*.

\*\* New regulations published in the August 14, 1998 *Federal Register*.

#### 4.3.4 State Reporting and Recordkeeping Checklist (40 CFR 142.14 and 142.15)

The LT1ESWTR does not add any state reporting requirements, but does include six state recordkeeping requirements.

The state should use the Primacy Revision Crosswalk in Appendix A to demonstrate that the state recordkeeping requirements are consistent with federal requirements.

The Primacy Revision Corsswalk includes state recordkeeping requirements indicating that the state must keep:

- Records of turbidity measurements for not less than one year. The information retained must be set forth in a form which makes possible comparison with the limits specified in §§141.71, 141.73, 141.173 and 141.175, 141.550–141.553, and 141.560–141.564.

- Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with §§141.72 and 141.74 and the reporting requirements of §§141.75, 141.175, and 141.570, for not less than one year. .
- Records of decisions made on a system-by-system and case-by-case basis under provisions of part 141, subpart H, subpart P, or subpart T, in writing and kept by the state.
- Records of systems consulting with the state concerning a modification to disinfection practice under §§141.170(d), 141.172(c), and 141.542 of this chapter, including the status of the consultation.
- Records of decisions that a system using alternative filtration technologies, as allowed under §§141.173(b) and §141.552 of this chapter, can consistently achieve a 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The decisions must include state-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised. The state must provide a copy of the decision to the system.
- Records of systems required to do filter self-assessment, CPE, or CCP under the requirements of §§141.175 and 141.563 of this chapter.

#### **4.3.5 Special Primacy Requirement (40 CFR 142.16)**

Section 4.4 provides guidance on how states may choose to meet the Special Primacy Requirements.

#### **4.3.6 Attorney General's Statement of Enforceability (40 CFR 142.12(c)(2))**

The complete and final primacy revision application must include an Attorney General's Statement certifying that the state regulations were duly adopted and are enforceable (unless EPA has waived this requirement by letter to the state). The Attorney General's Statement should also certify that the state does not have any audit privilege or immunity laws, or if it has such laws, that these laws do not prevent the state from meeting the requirements of the Safe Drinking Water Act. If a state has submitted this certification with a previous revision package, then the state should indicate the date of submittal and the Attorney General need only certify that the status of the audit laws has not changed since the prior submittal. An example of an Attorney General's Statement is presented in Figure 4.5.

##### **4.3.6.1 Guidance For States on Audit Privilege and/or Immunity Laws**

In order for EPA to properly evaluate the state's request for approval, the state Attorney General or independent legal counsel should certify that the state's environmental audit immunity and/or privilege and immunity law does not affect its ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act. This certification should be reasonably consistent with the wording of the state audit laws and should demonstrate how state program approval criteria are satisfied.

EPA will apply the criteria outlined in its "Statement of Principles" memo issued on 2/14/97 (*See* <http://epa.gov/oeca/oppa/pdf/auditimun.pdf>) in determining whether states with audit laws have retained adequate enforcement authority for any authorized federal programs. The principles articulated in the guidance are based on the requirements of federal law, specifically the enforcement and compliance and state program approval provisions of environmental statutes and their corresponding regulations. The principles provide that if provisions of state law are ambiguous, it will be important to obtain opinions from the state Attorney General or independent legal counsel interpreting the law as meeting specific federal requirements. If the law cannot be so interpreted, changes to state laws may be necessary to obtain federal program approval. Before submitting a package for approval, states with audit privilege and/or

immunity laws should initiate communications with appropriate EPA Regional Offices to identify and discuss the issues raised by the state's audit privilege and/or immunity law.

### Figure 4.5: Example of Attorney General's Statement

#### ***Model Language***

I hereby certify, pursuant to my authority as (1) and in accordance with the Safe Drinking Water Act as amended, and (2), that in my opinion the laws of the [State / Commonwealth of (3)] [or tribal ordinances of (4)] to carry out the program set forth in the "Program Description" submitted by the (5) have been duly adopted and are enforceable. The specific authorities provided are contained in statutes or regulations that are lawfully adopted at the time this Statement is approved and signed, and will be fully effective by the time the program is approved.

#### ***Model Language***

##### **I. For States with No Audit Privilege and/or Immunity Laws**

Furthermore, I certify that [State / Commonwealth of (3)] has not enacted any environmental audit privilege and/or immunity laws.

##### **II. For States with Audit Laws that do Not Apply to the State Agency Administering the Safe Drinking Water Act**

Furthermore, I certify that the environmental [audit privilege and/or immunity law] of the [State / Commonwealth of (3)] does not affect (3) ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act because the [audit privilege and/or immunity law] does not apply to the program set forth in the "Program Description." The Safe Drinking Water Act program set forth in the "Program Description" is administered by (5); the [audit privilege and/or immunity law] does not affect programs implemented by (5), thus the program set forth in the "Program Description" is unaffected by the provisions of [State / Commonwealth of (3)] [audit privilege and/or immunity law].

##### **III. For States with Audit Privilege and/or Immunity Laws that Worked with EPA to Satisfy Requirements for Federally Authorized, Delegated or Approved Environmental Programs**

Furthermore, I certify that the environmental [audit privilege and/or immunity law] of the [State / Commonwealth of (3)] does not affect (3) ability to meet enforcement and information gathering requirements under the Safe Drinking Water Act because [State / Commonwealth of (3)] has enacted statutory revisions and/or issued a clarifying Attorney General's Statement to satisfy requirements for federally authorized, delegated or approved environmental programs.

Seal of Office

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Date

- (1) State Attorney General or attorney for the primacy agency if it has independent legal counsel
- (2) 40 CFR 142.11(a)(7)(i) for initial primacy applications or 142.12(c)(1)(iii) for primacy program revision applications.
- (3) Name of State or Commonwealth
- (4) Name of Tribe
- (5) Name of Primacy Agency

## 4.4 Guidance for the Special Primacy Requirements of the LT1ESWTR

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This section contains information and guidance states can use when addressing the special primacy requirements of the LT1ESWTR. The guidance addresses special primacy conditions in the same order that they occur in the rule.

States should note that, in several sections, the guidance makes suggestions and offers alternatives that go beyond the minimum requirements indicated by reading the subsections of §142.16. EPA does this to provide states with information and/or suggestions that may be helpful to states' implementation efforts. Such suggestions are prefaced by "may" or "should" and are to be considered advisory. They are not required elements of states' applications for program revision.

**§142.16 Special primacy requirements. (p):** *Requirements for states to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirements that state provisions are no less stringent than the federal requirements, an application for approval of a state program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People, must contain the information specified in this paragraph:*

**(1) Enforceable requirements:** *States must have rules or other authority to require systems to participate in a Comprehensive Technical Assistance (CTA) activity, the performance improvement phase of the Composite Correction Program (CCP). The state must determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the state that the system is able to receive and implement technical assistance provided through the CTA. A CPE is a thorough review and analysis of a system's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. During the CTA phase, the system must identify and systematically address factors limiting performance. The CTA is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority-setting techniques and maintaining long-term involvement to systematically train staff and administrators.*

### Guidance

This special primacy requirement can be satisfied by a description of statutes, rules, and other authority the state can use to require PWSs to participate in a comprehensive technical assistance (CTA). EPA strongly encourages states not to rely exclusively on imminent and substantial endangerment authority to require CTAs because of the difficulty of establishing the existence of imminent and substantial endangerment in such situations. The appropriate section(s) of each source of authority should be cited and copies of the written documents must be included in the revision application package. The state should explain how the authorities will be used to require systems to participate in CTAs and ensure the resulting recommendations are implemented. States may also wish to address their authority to take administrative and/or legal actions and assess penalties.

States should note that this special primacy requirement of the Long Term 1 Enhanced Surface Water Treatment Rule is intended to ensure that states have authority to require systems to participate in comprehensive technical assistance (CTAs) in situations warranted by the results of the CPEs when a state has also determined that the system is able to receive and implement technical assistance provided through the CTA. Therefore, states may wish to consider other circumstances under which the requirement for performing a CPE or CTA might be desirable. States should consider development of prioritization procedures for targeting systems that need CTAs and should determine what performance-limiting factors (A, B, or C factors) must be corrected. To obtain the authority to ensure that systems conduct a CTA when necessary, states may want to add a requirement in their regulations that would require systems to go through with a CTA when the CPE required by the triggers in §141.563 of the rule shows that a CTA would be beneficial.

## References for more detailed guidance

1. *Optimizing Water Treatment Plant Performance Using the Composite Correction Program*, USEPA, Revised August 1998, EPA/625/6-91/027.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

2. *Optimizing Water Treatment Plant Performance Using the Composite Correction Program*, USEPA, February 1991, EPA/625/6-91/027.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

3. *Summary Report: Optimizing Water Treatment Plant Performance With the Composite Correction Program*, USEPA, 1990.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791



**§ 142.16 Special primacy requirements. (p):** Requirements for states to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirements that state provisions are no less stringent than the federal requirements, an application for approval of a state program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection, must contain the information specified in this paragraph: **(2) State practices or procedures. (i):** Section 141.530 of this chapter—How the state will approve a more representative data set for optional TTHM and HAA5 monitoring and profiling.

## Guidance

Section 141.531 allows states to approve a more representative data set for disinfection profiling than the data set required under 141.532-141.536. EPA believes that request for the use of more representative data sets are best handled by states on a case-by-case basis. Therefore, to meet this special primacy requirement, states' applications for primacy revision should demonstrate that each request for use of a more representative data set for profiling will be evaluated on its merits and approved only when:

1. A data set exists or will be collected; and,
2. The data set is more representative of the system's disinfection profiling than the data set required under 141.532-141.536.

Section 141.531 allows states to determine a system's profile is unnecessary if the system has TTHM and HAA5 levels below 0.064 mg/L for TTHM and 0.048 mg/L for HAA5. This monitoring is optional and this provision was included in the rule to reduce the burden of monitoring and producing a disinfection profile on small systems as compared to large systems. Under the optional monitoring provision, systems are required to collect at least one sample each for TTHM and HAA5 after January 1, 1998, during the month with the warmest water temperature and at the point of maximum residence time in the distribution system. States are required to include in their primacy application a description of how the state will approve a more representative data set for TTHM and HAA5 optional monitoring. States' applications for primacy revision should demonstrate that each request for use of a more representative data set will be evaluated on its merits and approved only when:

1. A data set exists or will be collected; and,
2. The data set is more representative of the system's optional TTHM and HAA5 data set required under 141.531, should EPA make the anticipated correction to allow use of such data sets.

## References for more detailed guidance

1. *IESWTR Disinfection Profiling and Benchmarking Guidance Manual*, USEPA, 1999.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

2. *Microbial and Disinfection Byproduct Rules Simultaneous Compliance Guidance Manual*, USEPA, 1999.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

3. *LTIESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual*, USEPA, 2003

**§ 142.16 Special primacy requirements. (p):** Requirements for states to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirements that state provisions are no less stringent than the federal requirements, an application for approval of a state program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection, must contain the information specified in this paragraph: **(2) State practices or procedures. (ii):** Section 141.535 of this chapter—How the state will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, ozone, or chlorine dioxide for primary disinfection.

## Guidance

Section 141.535 of the Long Term 1 Enhanced Surface Water Treatment Rule requires systems that use ozone, chloramines, or chlorine dioxide for primary disinfection to calculate the logs of inactivation of viruses using a method approved by the state. This calculation is required for a disinfection profile in addition to the calculation of the logs of inactivation for the *Giardia lamblia* disinfection profile. It is required because for these disinfectants, EPA expects greater CT may be necessary to achieve the virus inactivation required by the SWTR than for inactivation of *Giardia lamblia*. In their primacy revision applications, states must describe how they will approve a method to calculate the logs of inactivation for viruses. States may want to consult the methodology used for the IESWTR as a reference.

EPA suggests that states refer to the *LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual* (EPA Doc # 816-R-03-004, May 2003), and the *Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources* (SWTR Guidance Manual) for determining how systems should calculate the logs of inactivation of viruses, and thus meet this special primacy requirement. Suggested methods of doing so are as follows:

### *For systems using chloramines as a primary disinfectant*

Table E-13 of the SWTR Guidance Manual presents CT values for 2-log, 3-log, and 4-log inactivation of viruses by chloramine at temperatures ranging from <1° C to 25° C. The table is appropriate for use by systems that add chlorine prior to ammonia and, therefore, get some benefit of a short-lived free chlorine residual. The basis for the inactivation values in Table E-13, is discussed in Appendix F (Section F.2.3 Chloramines) of the SWTR Guidance Manual. Systems that add the two chemicals concurrently, or those adding ammonia first, have little free chlorine and should not use Table E-13 but may determine viral inactivation efficiencies by using the protocol found in Appendix G of the manual.

### *For systems using chlorine dioxide as a primary disinfectant*

Table E-9 of the SWTR Guidance Manual presents CT values for 2-log, 3-log, and 4-log inactivation of viruses by chlorine dioxide at temperatures ranging from <1° C to 25° C and within a pH range of 6-9. EPA believes it is appropriate for states to have PWSs use Table E-9 for calculating the logs of inactivation of viruses. Appendix F (F.2.2 Chlorine Dioxide) of the SWTR Guidance Manual offers a short discussion of the basis for the values in the table. It should be noted that chlorine dioxide is significantly more effective at higher pH's.

### *For systems using ozone as a primary disinfectant*

Table E-11 of the SWTR Guidance Manual shows CT values for 2-log, 3-log, and 4-log inactivation of viruses by ozone over a temperature range of <1° C to 25° C. EPA believes it is appropriate for states to have PWSs use Table E-11 for calculating the logs of inactivation of viruses. Appendix F (F.2.4 Ozone) of the SWTR Guidance Manual offers a short discussion of the basis for the values in the table.

#### *Other methods*

States may approve other methods for calculation of the logs of inactivation for viruses for systems using ozone or chloramines. The state must identify in its primacy revision application how it will approve the methods. The methods should be adequately explained in the primacy revision application.

#### **References for more detailed guidance**

1. *Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources*, the American Water Works Association, 1991.

Available from:

AWWA  
6666 West Quincy Avenue  
Denver, CO 80235  
or <http://www.epa.gov/safewater/mdbp/guidsws.pdf>

2. *Alternative Disinfectants and Oxidants Guidance Manual*, USEPA, 1999.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

3. *IESWTR Disinfection Profiling and Benchmarking Guidance Manual*, USEPA, 1999

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

4. *LTIESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual*, USEPA, 2003

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

**§142.16 Special primacy requirements. (p):** Requirements for states to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirements that state provisions are no less stringent than the federal requirements, an application for approval of a state program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection, must contain the information specified in this paragraph: **(2) State practices or procedures. (iii):** Section 141.542 of this chapter—How the state will consult with the system and approve significant changes to disinfection practices.

## Guidance

Systems that are required to develop disinfection profiles, and that later want to make a significant change to their disinfection practice, must develop a disinfection benchmark and consult with the state prior to making such change. As described in §141.541 of the LT1ESWTR, significant changes include:

- Changes to the point of disinfection.
- Changes to the disinfectant(s) used in the treatment plant.
- Changes to the disinfection process; or
- Any other modifications identified by the state. (Examples could include addition of source water, pretreatment, changes in contact basin geometry and baffling, or in some instances changes in pH).

The disinfection profiling and benchmarking requirements are intended to ensure that systems attempting to reduce disinfection byproduct production do not make changes that cause unintended and unacceptable increases in microbial risks. In order for the consultation process to be effective, states should identify all systems that are required to develop a disinfection profile and provide them with guidance in terms of when, and under what circumstances, consultation is necessary. It should be noted that the LT1ESWTR requires approval by the state before any significant changes to disinfection practice is made. States may use their existing approval processes to approve significant changes (e.g., plan review).

In their applications for primacy revision, states must explain how they will consult with systems to evaluate changes in disinfection practices and should include what criteria will be used to determine whether approval would be granted. EPA suggests that states, in the consultation process, consider the following:

- Why the change is being proposed.
- The positive impacts of the change.
- The negative impacts of the change.
- The alternative benchmark.
- Are there alternatives that achieve the desired goal and, if so, have they been evaluated?

Criteria that could be considered by the state could include:

- The microbial quality of the raw water.
- The effectiveness of watershed protection efforts.
- The efficacy of the treatment process in removing microbiological contaminants.
- Chronic and acute risk trade-offs.
- Alternative minimum benchmarks based on water quality.

Finally, the state should work with the PWS in an effort to reach a conclusion that considers, weighs, and balances the risks of microbial contaminants and disinfection byproducts. Ultimately, the state should make a public-health-based decision using all available information and best professional judgement.

#### **References for more detailed guidance**

1. *IESWTR Disinfection Profiling and Benchmarking Guidance Manual*, USEPA, 1999.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

2. *Microbial and Disinfection Byproduct Rules Simultaneous Compliance Guidance Manual*, USEPA, 1999.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

3. *LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual*, USEPA, 2003

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

**§142.16 Special primacy requirements. (p):** Requirements for states to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirements that state provisions are no less stringent than the federal requirements, an application for approval of a state program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection, must contain the information specified in this paragraph **(2) State practices or procedures. (iv):** Section 141.552 of this chapter—For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, how the state will determine that a public water system may use a filtration technology if the PWS demonstrates to the state, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of §141.72(b) of this chapter, consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. For a system that makes this demonstration, how the state will set turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time at a level that consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts.

## Guidance

The SWTR, IESWTR, and LT1ESWTR establish performance standards for several long-established types of surface water treatment technologies, including conventional treatment, direct filtration, slow sand filtration, and diatomaceous earth filtration. These technologies, when properly designed and operated, used in conjunction with disinfection and contact time, and applied to appropriate surface waters, are capable of protecting against the health risks associated with *Giardia lamblia*, *Legionella*, viruses, *Cryptosporidium*, and other pathogens. Section 141.552 of the LT1ESWTR requires PWSs that use technologies other than those mentioned to demonstrate to the state that the system's filtration in combination with disinfection treatment consistently achieves the rule's minimum removal and inactivation requirements for *Cryptosporidium*, *Giardia lamblia*, and viruses. When the state grants approval for the use of alternative technologies, it must establish a turbidity performance limit the system must meet at least 95 percent of the time (not to exceed 1 NTU) and a turbidity limit the system may not exceed at any time (not to exceed 5 NTU). The state must set the turbidity limits at levels that ensure the removal and/or inactivation requirements are consistently achieved.

States must, in their primacy revision application for LT1ESWTR, describe how they will determine that a PWS may use an alternative filtration technology if the PWS meets the prerequisites for doing so *and* how the state will establish the requisite turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time. States may want to consult the methodology used for the IESWTR as a reference.

Most states have a review and approval process that addresses all significant modifications to PWSs (not just alternative technologies). In their review of treatment technologies, states generally consider all relevant components necessary to provide consistently safe drinking water including raw water quality and its variability, pretreatment needs, design flow rates, disinfection, storage, monitoring, and operation and maintenance requirements. Because alternative technologies generally do not have long performance histories to base approval/permitting decisions upon, states may wish to apply an additional margin of scrutiny in their review process. The technologies should be evaluated not only on the basis of finished water quality, but also with consideration of operational complexities, the potential for cross connections, redundancy, the ability to handle variable raw water qualities, leaching of contaminants, and long term reliability. Pilot studies are often necessary to adequately demonstrate that an alternative technology is appropriate for use at a particular site.

Guidance has been developed for states to use in determining how to grant approvals for alternative technologies. This guidance generally does not address the current concern for *Cryptosporidium*. The

protocols that have been developed and used to assess the performance of technologies in terms of *Giardia lamblia* removal may, however, be revised for *Cryptosporidium* removal evaluations. EPA recommends that states consider the guidance on these issues presented in Section 4.3.7 and Appendix M of the SWTR Guidance Manual (reference 3) as well as the Western States Workgroup's *Consensus Protocol for Evaluation and Acceptance of Alternate Surface Water Filtration Technologies in Small System Applications*, 1992 (reference 1). The protocol developed by the Western States Workgroup establishes a procedure and criteria for evaluation of alternative filtration technologies and should be particularly useful. The following is an outline of the protocol's procedural steps.

- System component evaluation for leaching of contaminants.
- Demonstration of *Giardia* (and *Cryptosporidium*) removal performance.
  - Microscopic Particulate Analyses (MPA).
  - *Giardia/Cryptosporidium* surrogate particle removal evaluations.
  - Particle size analysis demonstration for *Giardia* (and *Cryptosporidium*) removal credit.
  - Live *Giardia/Cryptosporidium* challenge studies.
- On-site demonstration of performance effectiveness.
  - Prior testing of an identical system on a similar water.
  - Conditional acceptance with a performance bond.
  - Pilot testing with MPAs, appropriate monitoring, and final engineering report.

The final step in the process is for states to establish turbidity limits that the system must meet 95 percent of the time and that the system may not exceed at any time. This was not necessary under the SWTR's requirements because the limits for alternative technologies defaulted to the performance limits established for slow sand filtration. When establishing the turbidity performance requirements, states should give consideration to, among other things, cyst removal efficiencies, potential for interference with disinfection, potential for interference with bacteriological testing, indicators of treatment failure, and the technology's redundant components.

### References for more detailed guidance

1. *Consensus Protocol for Evaluation and Acceptance of Alternate Surface Water Filtration Technologies in Small System Applications*, Western States Workgroup, April 1992.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

2. *State Alternative Technology Approval Protocol*, ASDWA/EPA.

Available from:

Safe Drinking Water Hotline: 1-800-426-4791

3. *Guidance Manual for Compliance With the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources*, AWWA, 1991.

Available from:

AWWA

6666 West Quincy Avenue

Denver, CO 80235

or <http://www.epa.gov/safewater/mdbp/guidsws.pdf>



## **Section V**

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# **SDWIS Reporting and SNC Definitions**

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## 5.1 Safe Drinking Water Information System (SDWIS) Reporting Under the LT1ESWTR

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SDWIS/FED (Safe Drinking Water Information System/Federal version) is an EPA national database storing routine information about the nation's drinking water. Designed to replace the system known as FRDS (Federal Reporting Data System), SDWIS/FED stores the information EPA needs to monitor approximately 175,000 public water systems.

States supervise the drinking water systems within their jurisdictions to ensure that each public water system meets state and EPA standards for safe drinking water. The Safe Drinking Water Act (SDWA) requires states to report drinking water information periodically to EPA. This information is maintained in SDWIS/FED.

States report the following information to EPA:

- Basic information on each water system, including: name, ID number, number of people served, type of system (year-round or seasonal), and source of water (ground water or surface water);
- Violation information for each water system: whether it has followed established monitoring and reporting (M/R) schedules, complied with mandated treatment techniques (TT), or violated any Maximum Contaminant Levels (MCLs);
- Enforcement information: what actions states have taken to ensure that drinking water systems return to compliance if they are in violation of a drinking water regulation; and
- Sampling results for unregulated contaminants and for regulated contaminants when the monitoring results exceed the MCL.

EPA uses this information to determine if and when it needs to take action against non-compliant systems, oversee state drinking water programs, track contaminant levels, respond to public inquiries, and prepare national reports. EPA also uses this information to evaluate the effectiveness of its programs and regulations, and to determine whether new regulations are needed to further protect public health.

### 5.1.1 Federally Reported Violations

Under SDWIS/FED reporting, states only report when violations occur. In the interest of reducing the reporting burden on states, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the state. Any violation of the rule, whether included in the accompanying table or not, is a basis for a state or federal enforcement action.

Table 5.1 summarizes the violation and contaminant codes that will be used to report violations of the LT1ESWTR to SDWIS/FED.

**Table 5.1: SDWIS/FED Codes for Federal Reporting Under the LT1ESWTR**

<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique (TT) Violations</b>
37	0300	Failure to profile or consult w/state (disinfection changes)
43	0300	Combined filter effluent exceeds 1 NTU/state-set maximum requirements
44	0300	More than 5 percent of monthly combined filter effluent samples exceed 0.3 NTU/state-set maximum requirements
47	0300	Construction of an uncovered finished water storage facility
<i>Inventory Code</i>	0300	Failure to meet <i>Cryptosporidium</i> site specific conditions (unfiltered systems)
		<b>Monitoring and Reporting (M/R) Violations</b>
29	0300	<b>Major:</b> Failure to conduct follow-up activities triggered by individual filter turbidity exceedances.
38 <sup>1</sup>	0300	<b>Major:</b> Failure to collect and report 90 percent of required combined filter effluent turbidity samples
		<b>Major:</b> Failure to report all individual filter monitoring has been conducted
		<b>Minor:</b> Any other failure to monitor or report
		<b>Recordkeeping Violations</b>
09	0300	Failure to maintain the results of individual filter monitoring for at least 3 years
		<b>Public Notification (PN) Violation</b>
06	0300	Failure to notify public after a violation

1. Flag used to denote major or minor

Table 5.2 contains the Federally reportable violations for the LT1ESWTR in more detail. These violations are listed by contaminant or requirement and violation type. The table includes the SDWIS/FED reporting codes, the regulatory citation, system type affected, a detailed description of the violation, and the initial compliance date. This table will allow a user to better understand violations listed in SDWIS. For more information on how to report LT1ESWTR violations to SDWIS, please refer to the Appendix E.

**Table 5.2: Federal Reporting for LT1ESWTR**

Treatment Technique Violation						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
37/0300	Disinfection and Consultation	§141.530, §141.532, §141.536, §141.540, and §141.542	TT	CWS and NTNC Subpart H systems serving fewer than 10,000 people	Failure to profile or consult with the state before making a significant change to a disinfection practice if required to develop a disinfection profile	July 1, 2003 (systems serving 500-9,999)  January 1, 2004 (systems serving fewer than 500)
43/0300	Filtration	§141.551(b)	TT	Subpart H systems serving fewer than 10,000 using conventional or direct filtration  Subpart H systems serving fewer than 10,000 using alternative filtration technologies	Failure to achieve combined filter effluent turbidity level that at no time exceeds 1 NTU if PWS uses conventional or direct filtration  or  exceedance of the state-set maximum turbidity performance requirements for systems using alternative filtration technologies	January 1, 2005
44/0300	Filtration	§141.551(a)	TT	Subpart H systems serving fewer than 10,000 using conventional or direct filtration  Subpart H systems serving fewer than 10,000 using alternative filtration technologies	Failure to achieve combined filter effluent turbidity level of 0.3 NTU in 95 percent of monthly measurements if PWS uses conventional or direct filtration  or  failure to meet the state-set turbidity performance requirements in 95 percent of monthly measurements for systems using alternative filtration technologies	January 1, 2005*

Treatment Technique Violation						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
47/0300	Finished Water Reservoirs	§141.510 and §141.511	TT	All Subpart H systems serving fewer than 10,000 people	Systems are not allowed to begin construction of any uncovered finished water reservoir (reservoir, holding tank, or other storage facility)	March 15, 2002
Inventory Code/0300	<i>Cryptosporidium</i>	§141.520 and §141.521	TT	All unfiltered Subpart H systems serving fewer than 10,000 people	Failure to meet <i>Cryptosporidium</i> site specific condition requirements - system must install filtration within 18 months. Do not report a violation, but change the inventory record/code from “unfiltered avoiding” to “unfiltered required to filter”. Report a 42 code violation if filtration has not been installed after 18 months.	January 1, 2005*

Monitoring and Reporting Violations						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
29/0300	Filtration - Response to Individual Filter Trigger	§141.563(a)	M/R Major	Subpart H systems serving fewer than 10,000 using conventional or direct filtration	Failure to report to the state by the 10 <sup>th</sup> of the month following a turbidity exceedance (> 1.0 NTU in 2 consecutive recordings taken 15 minutes apart)	January 1, 2005*
29/0300	Filtration - Response to Individual Filter Trigger	§141.563(b)	M/R Major	Subpart H systems serving fewer than 10,000 using conventional or direct filtration	Failure to conduct and/or report to the state a self-assessment of an individual filter within 14 days of a turbidity exceedance (> 1.0 NTU in 2 consecutive recordings taken 15 minutes apart in each of 3 consecutive months)	January 1, 2005*
29/0300	Filtration - Response to Individual Filter Trigger	§141.563(c)	M/R Major	Subpart H systems serving fewer than 10,000 using conventional or direct filtration	Failure to have a comprehensive performance evaluation conducted by the state or a third party no later than 60 days after a turbidity exceedance (> 2.0 NTU in 2 consecutive recordings taken 15 minutes apart in 2 consecutive months) and have the evaluation completed and submitted to the state no later than 120 days following the exceedance	January 1, 2005*

Monitoring and Reporting Violations						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
38/0300	Filtration/ combined filter effluent	§141.570(a)	M/R Major Failure to collect and report at least 90 percent of required samples.	Subpart H systems serving fewer than 10,000 using conventional, direct, or alternative filtration	Failure to sample combined filter effluent for turbidity at required frequency using required collection and analytical methods and report the following within 10 days after the end of each month the PWS serves water to the public: 1. total number of samples taken, 2. the number and percentage of samples less than or equal to the limits specified in §141.73, or §141.1551, and §141.173; and, 3. date and value of any measurements over 1 NTU for conventional or direct filtration or which exceed the maximum level set by the state not to exceed 5.0 NTU for alternative filtration technologies	January 1, 2005*
			M/R Minor Any other failure to monitor or report.			
38/0300	Filtration	§141.570(b)	M/R Major	Subpart H systems serving fewer than 10,000 using conventional or direct filtration	Failure to report that the system has conducted all individual filter monitoring to the state within 10 days after the end of each month	January 1, 2005*



Recordkeeping Violations						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
09/0300	Filtration	§141.571(a)	Record-keeping	Subpart H systems serving fewer than 10,000 using conventional or direct filtration	Failure to maintain the results of individual filter monitoring for at least 3 years, documenting that the system has collected and recorded individual filter results every 15 minutes	January 1, 2005*

Public Notification Violations						
SDWIS Reporting Code	Regulated Contaminant/ Requirement	Citation	Violation Type	System Size and Type Affected	Violation	Initial Compliance Date
1	2	3	4	5	6	7
06/0300	Filtration and Disinfection	§141.202 and 203	PN	All Subpart H serving fewer than 10,000 people	Failure to notify public and use approved public notification language when there is a violation of the treatment technique and/or monitoring requirements for filtration and disinfection in Subpart H or Subpart T	January 1, 2005*

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by the minor corrections rule [69 FR 38850].

## **5.2 LT1ESWTR - SNC Definition**

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### **Draft SNC Definitions for the LT1ESWTR**

Significant non-compliers (SNCs) are community, non-transient non-community and transient non-community water systems that have more serious, frequent, or persistent violations. The criteria used by EPA designate a system as a SNC vary by contaminant or treatment technique requirement. The following are SNC definitions for the LT1ESWTR.

NOTE: SNC definitions for the Surface Water Treatment Rule continue to remain in effect.

#### **UNFILTERED AVOIDING FILTRATION**

- Systems which fail avoidance criteria must filter. See June 27, 1990 Surface Water Treatment Rule Implementation Manual. Systems become an SNC if filtration is not installed within 18 months of any failure of the avoidance criteria.
- A system that has three (3) or more Major M/R violations in any 12 consecutive months.
- A system that has a combination of five (5) or more Major M/R violations and Minor M/R violations in any 12 consecutive months.

#### **FILTERED**

- A system that has four (4) or more TT violations in any 12 consecutive months.
- A system that has a combination of six (6) or more TT violations and Major M/R violations in any 12 consecutive months.
- A system that has a combination of ten (10) or more TT violations, Major M/R violations, and Minor M/R violations in any 12 consecutive months.

#### **DISINFECTION PROFILING (if required)**

- Failure to consult with the state before making a significant disinfection change if required to develop a disinfection profile.

#### **UNCOVERED RESERVOIRS**

- Beginning construction of any uncovered finished water reservoir on or after March 15, 2002.

## **Section VI**

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# **Public Notification and Consumer Confidence Report Examples**

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This section provides examples of violations that systems may incur under the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). These examples address the public notification (PN) and Consumer Confidence Report (CCR) requirements for systems that incur these kinds of violations. Included in the examples are sample public notices and sample excerpts from CCR reports that would meet these public notification and CCR requirements. The examples in this section are adapted from examples 4-13 in Appendix E *LT1ESWTR Data Entry Instructions with Examples*. For more information on Safe Drinking Water Information System (SDWIS) reporting, refer to Appendix E and the examples contained therein.

Different levels of PN are required for different types of violations. The most severe violations, those presenting a significant chance of a hazard to human health, require immediate “Tier 1” PN. Less urgent violations require “Tier 2” or “Tier 3” PN, or none at all in the case of administrative violations. But every violation, regardless of whether it requires PN, must be reported in the annual CCR. Each time a systems delivers PN or a CCR to its customers, it must certify to the state that it has complied with the PN and CCR requirements. Table 6-1 provides an overview of PN and CCR requirements.

**Table 6-1. PN and CCR General Requirements**

<b>Type of Notification</b>	<b>By When?</b>	<b>By What Means?</b>	<b>Deadline to Certify Compliance</b>
CCR	July 1 of the year following the calendar year in which the violation occurred	Mail or direct delivery to billing units, and additional methods to notify those not reached by the first method	Within 3 months
Tier 1 PN	Within 24 hours of learning of the violation; also initiate consultation with Primacy Agency within 24 hours	Radio, TV, hand delivery, posting, or other method specified by Primacy Agency, along with additional methods if needed to reach persons served. Primacy Agency may establish additional requirements during consultation.	Within 10 days
Tier 2 PN	Within 30 days of learning of the violation; repeat notice every three months for unresolved violations	For community water systems (CWSs), mail or direct delivery; for non-community water systems (NCWSs), mail, direct delivery, or posting. Also, additional methods to notify those not reached by the first method. Primacy Agency may permit alternate methods.	Within 10 days
Tier 3 PN	Within 12 months of learning of the violation; repeated annually for unresolved violations	For CWSs, mail or direct delivery; for NCWSs, mail, direct delivery, or posting. Also, additional methods to notify those not reached by the first method. Primacy Agency may permit alternate methods. Notices for individual violations can be combined into an annual notice (including the CCR, if public notification requirements can still be met).	Within 10 days

Note: These requirements are the minimum required by EPA. Your Primacy Agency may have established stricter standards. Consult guidance material on the CCR and PN Rules for further information and additional requirements.

LT1ESWTR includes a variety of requirements, spanning every Tier level. Some violations require specific language to be included in PN or the CCR. Table 6-2 summarizes the types of violations that can occur under LT1ESWTR.

**Table 6-2. PN and CCR Requirements for LT1 Violations**

<b>Violation</b>	<b>Type</b>	<b>Public Notification</b>	<b>Inclusion in CCR</b>	<b>Required Language</b>
Exceedance of maximum CFE turbidity limit	Treatment Technique (TT)	Tier 1 or Tier 2, according to the judgement of the state after consultation (automatically elevated to Tier 1 if the state is not notified of the violation within 24 hours)	Required	Turbidity Health Effects <sup>1</sup> (PN, CCR)
Exceedance of 95 <sup>th</sup> -percentile turbidity limit in more than 5% of monthly CFE turbidity samples	TT	Tier 2	Required	Turbidity Health Effects <sup>1</sup> (PN, CCR)
Failure to adequately minimize <i>Cryptosporidium</i> risk in a watershed control program	TT	Tier 2	Required	<i>Giardia lamblia</i> , Viruses, HPC bacteria, <i>Legionella</i> , & <i>Cryptosporidium</i> Health Effects <sup>2</sup> (PN, CCR)
Failure to cover a new finished water storage facility	TT	Tier 2	Required	<i>Giardia lamblia</i> , Viruses, HPC bacteria, <i>Legionella</i> , & <i>Cryptosporidium</i> Health Effects <sup>2</sup> (PN, CCR)
Failure to develop a required disinfection profile, to calculate a required disinfection benchmark, or to consult with the state when making significant changes to disinfection practices	TT	Tier 2	Required	<i>Giardia lamblia</i> , Viruses, HPC bacteria, <i>Legionella</i> , & <i>Cryptosporidium</i> Health Effects <sup>2</sup> (PN, CCR)
Failure to collect CFE turbidity monitoring results as required	Monitoring	Tier 3	Required	Monitoring & Testing <sup>3</sup> (PN)

<b>Violation</b>	<b>Type</b>	<b>Public Notification</b>	<b>Inclusion in CCR</b>	<b>Required Language</b>
Failure to collect IFE turbidity monitoring results as required. (If an IFE turbidimeter fails, the system has 14 days to get it back online, and grab samples must be collected every four hours until the turbidimeter is back on-line. A violation occurs if a four-hour grab sample is not taken, or if the turbidimeter is not back online within 14 days.)	Monitoring	Tier 3	Required	Monitoring & Testing <sup>3</sup> (PN)
Failure to conduct follow-up actions triggered by regular IFE monitoring	Monitoring	Tier 3	Required	Monitoring & Testing <sup>3</sup> (PN)
Failure to report CFE turbidity monitoring results to the Primacy Agency as required	Reporting	Not required	Required	--
Failure to report IFE turbidity monitoring results to the Primacy Agency as required	Reporting	Not required	Required	--
Failure to report follow-up actions triggered by IFE monitoring	Reporting	Not required	Required	--
Failure to maintain IFE monitoring results for three years	Record-keeping	Not required	Required	--
Failure to keep disinfection benchmark or profile on file indefinitely	Record-keeping	Not required	Required	--

Note: Other standard language may also apply. These requirements are the minimum requirements by EPA. Your Primacy Agency may have established stricter standards, and has the authority to modify some requirements in particular instances. Consult guidance material on the PN, CCR, and LT1ESWTR for further information.

1. "Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."
2. "Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."
3. "We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we "did not monitor or test" or "did not complete all monitoring or testing" for [contaminant(s)], and therefore cannot be sure of the quality of your drinking water during that time."

## Example 1: Exceedance of Maximum CFE Turbidity Limit (State-Set Alternative Filtration Technology Limit)

### System Description - System B

System B is a community water system utilizing membrane microfiltration (i.e., an alternative filtration technology) to treat water from Lake P. The system uses chlorine as a primary and secondary disinfectant. Pursuant to the requirements of 40 CFR 141.551 and 40 CFR 141.552(a) for systems using alternative filtration, System B conducted a pilot study that showed that when the CFE turbidity is maintained below 0.5 NTU in 95% of all measurements taken at 4-hour intervals and below 1 NTU at all times, the plant was capable of removing 99% of *Cryptosporidium* oocysts, and removing or inactivating 99.9% of *Giardia lamblia* cysts and 99.99% of viruses. Subsequently, the Primacy Agency established these turbidity limits—0.5 NTU or below in at least 95% of monthly CFE samples, and 1 NTU or below in every sample—as the treatment technique turbidity performance standards for System B.

### Situation

The System B operator measures the CFE turbidity every four hours that the plant is in operation. Those measurements are recorded on a form provided by the Primacy Agency and each month's completed form is submitted to the Primacy Agency prior to the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of filtered water turbidity measurements taken during the month, the number and percentage of CFE measurements that were less than or equal to 0.5 NTU, and the date and value of any CFE turbidity measurement that exceeded 1 NTU.

On the September 12, 2005, a membrane failure caused one of the four-hour CFE turbidity measurements to be read and recorded at 1.6 NTU. This value is rounded to 2 NTU. The state was not contacted within 24 hours after the system became aware of the violation. The following information was included on the system's monthly report submitted on October 7, 2005:

**Table 6-3. System B September 2005 CFE Turbidity Monthly Report (Excerpt)**

Total Filter Measurements	# ≤ 0.5 NTU	% ≤ 0.5 NTU	Date > 1 NTU	Value of > 1 NTU
180	179	99%	9-12-05	2 NTU

Upon receiving this information, the state contacted the system immediately and discovered that the system had overlooked the violation and that no public notification had taken place.

### Public Notification and Consumer Confidence Report Requirements

Exceedance of the maximum turbidity value of 1 NTU is a treatment technique violation that requires either Tier 1 or Tier 2 public notification, according to the judgement of the Primacy Agency when consulted within 24 hours of the violation. Because the system did not consult with the state within 24 hours of the violation, public notification is automatically elevated to Tier 1. This notification is expected to occur within 24 hours of elevation to Tier 1 status (i.e., within 48 hours of the treatment technique violation). System B failed to notice and take action on the violation until reminded by the state on October 7. Tier 1 notice is still required for the treatment technique violation, and System B must provide this notice on October 8.

Note that in this example, although a Tier 1 violation has occurred requiring immediate public notice, the actual maximum turbidity exceedance occurred one month prior to distribution of the notice. In this case, the Primacy Agency may determine that typical Tier 1 language recommending boiling water prior to consumption is not appropriate since the turbidity problem has been resolved. Example 6-1 shows an



example of a public notice distributed on a Tier 1 schedule (i.e., within 24 hours of discovery of the violation in October) but with language more typical of Tier 2 notices (because the public health risk has passed). Next, Example 6-2 shows a more typical example of a Tier 1 public notice for a turbidity violation (delivered on time), and Example 6-3 shows an example follow-up notice indicating to the public that the problem has been corrected. Note that delivery of a follow-up notice is not required by EPA, but may be required by a Primacy Agency.

All treatment technique violations must be reported in the CCR. An example of a report of this violation in the CCR is shown in Example 6-4.

## **Example 6-1. Example Tier 1 Public Notification for a CFE Maximum Turbidity Exceedance (Delivered Weeks Late)**

### **IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER**

#### **System B Experienced High Turbidity Levels**

October 8, 2005

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. A water sample taken September 12, 2005 showed turbidity levels of 2 turbidity units. This is above the allowed limit of 1 turbidity unit.

*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

Normally we would contact the public immediately when a turbidity violation of this sort occurs, to warn of possible health risks. However, due to an administrative failure, in this case we unfortunately failed to. We became aware of the violation when the state reviewed our records and pointed it out to us.

We are not aware of any health impacts on the community connected with the incident. Since the turbidity returned to normal levels weeks ago, the water is currently safe to drink.

#### **What should I do?**

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

Individuals with severely compromised immune systems, infants, and the elderly may be more susceptible to waterborne disease in general, and they or their caretakers should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791.

The symptoms above are not caused only by organisms in drinking water. If you experience any of the symptoms described above and they persist, you may want to seek medical advice.

#### **What happened? What is being done?**

The high turbidity that was recorded on September 12, 2005 was caused by a failed filter membrane. We shut off flow to that filter module within minutes of the event. However, some water passed through the filter plant without adequate treatment. The failed filter was repaired by September 15, 2005.

We are working with the state to insure that if such an incident ever occurs again, the public will be notified immediately.

For more information, please contact John Johnson, manager of System B, at 555-1234 or write to 2600 Winding Rd., Townsville, GA 12345. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1 (800) 426-4791.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System B.

State Water System ID#GA1234584. Date distributed: 9/13/05

## Example 6-2. Example Tier 1 Public Notification for a CFE Maximum Turbidity Exceedance

### DRINKING WATER WARNING

System B has High Turbidity Levels

September 13, 2005

### BOIL YOUR WATER BEFORE USING

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. A water sample taken September 12, 2005 showed turbidity levels of 2 turbidity units. This is above the allowed limit of 1 turbidity unit.

*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

#### What should I do?

- DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and food preparation until further notice. Tap water should be allowed to boil for one full minute.
- People with severely compromised immune systems, infants, and some elderly may be at increased risk of waterborne disease. These people and their caretakers should seek advice about drinking water from their health care providers.
- The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

#### What happened? What is being done?

The high turbidity that was recorded on September 12, 2005 was caused by a failed filter membrane. We shut off flow to that filter module within minutes of the event. However, some water passed through the filter plant without adequate treatment. Turbidity levels from our other filter units remain below the limit of 1 turbidity unit. We expect to have the failed filter repaired by September 15, 2005.

We are currently flushing the distribution system to discard all of the lower quality water. We will inform you when you no longer need to boil your water.

For more information, please contact John Johnson, manager of System B, at 555-1234 or write to 2600 Winding Rd., Townsville, GA 12345. Updates will be regularly provided on Channel 22 and KMMM (97.3 FM). General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1 (800) 426-4791.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System B.

State Water System ID#GA1234584. Date distributed: 9/13/05

### Example 6-3. Example Problem Corrected Notification for a CFE Maximum Turbidity Exceedance

#### DRINKING WATER PROBLEM CORRECTED

Customers of System B were notified on September 13, 2005 of a problem with our drinking water and were advised to boil all water before drinking it. We are pleased to report that the problem has been corrected and that it is no longer necessary to boil water before drinking it. We apologize for any inconvenience and thank you for your patience.

The failed membrane filter that caused the turbidity problem has been replaced and is functioning properly. We have flushed the distribution system pipes to remove all of the poor-quality water.

As always, you may contact John Johnson, manager of System B, at 555-1234 or write to 2600 Winding Rd., Townsville, GA 12345 with any comments or questions.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System B.

State Water System ID#GA1234584. Date distributed: 9/14/05

### Example 6-4. Example of a Notice in the CCR for a CFE Maximum Turbidity Exceedance

#### Water Quality Data

Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples $\leq$ 0.5 NTU during any month is $<95\%$	N/A	97%	March (month of lowest percentage)	No	soil runoff
	TT violation if any sample $>1$ NTU		2 NTU	9/12/05	Yes	

#### Violation

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. A water sample taken September 12, 2005 showed turbidity levels of 2 turbidity units. This was above the allowable limit of 1 turbidity unit. Because of this high level of turbidity, there was an increased chance that the water may have contained disease-causing organisms.  
*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

The high turbidity that was recorded on September 12, 2005 was caused by a failed filter membrane. We shut off flow to that filter module within minutes of the event. This problem was corrected by September 14, 2005. Turbidity levels in the water now meet the standards.

## Example 2: Exceedance of Maximum CFE Turbidity Limit (1 NTU) at Multiple Treatment Plants

### System Description - System C

System C is a community water system with two treatment plants. Both treatment plants use surface water sources and use chlorine as a predisinfectant and primary disinfectant. The treatment technique standard in 40 CFR 141.551(b) for direct and conventional filtration systems require that CFE turbidity measurements be taken at 4-hour intervals at each plant, and that the turbidity must be maintained at or below 0.3 NTU in 95% of each plant's monthly measurements, and at or below 1 NTU at all times.

### Situation

The System C operator measures the CFE turbidity every four hours that the plants are in operation. Those measurements are recorded on a form provided by the Primacy Agency and each month's completed form is submitted to the Primacy Agency by the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of combined filter effluent turbidity measurements taken each month, the number and percentage of CFE measurements that are less than or equal to 0.3 NTU, and the date and value of any CFE turbidity measurement that exceeds 1 NTU. The following information was included on the system's monthly report submitted on February 6, 2006:

**Table 6-4. System C, Treatment Plant #1 January 2006 CFE Turbidity Monthly Report (Excerpt)**

Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
180	173	96%	1-5-06	3 NTU

On January 5, 2006, one of the four-hour CFE turbidity measurements was read and recorded at 3.2 NTU in treatment plant #1. This value is rounded to 3 NTU.

**Table 6-5. System C, Treatment Plant #2 January 2006 CFE Turbidity Monthly Report (Excerpt)**

Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
180	176	98%	1-17-06	2 NTU

On January 17, 2006, one of the four-hour CFE turbidity measurements at Treatment Plant #2 was read and recorded at 1.9 NTU. This value is rounded to 2 NTU.

### Public Notification and Consumer Confidence Report Requirements

On January 5, 2006, one of the four-hour CFE turbidity measurements at treatment plant #1 exceeded the maximum turbidity limit of 1 NTU, and on January 17, 2006, one of the four-hour CFE turbidity measurements at treatment plant #2 exceeded the maximum turbidity limit of 1 NTU. These exceedances are both treatment technique violations and the system must consult the state within 24 hours for this type of violation to determine if a Tier 1 or Tier 2 public notification situation exists. Failure to consult the Primacy Agency automatically results in a Tier 1 public notification requirement for this type of TT violation.

System C consulted the Primacy Agency within 24 hours of both exceedances and the Primacy Agency determined that the system must provide Tier 2 public notification for these violations. The system must provide public notification within 30 days of learning of the violation. Notification must be provided by mail or other direct delivery method (such as hand delivery), and any other reasonable method to reach affected individuals that would not have received the information by mail or the direct delivery method used. For any unresolved violation following an initial Tier 2 notice, notice must be repeated every three months for as long as the violation persists. The system was aware of the violations on January 5, 2006 and January 17, respectively. Repeat notification was not required in this instance since the compliance period for this violation is one month. However, if the system exceeds this standard in the next month, public notice will again be required.

Since both Tier 2 violations occurred within a 30-day period, the system provided public notification for both violations at the same time, shortly after the second exceedance occurred. An example of a public notice that fulfills the public notification requirements for these violations is shown in Example 6-5.

All treatment technique violations must be reported in the Consumer Confidence Report (CCR). An example of a report of this violation in the CCR is shown in Example 6-6.

## Example 6-5. Example Tier 2 Public Notification for CFE Maximum Exceedance

### IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

#### System C Did Not Meet Treatment Technique Requirements

Our water system recently violated a turbidity limit. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Normal turbidity levels at our plants are less than 0.3 turbidity units. A water sample taken January 5, 2006, at Plant #1 showed levels of 3 turbidity units. Another water sample taken January 17, 2006, at Plant #2 showed levels of 2 turbidity units. These were above the regulatory limit of 1 turbidity unit.

*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. We do not anticipate that these isolated exceedances will pose a significant risk to the health of our customers.*

#### **What should I do?**

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

Individuals with severely compromised immune systems, infants, and the elderly may be more susceptible to waterborne disease in general, and they or their caretakers should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791. If you have specific health concerns, consult your doctor.

#### **What happened? What is being done?**

A heavy snowstorm caused runoff with high levels of turbidity to enter our water sources, which overloaded the filters at our plants. We added chemicals that reduce turbidity and we monitored chlorine levels and adjusted them as needed to compensate for the filtration problems. This situation has now been resolved.

For more information, please contact John Johnson, manager of System C, at 555-1234 or write to 2600 Winding Rd., Townsville, SA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System C.

State Water System ID#GA1234681. Sent: 1/20/06

### Example 6-6. Example of a Notice in the CCR for CFE Maximum Turbidity Exceedance

#### Water Quality Data at Treatment Plant #1

Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples $\leq 0.3$ NTU during any month is $< 95\%$	N/A	96%	January (month of lowest percentage)	No	soil runoff
	TT violation if any sample $> 1$ NTU		3 NTU	1/05/06	Yes	

#### Water Quality Data at Treatment Plant #2

Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples $\leq 0.3$ NTU during any month is $< 95\%$	N/A	98%	January (month of lowest percentage)	No	soil runoff
	TT violation if any sample $> 1$ NTU		2 NTU	1/17/06	Yes	

#### Violations at Treatment Plants #1 and #2

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Normal turbidity levels at our plants are less than 0.3 turbidity units. Water samples taken on January 5, 2006 at Water Treatment Plant #1 showed levels of 3 turbidity units and samples taken on January 17, 2006 at Water Treatment Plant #2 showed levels of 2 turbidity units. These were above the regulatory limit of 1 turbidity unit.  
*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. We are not aware of any increased incidence of waterborne disease in the community connected with these isolated exceedances.*

A heavy snowstorm caused runoff with high levels of turbidity to enter our water sources, which overloaded the filters at our plants and caused the high turbidity measurements. We added chemicals that reduce turbidity and we monitored chlorine levels and adjusted them as needed to compensate for the filtration problems. This situation was resolved within two hours of the beginning of each incident and has not occurred since.



### **Example 3: Exceedance of 95<sup>th</sup> Percentile Turbidity Limit in Over 5% of CFE Samples (0.3 NTU)**

#### **System Description - System D**

System D is a community water system that serves 9,000 people and utilizes two conventional filtration water treatment plants, each with four filter beds.

#### Situation

During the month of July, 2006, the operator measures CFE turbidity every four hours at each plant while they are in operation and records the results on a form provided by the Primacy Agency. His report, submitted to the Primacy Agency on August 9, 2006, includes the following information:

**Table 6-6. System D Plant #1 July 2006 CFE Turbidity Monthly Report (Excerpt)**

<b>Total Filter Measurements</b>	<b># ≤ 0.3 NTU</b>	<b>% ≤ 0.3 NTU</b>	<b>Date &gt; 1 NTU</b>	<b>Value of &gt; 1 NTU</b>
186	167	90%	--	--

**Table 6-7. System D Plant #2 July 2006 CFE Turbidity Monthly Report (Excerpt)**

<b>Total Filter Measurements</b>	<b># ≤ 0.3 NTU</b>	<b>% ≤ 0.3 NTU</b>	<b>Date &gt; 1 NTU</b>	<b>Value of &gt; 1 NTU</b>
186	169	91%	--	--

The report shows that during the month of July, 2006, Plants #1 and #2 both failed to achieve CFE turbidity of 0.3 NTU or less in 95% or more of the 4-hour samples.

#### Public Notification and Consumer Confidence Report Requirements

System D met the 0.3 NTU limit in 90% and 91% of the monthly turbidity measurements at Plant #1 and Plant #2, respectively. Both plants are required to meet the 0.3 NTU limit in 95% of monthly turbidity measurements. This is a treatment technique violation and requires Tier 2 public notification. The system must provide public notification within 30 days of learning of the violation. Notification must be provided by mail or other direct delivery method (such as hand delivery), and any other reasonable method to reach affected individuals that would not have received the information by mail or the direct delivery method used. Notice must be provided to each customer receiving a bill and other service connections to which water is delivered. For any unresolved violation following an initial Tier 2 notice, notice must be repeated every three months for as long as the violation persists. The system was aware of the violation on August 9, 2006. Repeat notification was not required in this instance since the compliance period for this violation is one month. However, if the system exceeds this standard in the next month, public notice will again be required.

An example of a public notice that fulfills the public notification requirements for this violation is shown in Example 6-7.

All treatment technique violations must be reported in the CCR. An example of a report of this violation in the CCR is shown in Example 6-8.

## Example 6-7. Example Tier 2 Public Notification for CFE 95<sup>th</sup> Percentile Turbidity Exceedance in Multiple Treatment Plants

### IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

#### System D Did Not Meet Treatment Technique Requirements

Our water system recently violated a turbidity limit. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Water samples for July, 2006 showed that 90 percent of the monthly turbidity measurements at Treatment Plant #1 were less than or equal to 0.3 turbidity units. Water samples for July, 2006 at Treatment Plant #2 showed that 91 percent of the monthly turbidity measurements were less than or equal to 0.3 turbidity units. The regulatory standard is that at least 95 percent of monthly turbidity measurements must meet the 0.3 turbidity unit limit. Therefore, violations occurred in both plants. The turbidity levels were relatively low, but their persistence was a concern. Normal turbidity levels at our plant are 0.1 units.

*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

#### What should I do?

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

Individuals with severely compromised immune systems, infants, and elderly may be more susceptible to waterborne disease in general, and they or their caretakers should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791. If you have specific health concerns, consult your doctor.

#### What is being done?

We inspected and cleaned the filters and the turbidity levels in both of our treatment plants have steadied at normal levels of 0.1 turbidity units. This situation is now resolved.

For more information, please contact John Johnson, manager of System D, at 555-1234 or write to 2600 Winding Rd., Townsville, SA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System D.

State Water System ID#GA1234585. Sent: 8/22/06

**Example 6-8. Example of a Notice in the CCR for CFE 95<sup>th</sup> Percentile Turbidity Exceedance in Multiple Treatment Plants**

<u>Water Quality Data at Treatment Plant #1</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples $\leq 0.3$ NTU during any month is $< 95\%$	N/A	90%	July, 2006	Yes	soil runoff
	TT violation if any sample $> 1$ NTU		--	--	No	

<u>Water Quality Data at Treatment Plant #2</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if the percentage of samples $\leq 0.3$ NTU is $< 95\%$	N/A	91%	July, 2006	Yes	soil runoff
	TT violation if any sample $> 1$ NTU		--	--	No	

**Violations at Treatment Plants #1 and #2**

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Water samples for July, 2006 showed that 90 percent of turbidity measurements at Treatment Plant #1 and 91 percent of turbidity measurements at Treatment Plant #2 were less than or equal to 0.3 turbidity units. The standard is that at least 95 percent of turbidity measurements each month must be less than or equal to 0.3 turbidity units. Therefore, violations occurred in both plants. The turbidity levels were relatively low, but their persistence was a concern. Normal turbidity levels at our plants are 0.1 units. *Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

#### **Example 4: Exceedance of 95<sup>th</sup> Percentile Turbidity Limit in Over 5% of CFE Samples (State-Set Alternative Filtration Technology Limit)**

##### Situation

The operator of System B (described in Example #1) measures the CFE turbidity every four hours that the plant is in operation. Those measurements are recorded on a form provided by the Primacy Agency and each month's completed form is submitted to the Primacy Agency by the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of filtered water turbidity measurements taken each month, the number and percentage of CFE measurements taken each month that are less than or equal to 0.5 NTU (the performance standard set by the Primacy Agency for this alternative filtration technology for this system), and the date and value of any CFE turbidity measurement that exceeds 1 NTU. The November 2005 report submitted by System B to the Primacy Agency on December 10, 2005 showed that only 92% of the CFE turbidity measurements taken every four hours in November were less than or equal to 0.5 NTU. The following information was included in the system's November 2005 report to the Primacy Agency.

**Table 6-8. System B November 2005 CFE Turbidity Monthly Report (Excerpt)**

<b>Total Filter Measurements</b>	<b># ≤ 0.5 NTU</b>	<b>% ≤ 0.5 NTU</b>	<b>Date &gt; 1 NTU</b>	<b>Value of &gt; 1 NTU</b>
180	166	92%	--	--

##### Public Notification and Consumer Confidence Report Requirements

System B met the Primacy Agency-set standard of 0.5 NTU in 92% of monthly CFE readings. The system is required to meet the 0.5 NTU standard in 95% of the monthly CFE readings. This is a treatment technique violation and requires Tier 2 public notification. The system must provide public notification within 30 days of learning of the violation. Notification must be provided by mail or other direct delivery method (such as hand delivery), and any other reasonable method to reach affected individuals that would not have received the information by mail or the direct delivery method used. Notice must be provided to each customer receiving a bill and other service connections to which water is delivered. For any unresolved violation following an initial Tier 2 notice, the notice must be repeated every three months for as long as the violation persists. The system was aware of the violation on December 10, 2005 and therefore must issue notification by January 9, 2006. Repeat notification was not required in this instance since the compliance period for this violation is one month. However, if the system exceeds this standard in the next month, public notice will again be required.

An example of a public notice that fulfills the public notification requirements for this violation is shown in Example 6-9.

All treatment technique violations must be reported in the CCR. An example of a report of this violation in the CCR is shown in Example 6-10.

## Example 6-9. Example Tier 2 Public Notification for CFE 95<sup>th</sup>-Percentile Turbidity Exceedance

### IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

#### System B Did Not Meet Treatment Technique Requirements

Our water system recently violated a turbidity limit. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. We are required to keep turbidity to a level where no more than 5 percent of samples in a month exceed 0.5 turbidity units. In November, 8 percent of samples had turbidity at levels exceeding 0.5 turbidity units. The turbidity levels were not very high, but their persistence was a concern. Normal turbidity levels at our plant are less than 0.3 units.

*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

#### **What should I do?**

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

Individuals with severely compromised immune systems, infants, and the elderly may be more susceptible to waterborne disease, and they or their caretakers should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791. If you have specific health concerns, consult your doctor.

#### **What happened? What is being done?**

We inspected and cleaned the filters and the turbidity levels in the treatment plant have steadied at normal levels of less than 0.3 turbidity units. This situation is now resolved.

For more information, please contact John Johnson, manager of System B, at 555-1234 or write to 2600 Winding Rd., Townsville, SA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System B.

State Water System ID# GA1234584. Sent: 12/20/05

**Example 6-10. Example of a Notice in the CCR for CFE 95<sup>th</sup> Percentile Turbidity Exceedance**

<u>Water Quality Data</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples $\leq 0.5$ NTU during any month is $< 95\%$	N/A	92%	November, 2005	Yes	soil runoff
	TT violation if any sample $> 1$ NTU		--	--	No	

Violation

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. We are required to keep turbidity to a level where no more than 5 percent of samples in a month exceed 0.5 turbidity units. In November, 8 percent of samples had turbidity at levels exceeding 0.5 turbidity units. The turbidity levels were not very high, but their persistence was a concern. Normal turbidity levels at our plant are less than 0.3 units.  
*Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

We inspected and cleaned the filters within days of learning of the violation and the turbidity levels in the treatment plant have steadied at normal levels of less than 0.3 turbidity units. This situation was resolved on December 15, 2005.

## **Example 5: Making Significant Changes to Disinfection Practices Without State Approval**

### **System Description - System A**

System A is a community water system serving 9,100 people that has a conventional treatment plant treating a single surface water source. The system adds chlorine ahead of the flocculators and again to the combined filter effluent (CFE). Monitoring conducted under 40 CFR141.531 showed that System A had disinfection byproduct levels that required preparation of a disinfection profile. Therefore, System A calculated the log inactivation for *Giardia lamblia* on a weekly basis at peak hourly flow for one full year as described in 40 CFR141.532 and 40 CFR141.533. System A retained the disinfection profile data in a spreadsheet format that was approved by the Primacy Agency.

### **Situation**

System A's operator collects the required samples for TTHM and HAA5 under the Stage 1 Disinfectants and Disinfection Byproducts Rule for the first two quarters of calendar year 2004. The operator believes these data show the system will likely incur MCL violations for TTHM and/or HAA5 at the end of the first full year of monitoring. Therefore, after checking to see that he can meet the CT requirements of the Surface Water Treatment Rule (SWTR) with chlorination of the combined filter effluent alone, he discontinues the addition of chlorine ahead of the flocculators and begins operation with chlorine only added to the CFE. The Primacy Agency becomes aware of this change to disinfection practice when conducting a sanitary survey on March 1, 2006. During the sanitary survey, the Primacy Agency notes that the operator made changes to the disinfection practice on about August 1, 2004. The Primacy Agency ultimately approves the changes made by the PWS on July 15, 2006.

### **Public Notification and Consumer Confidence Report Requirements**

System A failed to submit to the Primacy Agency a description of the proposed change to disinfection practices, the disinfection profile and benchmark, and an analysis of how the proposed change would affect the levels of disinfection. This is a treatment technique violation that requires Tier 2 public notification. Tier 2 public notification must be provided within 30 days of learning of the violation. Since System A is a CWS, notification must be provided by mail or other direct delivery method (such as hand delivery), and plus other reasonable method to reach affected individuals that would not have received the information by the primary method. Tier 2 notice must be repeated every three months for unresolved violations. In this example, the system was aware of the violation on March 1, 2006. The system must provide public notification no later than March 31, 2006. Repeat public notification, due by June 30, 2006, is required in this instance since the violation was not resolved until July 15, 2006.

An example of a public notice that fulfills the public notification requirements for this violation is shown in Example 6-11.

All treatment technique violations must also be included in the CCR. An explanation of how the system returned to compliance could also be included. An example of a report of this violation that could be used in this system's CCR is shown in Example 6-12.

## **Example 6-11. Example Tier 2 Public Notification for Failure to Consult with Primacy Agency Before Making a Significant Change in Disinfection Practices**

### **IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER**

#### **System A Failed to Contact the State about a Disinfection Process Change**

Our water system recently failed to contact the state prior to modifying our disinfection practices. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

On August 1, 2004 we made changes to our disinfection practices without first consulting the state. We were required to submit to the state a description of the proposed change to our disinfection practices, specific disinfection records, and an analysis of how the proposed change would affect the levels of disinfection in our system.

*Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

Although we failed to consult with the state, subsequent monitoring indicates that the new disinfection practices are adequate, and that public health is not at risk.

#### **What should I do?**

This is not an emergency. You do not need to boil your water or take other corrective actions. If a situation arises where the water is not safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

#### **What happened? What is being done?**

Since becoming aware of the violation, we have submitted all of the required information to the state and are seeking approval for the changes to our disinfection practices. We hope to have approval from the state for these changes by the end of July, 2006.

For more information, please contact John Johnson, manager of System A, at 555-1234 or write to 2600 Winding Rd., Townsville, GA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System A.

State Water System ID# GA1234582. Sent: 3/29/06



**Example 6-12. Example of a Notice in the CCR for Failure to Consult with Primacy Agency Before Making a Significant Change in Disinfection Practices**

<u>Water Quality Data</u>					
Contaminant	MCL/MRDL/TT	Value	Date	Violation	Source
<i>Giardia lamblia</i> , Viruses, Heterotrophic plate count bacteria, <i>Legionella</i> , <i>Cryptosporidium</i>	TT	N/A	8/1/04	Yes*	Sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

\*System A incurred a treatment technique violation for making changes to disinfection practices without first consulting the state. More information about this violation is provided in the violation section.

Violation

- On August 1, 2004, we made changes to our disinfection practices without first consulting with the state. We were required to submit to the state a description of the proposed change to our disinfection practices, specific disinfection records, and an analysis of how the proposed change would affect the levels of disinfection in our system. When we became aware of the violation in March of 2006, we submitted the required documentation to the state, and the state approved the changes on July 15, 2006.  
*Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

Although we initially failed to consult with the state when changing our disinfection practices, subsequent monitoring shows that the new disinfection practices are adequately protective of public health. We are not aware of any adverse health impacts to our customers as a result of the modification.

## **Example 6: Starting Construction of an Uncovered Water Storage Facility On or After March 15, 2002**

### **System Description - System E**

System E is an unfiltered community water system that meets the filtration avoidance criteria and uses water from Y2 Lake. System E chlorinates the unfiltered water to provide adequate CT prior to water entering the distribution system. The system provides water to 1,000 persons.

### **Situation**

On May 15, 2002 System E had a construction company begin construction of an uncovered finished water storage reservoir. The storage facility was constructed and put on-line on October 31, 2002. During a sanitary survey conducted by the Primacy Agency on March 24, 2003, the completed reservoir was discovered and a cease and desist order was issued. Under LT1ESWTR, all new finished water reservoirs must be covered. System E's uncovered reservoir was physically disconnected from the water system on January 15, 2004.

### **Public Notification and Consumer Confidence Report Requirements**

System E began construction of an uncovered finished water storage facility on or after March 15, 2002. This is a treatment technique violation and requires Tier 2 public notification. The system must provide public notification within 30 days of learning of the violation. Notification must be provided by mail or other direct delivery method (such as hand delivery), and any other reasonable method to reach affected individuals that would not have received the information by mail or the direct delivery method used. Notice must be provided to each customer receiving a bill and other service connections to which water is delivered. For any unresolved violation following an initial Tier 2 notice, notice must be repeated every three months for as long as the violation persists. The system was aware of the violation on March 24, 2003. Repeat notification is required in this instance since the violation was not resolved until January 15, 2004.

An example of a public notice that fulfills the public notification requirements for this violation is shown in Example 6-13.

All treatment technique violations must be reported in the CCR. An example of a report of this violation in the CCR is shown in Example 6-14.

## Example 6-13. Example Tier 2 Public Notification for Construction of an Uncovered Finished Water Storage Facility

### IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

#### System E Did Not Meet Treatment Technique Requirements

Our water system recently violated a standard that requires all new finished water reservoirs to be covered. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

We began construction of an uncovered finished water storage reservoir on May 15, 2002. Regulations require that all new finished water storage reservoirs, if construction begins on or after March 15, 2002, must be covered.

An uncovered reservoir used to store treated water is susceptible to contamination from birds and other animals. *Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

#### What should I do?

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

Individuals with severely compromised immune systems, infants, and the elderly may be more susceptible to waterborne disease in general, and they or their caretakers should seek advice about drinking water from their health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at 1 (800) 426-4791. If you have specific health concerns, consult your doctor.

#### What is being done?

We are developing plans to disconnect the uncovered finished water storage reservoir from the system. We expect to have the reservoir disconnected from the system by the end of January 2004.

For more information, please contact John Johnson, manager of System E, at 555-1234 or write to 2600 Winding Rd., Townsville, SA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System E.

State Water System ID#GA1234586. Sent: 4/18/03

**Example 6-14. Example of a Notice in the CCR for Construction of an Uncovered Finished Water Storage Facility**

<u>Water Quality Data</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
<i>Giardia lamblia</i> , Viruses, Heterotrophic plate count bacteria, <i>Legionella</i> , <i>Cryptosporidium</i>	TT	0		5/15/02	Yes*	Sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

\*System A incurred a treatment technique violation for beginning construction of an uncovered finished water storage reservoir on or after March 15, 2002. More information about this violation is provided in the violation section.

**Violation**

- We began construction of an uncovered finished water storage reservoir on May 15, 2002. Regulations require that all finished water storage reservoirs for which construction begins on or after March 15, 2002 must be covered.  
An uncovered reservoir used to store treated water is susceptible to contamination from animals, such as birds. *Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

This situation was resolved when we disconnected the reservoir from the system on January 15, 2004.

## Example 7: Failure to Conduct IFE Monitoring Follow-Up Activities

### System Description - System F

System F is a community system that treats a single surface water source with a direct filtration plant that has eight individual filters capable of producing 6.91 MGD over a 24-hour period. The system serves 9,000 persons. Pursuant to the treatment technique requirements of the LT1ESWTR, System F must measure the turbidity of the CFE every four hours of operation and record those measurements on a form approved by the Primacy Agency. Additionally, System F must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter turbidity readings must be recorded every 15 minutes during the time each filter is in operation and records of the 15-minute measurements must be retained by the system for at least three years. Systems must report that they have conducted each month's individual filter monitoring by the 10<sup>th</sup> day of the following month. Systems must also report to the state by the 10<sup>th</sup> of the following month any IFE sampling results that exceeded 1.0 NTU in 2 consecutive recordings taken 15 minutes apart.

At the time of the Primacy Agency's sanitary survey, conducted on February 26, 2006, the inspector printed out the individual filter monitoring data and learned the following information, presented in the following three example scenarios.

In the following examples #7A, #7B, and #7C, relevant data is excerpted from turbidity monitoring forms and presented numerically. Shaded cells represent data that has been recorded but does not trigger follow-up activities under the LT1ESWTR.

#### Example #7A Situation

A system that has an individual filter that exceeds the turbidity value of 1.0 NTU in two consecutive recordings 15 minutes apart is required to report those results to the state by the 10<sup>th</sup> of the following month. Filter number 7 had exceeded 1.0 NTU in two consecutive measurements taken 15 minutes apart on November 11, 2005 and again on December 6, 2005. No report of these exceedances was provided to the Primacy Agency.

**Table 6-9. System F Filter #7 November 2005 IFE Turbidity Monitoring Form (Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/11			1.2 NTU	1.1 NTU				
11/12								

**Table 6-10. System F Filter #7 December 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/6						1.3 NTU	1.1 NTU	
12/7								

Example #7B Situation

A system that exceeds the turbidity value of 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter for three months in a row must conduct a self-assessment of the filter within 14 days of the trigger (i.e., the double exceedance in the third month), and report to the Primacy Agency by the 10<sup>th</sup> of the following month that the self-assessment was triggered and that it was performed. (Though if the self-assessment was triggered in the last four days of the month, it need not be reported until it has been performed, i.e., as late as 14 days after the trigger.) Filter number 3 exceeded 1.0 NTU in two consecutive measurements taken 15 minutes apart on October 31, 2005, November 1, 2005, and December 2, 2005 (3 consecutive months). System F failed to conduct a self-assessment of filter number 3 within 14 days of the trigger (i.e., by December 16) and made no report to the Primacy Agency.

**Table 6-11. System F Filter #3 October 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
10/30								
10/31		1.2 NTU	1.1 NTU					

**Table 6-12. System F Filter #3 November 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/1						1.3 NTU	1.1 NTU	
11/2								

**Table 6-13. System F Filter #3 December 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/2		1.2 NTU	1.4 NTU					
12/3								

Example #7C Situation

A system that exceeds a turbidity value of 2.0 NTU in two consecutive recordings 15 minutes apart in the same filter for two months in a row must arrange to have a comprehensive performance evaluation (CPE) conducted by the state or by a third party approved by the state. Arrangements for the CPE must be made within 60 days after the trigger (the second consecutive reading above 2.0 NTU in the second straight month), and the CPE must be performed and a report submitted to the state within 120 days after the trigger. Filter number 5 exceeded 2.0 NTU in two consecutive measurements taken 15 minutes apart on both November 1, 2005 and December 18, 2005 (two consecutive months), triggering the requirement for a CPE. The CPE was required to be conducted within 60 days, or no later than February 16, 2006. System F had not, at the time of the sanitary survey (February 26, 2006), made arrangements for the Primacy Agency or a third party approved by the Primacy Agency to conduct a CPE.

**Table 6-14. System F Filter #5 November 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/1						2.3 NTU	2.1 NTU	
11/2								

**Table 6-15. System F Filter #5 December 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/18		2.2 NTU	2.4 NTU					
12/19								

Public Notification and Consumer Confidence Report Requirements

System F has incurred violations for failure to report information to the state, and failure to conduct IFE monitoring follow-up activities. The monitoring violations require Tier 3 public notification, and both the monitoring and reporting violations require CCR notification. The reporting violations are as follows:

- The system failed to report to the state by November 10 that Filter #3 exceeded 1.0 NTU in two consecutive 15-minute readings in the previous month.
- The system failed to report to the state by December 10 that Filters #3, #5, and #7 exceeded 1.0 NTU in two consecutive 15-minute readings in the previous month.
- The system failed to report to the state by January 10 that Filters #3, #5, and #7 exceeded 1.0 NTU in two consecutive 15-minute readings in the previous month, and failed to report that the Filter #3 results of December 2 triggered a filter self-assessment and that the filter #5 results of December 18 triggered a CPE.

The monitoring and testing violations are as follows:

- The system failed to perform a required filter self-assessment on Filter #3 by December 16. The filter self-assessment was triggered by the Filter #3 results on December 2, and should have been performed within 14 days.



- The system failed to arrange for a CPE to be performed by February 16. The CPE was triggered by the Filter #5 results on December 18, and should have been scheduled within 60 days.

As a result of the sanitary survey, the state conducted a CPE at System F on March 12, 2006. As part of the CPE, a filter self-assessment was done on Filter #3. The CPE report was completed by April 6, 2006, and this date is within the 120 days allowed for completion and submittal of the CPE report.

The system must provide Tier 3 public notification for the monitoring violations within one year of learning of the violations, i.e., by February 26, 2007. Notification must be provided by mail or other direct delivery method (such as hand delivery), plus any other reasonable method to reach affected individuals that would not have received the information by the first method. Notice must be provided to each customer receiving a bill and other service connections to which water is delivered. Since System F is a community water system, it issues an annual CCR. System F can use the CCR sent on July 1, 2006, to inform the public of the Tier 3 violations, since it falls within the February 26, 2007 deadline. If System F uses the CCR for Tier 3 PN reporting, it must be sure to meet all relevant PN requirements.

In addition, both the monitoring violations and the reporting violations must be described in the CCR. Those violations that occurred in 2005, including the reporting violations of November and December, and the self-assessment monitoring violation of December, must be described in the CCR released in 2006. The reporting violations of January, 2006 and the CPE-scheduling monitoring violation of February, 2006 must be described in the CCR released in 2007.

Note that while a single CCR notice in 2006 is sufficient to satisfy both the PN and CCR requirements for the self-assessment monitoring violation, the CPE-scheduling monitoring violation must be reported in the 2007 CCR notice to satisfy CCR requirements, regardless of whether it is reported in the 2006 CCR notice to satisfy PN requirements.

An example of the violation notice in the CCR released on July 1, 2006 is shown in Example 6-15. An example of the violation notice in the CCR released on July 1, 2007 is shown in Example 6-16.

**Example 6-15. Example of a Notice in the 2006 CCR for IFE Turbidity Monitoring and Reporting Violations that Took Place in 2005 (Also Satisfying Tier 3 PN Requirements for IFE Turbidity Monitoring Violations)**

**Violations**

- In November and December of 2005, we failed to report to the state that turbidity measurements from several filters exceeded 1.0 NTU in consecutive samples taken 15 minutes apart in October and November. In addition, we failed to take follow-up actions triggered by high turbidity levels: namely, we failed to perform a filter self-assessment required in December, and we failed to schedule a Comprehensive Performance Evaluation (CPE) in February of this year. *We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the past year, we did not complete all monitoring and testing for turbidity, and therefore can not be sure of the quality of your drinking water during that period.* We did not become aware of the violations until February 26, 2006, during a visit from the state. We submitted all required monitoring information to the state on March 6, 2006. With the assistance of the state, we accomplished both the filter self-assessment and the CPE the week of March 12. As a result of these activities, we were able to identify the factors that led to the poor performance of our filters. We resolved the high turbidity issues and have had no further problems with our filters.

## Example 6-16. Example of a Notice in the 2007 CCR for IFE Turbidity Monitoring and Reporting Violations That Took Place in 2006

### Violations

- In January of 2006, we failed to report to the state that turbidity measurements from several filters exceeded 1.0 NTU in consecutive samples taken 15 minutes apart in the previous month. In addition, we failed to take follow-up actions triggered by high turbidity levels: namely, we failed to schedule a Comprehensive Performance Evaluation (CPE) in February. *We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During the past year, we did not complete all monitoring and testing for turbidity, and therefore can not be sure of the quality of your drinking water during that period.* We did not become aware of the violations until February 26, 2006, during a visit from the state. We submitted all required monitoring information to the state on March 6, 2006. With the assistance of the state, the CPE was performed the week of March 12, 2006. As a result of these activities, we were able to identify the factors that led to the poor performance of our filters. We resolved the high turbidity issues and have had no further problems with our filters.

### Example 8: Failure to Collect CFE Turbidity Data

#### System Description - System G

System G is a community water system that treats a single surface water source with a direct filtration plant that has four individual filters. Pursuant to the treatment technique requirements of the SWTR and LT1ESWTR, System G must measure the turbidity of the CFE every four hours of operation and record those measurements on a form approved by the Primacy Agency. Additionally, System G must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter effluent (IFE) turbidity readings must be recorded every 15 minutes during the time each filter is in operation, and records of the 15-minute measurements must be retained by the system for at least three years. Systems must report that they have conducted each month's IFE monitoring by the 10<sup>th</sup> of the following month. If the IFE turbidity ever exceeds 1.0 NTU in 2 consecutive recordings taken 15 minutes apart, systems must also report this and the reason for the exceedance, if known, to the state by the 10<sup>th</sup> of the following month.

#### Situation

System G's operator takes samples of the CFE every four hours and measures turbidity. The results of these turbidity measurements are recorded on a daily CFE form approved by the Primacy Agency and the operator submits the completed forms to the Primacy Agency prior to the 10<sup>th</sup> day of the following month. However, on April 15, 2006, System E's operator went on extended medical leave for 90 days. During this period of time, the backup operators failed to collect a number of CFE samples.

#### Public Notification and Consumer Confidence Report Requirements

System G has incurred multiple monitoring violations for failure to collect required combined filter effluent turbidity data. The system must provide Tier 3 public notice for the violation within one year of learning of the violations. Notification must be provided by mail or other direct delivery method (such as hand delivery), and plus other reasonable method to reach affected individuals that would not have received the information by the primary method. Notice must be provided to each customer receiving a bill and other service connections to which water is delivered.

Normally, the state would have contacted the system in May and June and July upon seeing that the system had failed to collect all required samples in April and May and June. In this particular example,

the state accidentally overlooked the data. The system only became aware of the violations when the regular operator returned and reviewed the records on July 16, 2006. The system therefore must provide Tier 3 PN before July 16, 2007. Since System G is a community water system, it issues an annual CCR. System G can use the CCR sent on July 1, 2007 to inform the public of the Tier 3 violations, as long as it meets all relevant PN requirements.

In addition, System G has to satisfy CCR requirements. All violations that occurred in calendar year 2006, including the monitoring violations described above, must be reported in the CCR released on July 1, 2007. In this case, the same CCR notice can be used to satisfy both the PN and CCR requirements.

An example of a violation notice in the 2007 CCR that will satisfy both the PN and the CCR requirements is shown in Example 6-17. If System G wants to issue PN earlier, it can. A sample separate PN notice for these violations is shown in Example 6-18.

**Example 6-17. Example of a Notice in the CCR for Failure to Monitor CFE Turbidity (also Satisfying Tier 3 PN Requirements for CFE Monitoring Violations)**

**Violation**

- *We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During April, May, June, and July of 2006, we did not complete all monitoring and testing for turbidity, and therefore can not be sure of the quality of your drinking water during that time.*  
On July 16, 2006 we reviewed our monitoring policies and all required samples have been collected since then. This situation is now resolved. All of the turbidity measurements that were collected met the standards required for our system.

**Example 6-18. Example of Optional Separate Tier 3 Public Notification for Failure to Monitor CFE Turbidity**

**IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER**

**Monitoring Requirements Not Met for System G**

Our water system recently failed to monitor turbidity as required. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct this situation.

*We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During April, May, June, and July of 2006, we did not complete all monitoring or testing for turbidity and therefore cannot be sure of the quality of our drinking water during that time.*

Turbidity (cloudiness) does not have any health effects, but turbidity levels indicate whether we are effectively filtering the water supply. Although we failed to collect a number of required turbidity samples while we were understaffed between April and July, the samples that were collected indicated that the water was of good quality.

**What should I do?**

There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified immediately. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

**What was done?**

On July 16, 2006 we returned to having a full staff of operators and all required samples have been collected since then. We have reviewed our monitoring policies to ensure that the situation does not arise again.

For more information, please contact John Johnson, manager of System G, at 555-1234 or write to 2600 Winding Rd., Townsville, SA 12345.

*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by System G.

State Water System ID# GA1234589. Sent: 8/12/06

## **Example 9: Failure to Report IFE Turbidity Monitoring**

### **Situation**

During the 90-day period that System G's (described in Example #9) operator is on extended medical leave, the backup operators also fail to report to the state each month that individual filter effluent has been monitored on a continuous basis and that the results of such monitoring have been measured and recorded at 15 minute intervals for each filter. When the regular operator returned in July, he noticed the error and sent the required information to the state.

### **Public Notification and Consumer Confidence Report Requirements**

System G is required to notify the state by the 10<sup>th</sup> of each month that IFE data have been collected as required during the previous month. By failing to notify the state of IFE monitoring in April by May 10, in May by June 10, and in June by July 10, System G has incurred three reporting violations. No public notice is required for reporting violations, but the system must describe the violation in the CCR to satisfy CCR requirements.

An example of a report of this violation in the CCR is shown in Example 6-19.

### **Example 6-19. Example of a Notice in the CCR for Failure to Report that IFE Turbidity Monitoring Has Been Conducted**

#### **Violation**

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Although we performed required monitoring of individual filters, our system failed to submit required reports to the state for the months of April, May, and June. The monthly reports indicate that we conducted continuous turbidity monitoring at each of our filters and that the results of this monitoring were recorded at 15 minute intervals.  
On July 30, 2006 we submitted the required reports to the state. The situation is now resolved.

## **Example 10: Failure to Maintain IFE Monitoring Records For At Least 3 Years**

### **System Description - System H**

System H is a community water system that treats a single surface water source with a direct filtration plant that has four individual filters. Pursuant to the treatment technique requirements of the LT1ESWTR, System H must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter turbidity readings must be recorded every 15 minutes during the time each filter is in operation and records of the 15-minute measurements must be retained by the system for at least three years.

### **Situation**

A representative from the Primacy Agency travels to System H on January 5, 2006 to conduct a sanitary survey. During the sanitary survey, she asks to see the individual filter monitoring results and learns that they are purged from System H's SCADA system at the end of each quarter and no other records of such measurements are retained.

### **Public Notification and Consumer Confidence Report Requirements**

System H has incurred a recordkeeping violation for failure to retain the results of individual filter monitoring on file for at least 3 years from the date of sample collection. No special public notification is required for a recordkeeping violation, but the violation must be reported in the annual CCR. The CCR notice must be repeated for as long as the system is in violation of recordkeeping requirements. If the system begins keeping IFE monitoring data on file starting with the first quarter of 2006, it will be in compliance with recordkeeping requirements (having three years' worth of data) on January 1, 2009. Therefore, the CCR notice must be repeated in every CCR from 2005 (covering calendar year 2004) to 2009 (covering calendar year 2008).

An example of a notice about this violation in the CCR is shown in Example 6-20.

### **Example 6-20. Example of a Notice in the CCR for Failure to Maintain IFE Monitoring Records For at Least 3 Years**

#### **Violation**

- We routinely monitor your water for turbidity (cloudiness). This tells us whether we are effectively filtering the water supply. Our system is required to retain the results of turbidity monitoring from each individual filter for a period of at least 3 years after the date of sample collection. In the past we kept such records for only 3 months.  
We have set up a database to retain all individual filter turbidity monitoring data for at least three years. We expect to have three years' worth of data and be in compliance with recordkeeping requirements by January of 2009.

## **Appendix A**

# **Primacy Revision Crosswalk**

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SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>SUBPART A—GENERAL</b>			
<b>§ 141.2 DEFINITIONS</b>			
Comprehensive performance evaluation	§ 141.2		
Disinfection profile	§ 141.2		
Ground water under the direct influence of surface water	§ 141.2		
<b>SUBPART H—FILTRATION AND DISINFECTION</b>			
<b>§ 141.70 GENERAL REQUIREMENTS</b>			
<i>Additional requirements for systems serving fewer than 10,000 people.</i> In addition to complying with requirements in this subpart, systems serving fewer than 10,000 people must also comply with the requirements in subpart T of this part.	§ 141.70 (e)		
<b>§ 141.73 FILTRATION</b>			
Beginning January 1, 2005, systems serving fewer than 10,000 people must meet the turbidity requirements in §§141.550 through 141.553.	§ 141.73(a)(4)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<p><u>Other filtration technologies.</u> A public water system may use a filtration technology not listed in paragraphs (a) through (c) of this section if it demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of §141.72(b), consistently achieves 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts and 99.99 percent removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of paragraph (b) of this section apply. Beginning January 1, 2002, systems serving at least 10,000 people must meet the requirements for other filtration technologies in §141.173(b). Beginning January 1, 2005, systems serving fewer than 10,000 people must meet the requirements for other filtration technologies in §141.550 through 141.553.</p>	§ 141.73 (d)		
<b>SUBPART O—CONSUMER CONFIDENCE REPORTS</b>			
<b>§ 141.153      CONTENT OF THE REPORTS</b>			
<p>When it is reported pursuant to §141.73 or §141.173 or §141.551: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in §141.73 or §141.173, or §141.551 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;</p>	§ 141.153 (d) (4) (v) (C)		



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>SUBPART P—ENHANCED FILTRATION AND DISINFECTION - SYSTEMS SERVING 10,000 OR MORE PEOPLE</b>			
<b>§ 141.170 GENERAL REQUIREMENTS</b>			
Subpart H systems that did not conduct optional monitoring under § 141.172 because they served fewer than 10,000 persons when such monitoring was required, but serve more than 10,000 persons prior to January 1, 2005 must comply with §§ 141.170, 141.171, 141.173, 141.174, and 141.175. These systems must also consult with the State to establish a disinfection benchmark. A system that decides to make a significant change to its disinfection practice, as described in § 141.172(c)(1)(i) through (iv) must consult with the State prior to making such change.	§ 141.170 (d)		
<b>SUBPART Q - PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS</b>			
<b>§ 141.202 TIER 1 PUBLIC NOTICE- FORM, MANNER, AND FREQUENCY OF NOTICE</b>			
Table 1- Violation Categories and other Situations Requiring a Tier 1 Public Notice	§ 141.202 (a)		
Violation of the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A), where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;	§ 141.202 (a)(6)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§ 141.203 TIER 2 PUBLIC NOTICE- FORM, MANNER, AND FREQUENCY OF NOTICE</b>			
Violation of the SWTR, IESWTR or LT1ESWTR treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.	§ 141.203 (b)(3)(ii)		
<b>APPENDIX A TO SUBPART Q OF PART 141 - NPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE</b>			
<p>5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)</p> <p>MCL/MRD/TT violations</p> <p>Tier of Public Notice Required      Citation</p> <p>2,1      141.71(a)(2) and (c)(2)(i); 141.73(a)(2), (b)(2), (c)(2), and (d); 141.173(a)(2) and (b); 141.551(b)</p> <p>Monitoring and testing procedure violations</p> <p>Tier of Public Notice Required      Citation</p> <p>3      141.74(a)(1), (b)(2), and (c)(1); 141.174; 141.560(a)-(c); 141.561</p>	Appendix A I.A.5		
<p>7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)</p> <p>MCL/MRD/TT violations</p> <p>Tier of Public Notice Required      Citation</p> <p>2      141.170-141.173 141.500-141.553</p> <p>Monitoring and testing procedure violations</p> <p>Tier of Public Notice Required      Citation</p> <p>3      141.172, 141.174, 141.530- 141.544, 141.560-141.564</p>	Appendix A I.A.7		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<p>9. Long Term 1 Enhanced Surface Water Treatment Rule violations.</p> <p>MCL/MRDL/TT violations</p> <p>Tier of Public Notice Required      Citation</p> <p>2    141.500-141.553</p> <p>Monitoring and testing procedure violations</p> <p>Tier of Public Notice Required      Citation</p> <p>3    141.530-141.544</p> <p>    141.560-141.564</p>	Appendix A I.A.9		
<p>10. Benchmarking and disinfection profiling</p> <p>MCL/MRDL/TT violations</p> <p>Tier of Public Notice Required      Citation</p> <p>N/A    N/A</p> <p>Monitoring and testing procedure violations</p> <p>Tier of Public Notice Required      Citation</p> <p>3    141.172, 141.530-141.544</p>	Appendix A I.G.10		
<p>6. Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) are required to consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.</p>	Appendix A - Endnote 6		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>APPENDIX B TO SUBPART Q OF PART 141 - STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION</b>			
Contaminant: 2c. Turbidity (IESWTR TT and LT1ESWTR TT) MCLG (mg/L): None MCL (mg/L): TT Standard Health Effects Language for PN: Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Appendix B A.2c		
B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), and the Filter Backwash Recycling Rule (FBRR) violations:  Contaminant: 3. <i>Giardia lamblia</i> (SWTR/IESWTR/LT1ESWTR) 4. Viruses (SWTR/IESWTR/LT1ESWTR) 5. Heterotrophic plate count (HPC) bacteria (SWTR/IESWTR/LT1ESWTR) 6. <i>Legionella</i> (SWTR/IESWTR/LT1ESWTR) 7. <i>Cryptosporidium</i> (IESWTR/FBRR/LT1ESWTR) MCLG (mg/L): Zero MCL (mg/L): TT Standard Health Effects Language for PN: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Appendix B B.3-B.7		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).	Appendix B - Endnote 4		
There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the primacy agency.	Appendix B - Endnote 6		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 1, 2005, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.	Appendix B - Endnote 8		
SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.	Appendix B - Endnote 10		





SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>SUBPART T —ENHANCED FILTRATION AND DISINFECTION - SYSTEMS SERVING FEWER THAN 10,000 PEOPLE</b>			
<b>§141.500 GENERAL REQUIREMENTS</b>			
The requirements of this subpart constitute national primary drinking water regulations. These regulations establish requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under subpart H of this part. The regulations in this subpart establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: <i>Giardia lamblia</i> , viruses, heterotrophic plate count bacteria, <i>Legionella</i> , <i>Cryptosporidium</i> and turbidity. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:	§ 141.500		
At least 99 percent (2 log) removal of <i>Cryptosporidium</i> between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or <i>Cryptosporidium</i> control under the watershed control plan for unfiltered systems; and	§ 141.500 (a)		
Compliance with the profiling and benchmark requirements in §§141.530 through 141.544.	§ 141.500 (b)		
<b>§141.501 WHO IS SUBJECT TO THE REQUIREMENTS OF SUBPART T?</b>			
You are subject to these requirements if your system:	§ 141.501		
Is a public water system;	§ 141.501 (a)		
Uses surface water or GWUDI as a source; and	§ 141.501 (b)		
Serves fewer than 10,000 persons.	§ 141.501 (c)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.502 WHEN MUST MY SYSTEM COMPLY WITH THESE REQUIREMENTS?</b>			
You must comply with these requirements beginning January 1, 2005 except where otherwise noted.	§ 141.502		
<b>§141.503 WHAT DOES SUBPART T REQUIRE?</b>			
There are seven requirements of this subpart, and you must comply with all requirements that are applicable to your system. These requirements are:	§ 141.503		
You must cover any finished water reservoir that you began to construct on or after March 15, 2002 as described in §§141.510 and 141.511;	§ 141.503 (a)		
If your system is an unfiltered system, you must comply with the updated watershed control requirements described in §§141.520-141.522;	§ 141.503 (b)		
If your system is a community or non-transient non-community water system you must develop a disinfection profile as described in §§141.530-141.536;	§ 141.503 (c)		
If your system is considering making a significant change to its disinfection practices, you must develop a disinfection benchmark and consult with the State for approval of the change as described in §§141.540-141.544;	§ 141.503 (d)		
If your system is a filtered system, you must comply with the combined filter effluent requirements as described in §§141.550-141.553;	§ 141.503 (e)		
If your system is a filtered system that uses conventional or direct filtration, you must comply with the individual filter turbidity requirements as described in §§141.560-141.564; and	§ 141.503 (f)		
You must comply with the applicable reporting and recordkeeping requirements as described in §§141.570-141.571.	§ 141.503 (g)		



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.510 IS MY SYSTEM SUBJECT TO THE NEW FINISHED WATER RESERVOIR REQUIREMENTS?</b>			
All subpart H systems which serve fewer than 10,000 are subject to this requirement.	§ 141.510		
<b>§141.511 WHAT IS REQUIRED OF NEW FINISHED WATER RESERVOIRS?</b>			
If your system begins construction of a finished water reservoir on or after March 15, 2002 the reservoir must be covered. Finished water reservoirs for which your system began construction prior to March 15, 2002 are not subject to this requirement.	§ 141.511		
<b>§141.520 IS MY SYSTEM SUBJECT TO THE UPDATED WATERSHED CONTROL REQUIREMENTS?</b>			
If you are a subpart H system serving fewer than 10,000 persons which does not provide filtration, you must continue to comply with all of the filtration avoidance criteria in §141.71, as well as the additional watershed control requirements in §141.521.	§ 141.520		
<b>§141.521 WHAT UPDATED WATERSHED CONTROL REQUIREMENTS MUST MY UNFILTERED SYSTEM IMPLEMENT TO CONTINUE TO AVOID FILTRATION?</b>			
Your system must take any additional steps necessary to minimize the potential for contamination by <i>Cryptosporidium</i> oocysts in the source water. Your system's watershed control program must, for <i>Cryptosporidium</i> :	§ 141.521		
Identify watershed characteristics and activities which may have an adverse effect on source water quality; and	§ 141.521 (a)		
Monitor the occurrence of activities which may have an adverse effect on source water quality.	§ 141.521 (b)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.522 HOW DOES THE STATE DETERMINE WHETHER MY SYSTEM'S WATERSHED CONTROL REQUIREMENTS ARE ADEQUATE?</b>			
During an onsite inspection conducted under the provisions of §141.71(b)(3), the State must determine whether your watershed control program is adequate to limit potential contamination by <i>Cryptosporidium</i> oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of your program to monitor and control detrimental activities occurring in the watershed; and the extent to which your system has maximized land ownership and/or controlled land use within the watershed.	§ 141.522		
<b>§141.530 WHAT IS A DISINFECTION PROFILE AND WHO MUST DEVELOP ONE?</b>			
A disinfection profile is a graphical representation of your system's level of <i>Giardia lamblia</i> or virus inactivation measured during the course of a year. If you are a subpart H community or non-transient non-community water system which serves fewer than 10,000 persons, your system must develop a disinfection profile unless your State determines that your system's profile is unnecessary. Your State may approve the use of a more representative data set for disinfection profiling than the data set required under §§141.532-141.536.	§ 141.530		
<b>§141.531 WHAT CRITERIA MUST A STATE USE TO DETERMINE THAT A PROFILE IS UNNECESSARY?</b>			
States may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in your distribution system. Your State may approve a more representative TTHM and HAA5 data set to determine these levels.	§ 141.531		



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.532 HOW DOES MY SYSTEM DEVELOP A DISINFECTION PROFILE AND WHEN MUST IT BEGIN?</b>			
A disinfection profile consists of three steps:	§ 141.532		
First, your system must collect data for several parameters from the plant as discussed in §141.533 over the course of 12 months. If your system serves between 500 and 9,999 persons you must begin to collect data no later than July 1, 2003. If your system serves fewer than 500 persons you must begin to collect data no later than January 1, 2004.	§ 141.532 (a)		
Second, your system must use this data to calculate weekly log inactivation as discussed in §§141.534 and 141.535; and	§ 141.532 (b)		
Third, your system must use these weekly log inactivations to develop a disinfection profile as specified in §141.536.	§ 141.532 (c)		
<b>§141.533 WHAT DATA MUST MY SYSTEM COLLECT TO CALCULATE A DISINFECTION PROFILE?</b>			
Your system must monitor the following parameters to determine the total log inactivation using the analytical methods in §141.74 (a), once per week on the same calendar day, over 12 consecutive months:	§ 141.533		
The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;	§ 141.533 (a)		
If your system uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;	§ 141.533 (b)		
The disinfectant contact time(s) ("T") during peak hourly flow; and	§ 141.533 (c)		
The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.	§ 141.533 (d)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.534 HOW DOES MY SYSTEM USE THIS DATA TO CALCULATE AN INACTIVATION RATIO?</b>			
Use the tables in Sec. 141.74(b)(3)(v) to determine the appropriate CT <sub>99.9</sub> value. Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of <i>Giardia lamblia</i> :	§ 141.534		
If your system uses only one point of disinfectant application, you must determine one inactivation ratio (CT <sub>calc</sub> /CT <sub>99.9</sub> ) before or at the first customer during peak hourly flow, or	§ 141.534 (a) (1)		
If your system uses only one point of disinfectant application, you must determine successive CT <sub>calc</sub> /CT <sub>99.9</sub> values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, your system must calculate the total inactivation ratio by determining (CT <sub>calc</sub> /CT <sub>99.9</sub> ) for each sequence and then adding the (CT <sub>calc</sub> /CT <sub>99.9</sub> ) values together to determine ( $\Sigma$ CT <sub>calc</sub> /CT <sub>99.9</sub> ).	§ 141.534 (a) (2)		
If your system uses more than one point of disinfectant application before the first customer, you must determine the CT <sub>calc</sub> /CT <sub>99.9</sub> value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in §141.534(a)(2).	§ 141.534 (b)		
<b>§141.535 WHAT IF MY SYSTEM USES CHLORAMINES, OZONE, OR CHLORINE DIOXIDE FOR PRIMARY DISINFECTION?</b>			
If your system uses chloramines, ozone, or chlorine dioxide for primary disinfection, you must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the State.	§ 141.535		



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<b>§141.536 MY SYSTEM HAS DEVELOPED AN INACTIVATION RATIO; WHAT MUST WE DO NOW?</b>			
Each log inactivation serves as a data point in your disinfection profile. Your system will have obtained 52 measurements (one for every week of the year). This will allow your system and the State the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (your Disinfection Profile). Your system must retain the Disinfection Profile data in graphic form, such as a spreadsheet, which must be available for review by the State as part of a sanitary survey. Your system must use this data to calculate a benchmark if you are considering changes to disinfection practices.	§ 141.536		
<b>§141.540 WHO HAS TO DEVELOP A DISINFECTION BENCHMARK?</b>			
If you are a subpart H system required to develop a disinfection profile under §§141.530 through 141.536, your system must develop a Disinfection Benchmark if you decide to make a significant change to your disinfection practice. Your system must consult with the State for approval before you can implement a significant disinfection practice change.	§ 141.540		
<b>§141.541 WHAT ARE SIGNIFICANT CHANGES TO DISINFECTION PRACTICE?</b>			
Significant changes to disinfection practice include:	§ 141.541		
Changes to the point of disinfection;	§ 141.541 (a)		
Changes to the disinfectant(s) used in the treatment plant;	§ 141.541 (b)		
Changes to the disinfection process; or	§ 141.541 (c)		
Any other modification identified by the State.	§ 141.541 (d)		

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<b>§141.542 WHAT MUST MY SYSTEM DO IF WE ARE CONSIDERING A SIGNIFICANT CHANGE TO DISINFECTION PRACTICES?</b>			
If your system is considering a significant change to its disinfection practice, your system must calculate a disinfection benchmark(s) as described in §§141.543 and 141.544 and provide the benchmark(s) to your State. Your system may only make a significant disinfection practice change after consulting with the State for approval. Your system must submit the following information to the State as part of the consultation and approval process:	§ 141.542		
A description of the proposed change;	§ 141.542 (a)		
The disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark;	§ 141.542 (b)		
An analysis of how the proposed change will affect the current levels of disinfection; and	§ 141.542 (c)		
Any additional information requested by the State.	§ 141.542 (d)		
<b>§141.543 HOW IS THE DISINFECTION BENCHMARK CALCULATED?</b>			
If your system is making a significant change to its disinfection practice, it must calculate a disinfection benchmark using the following procedure: Step 1: Using the data your system collected to develop the Disinfection Profile, determine the average <i>Giardia lamblia</i> inactivation for each calendar month by dividing the sum of all <i>Giardia lamblia</i> inactivations for that month by the number of values calculated for that month. Step 2: Determine the lowest monthly average value out of the twelve values. This value becomes the disinfection benchmark.	§ 141.543		





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<b>§141.544 WHAT IF MY SYSTEM USES CHLORAMINES, OZONE, OR CHLORINE DIOXIDE FOR PRIMARY DISINFECTION?</b>			
If your system uses chloramines, ozone or chlorine dioxide for primary disinfection your system must calculate the disinfection benchmark from the data your system collected for viruses to develop the disinfection profile in addition to the <i>Giardia lamblia</i> disinfection benchmark calculated under §141.543. This viral benchmark must be calculated in the same manner used to calculate the <i>Giardia lamblia</i> disinfection benchmark in §141.543.	§ 141.544		
<b>§141.550 IS MY SYSTEM REQUIRED TO MEET SUBPART T COMBINED FILTER EFFLUENT TURBIDITY LIMITS?</b>			
All subpart H systems which serve populations fewer than 10,000, are required to filter, and utilize filtration other than slow sand filtration or diatomaceous earth filtration must meet the combined filter effluent turbidity requirements of §§141.551-141.553. If your system uses slow sand or diatomaceous earth filtration you are not required to meet the combined filter effluent turbidity limits of subpart T, but you must continue to meet the combined filter effluent turbidity limits in §141.73.	§ 141.550		
<b>§ 141.551 WHAT STRENGTHENED COMBINED FILTER EFFLUENT TURBIDITY LIMITS MUST MY SYSTEM MEET?</b>			
Your system must meet two strengthened combined filter effluent turbidity limits.	§ 141.551		
The first combined filter effluent turbidity limit is a “95 <sup>th</sup> percentile” turbidity limit that your system must meet in at least 95 percent of the turbidity measurements taken each month. Measurements must continue to be taken as described in §141.74(a) and (c). Monthly reporting must be completed according to §141.570. The required limits for specific filtration technologies follow:	§ 141.551 (a)		
If your system consists of conventional filtration or direct filtration, your 95 <sup>th</sup> percentile turbidity value is 0.3 NTU.	§ 141.551 (a) (1)		

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If your system consists of all other “alternative” filtration, your 95 <sup>th</sup> percentile turbidity value is a value determined by the State (not to exceed 1 NTU) based on the demonstration described in §141.552	§ 141.551 (a) (2)		
The second combined filter effluent turbidity limit is a “maximum” turbidity limit which your system may at no time exceed during the month. Measurements must continue to be taken as described in §141.74(a) and (c). Monthly reporting must be completed according to §141.570. The required limits for specific filtration technologies follow:	§ 141.551 (b)		
If your system consists of conventional filtration or direct filtration, your maximum turbidity value is 1 NTU.	§ 141.551 (b) (1)		
If your system consists of all other “alternative filtration,” your maximum turbidity value is a value determined by the State (not to exceed 5 NTU) based on the demonstration as described in §141.552	§ 141.551 (b) (2)		
<b>§141.552 MY SYSTEM CONSISTS OF “ALTERNATIVE FILTRATION” AND IS REQUIRED TO CONDUCT A DEMONSTRATION - WHAT IS REQUIRED OF MY SYSTEM AND HOW DOES THE STATE ESTABLISH MY TURBIDITY LIMITS?</b>			
If your system consists of alternative filtration (filtration other than slow sand filtration, diatomaceous earth filtration, conventional filtration, or direct filtration) you are required to conduct a demonstration (see tables in §141.551), your system must demonstrate to the State, using pilot plant studies or other means, that your system’s filtration, in combination with disinfection treatment, consistently achieves:	§ 141.552 (a)		
99 percent removal of <i>Cryptosporidium</i> oocysts;	§ 141.552 (a) (1)		
99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts; and	§ 141.552 (a) (2)		
99.99 percent removal and/or inactivation of viruses.	§ 141.552 (a) (3)		
[Reserved]	§ 141.552 (b)		



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<b>§141.553 MY SYSTEM PRACTICES LIME SOFTENING - IS THERE ANY SPECIAL PROVISION REGARDING MY COMBINED FILTER EFFLUENT?</b>			
If your system practices lime softening, you may acidify representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the State.	§ 141.553		
<b>§141.560 IS MY SYSTEM SUBJECT TO INDIVIDUAL FILTER TURBIDITY REQUIREMENTS?</b>			
If your system is a subpart H system serving fewer than 10,000 people and utilizing conventional filtration or direct filtration, you must conduct continuous monitoring of turbidity for each individual filter at your system. The following requirements apply to continuous turbidity monitoring:	§ 141.560		
Monitoring must be conducted using an approved method in § 141.74(a);	§ 141.560 (a)		
Calibration of turbidimeters must be conducted using procedures specified by the manufacturer;	§ 141.560 (b)		
Results of turbidity monitoring must be recorded at least every 15 minutes;	§ 141.560 (c)		
Monthly reporting must be completed according to § 141.570; and	§ 141.560 (d)		
Records must be maintained according to § 141.571.	§ 141.560 (e)		
<b>§141.561 WHAT HAPPENS IF MY SYSTEM'S TURBIDITY MONITORING EQUIPMENT FAILS?</b>			
If there is a failure in the continuous turbidity monitoring equipment, your system must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. Your system has 14 days to resume continuous monitoring before a violation is incurred.	§ 141.561		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
<b>§141.562 MY SYSTEM ONLY HAS TWO OR FEWER FILTERS - IS THERE ANY SPECIAL PROVISION REGARDING INDIVIDUAL FILTER TURBIDITY MONITORING?</b>			
Yes, if your system only consists of two or fewer filters, you may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in §141.560(a) through (d) and §141.561.	§141.562		
<b>§141.563 WHAT FOLLOW-UP ACTION IS MY SYSTEM REQUIRED TO TAKE BASED ON CONTINUOUS TURBIDITY MONITORING?</b>			
Follow-up action is required as follows:	§ 141.563		
If the turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for systems with 2 filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart, your system must report to the State by the 10 <sup>th</sup> of the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).	§ 141.563 (a)		
If a system was required to report to the State for three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters), your system must conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a CPE as specified in §141.563(c) was required. Systems with 2 filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.	§ 141.563 (b)		



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
If a system was required to report to the State for two months in a row and turbidity exceeded 2.0 NTU in 2 consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters), your system must arrange to have a comprehensive performance evaluation (CPE) conducted by the State or a third party approved by the State not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the State or a third party approved by the State within the 12 prior months or the system and State are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the State no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.	§ 141.563 (c)		
<b>§ 141.564 MY SYSTEM PRACTICES LIME SOFTENING. IS THERE ANY SPECIAL PROVISION REGARDING MY INDIVIDUAL FILTER TURBIDITY MONITORING?</b>			
If your system utilizes lime softening, you may apply to the State for alternative turbidity exceedance levels for the levels specified in §141.563. You must be able to demonstrate to the State that higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.	§ 141.564		
<b>§ 141.570 WHAT DOES SUBPART T REQUIRE THAT MY SYSTEM REPORT TO THE STATE?</b>			
The following table describes the items which must be reported and the frequency of reporting. Your system is required to report the information described in the following table, if it is subject to the specific requirement shown in the first column:	§ 141.570		
If your system is subject to combined filter effluent requirements, §§ 141.550-141.553, your system must report:	§ 141.570 (a)		
The total number of filtered water turbidity measurements taken during the month by the 10 <sup>th</sup> of the following month	§ 141.570 (a) (1)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to your system's required 95th percentile limit by the 10 <sup>th</sup> of the following month	§ 141.570 (a) (2)		
The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system by the 10 <sup>th</sup> of the following month	§ 141.570 (a) (3)		
If your system is subject to individual filter turbidity requirements, §§ 141.560-141.564, your system must report:	§ 141.570 (b)		
That your system conducted individual filter turbidity monitoring during the month, by the 10 <sup>th</sup> of the following month	§ 141.570 (b) (1)		
The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, and the cause (if known) for the exceedance(s), but only if 2 consecutive measurements exceeded 1.0 NTU by the 10 <sup>th</sup> of the following month.	§ 141.570 (b) (2)		
If a self-assessment is required, the date that it was triggered and the date that it was completed, by the 10 <sup>th</sup> of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month)	§ 141.570 (b) (3)		
If a CPE is required, that the CPE is required and the date that it was triggered, by the 10 <sup>th</sup> of the following month	§ 141.570 (b) (4)		
Copy of completed CPE report, within 120 days after the CPE was triggered	§ 141.570 (b) (5)		
If your system is subject to disinfection profiling, §§141.530-141.536, your system must report the following information:	§ 141.570 (c)		
Results of optional monitoring which show TTHM levels < 0.064 mg/L and HAA5 levels < 0.048 mg/L (Only if your system wishes to forgo profiling), or that your system has begun disinfection profiling by:	§ 141.570 (c) (1)		
For systems serving 500-9,999 July 1, 2003	§ 141.570 (c) (1) (i)		
For systems serving fewer than 500 January 1, 2004	§ 141.570 (c) (1) (ii)		



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	STATE CITATION (DOCUMENT TITLE, PAGE NUMBER, SECTION/PARAGRAPH)	DIFFERENT FROM FED. REQUIREMENT? (EXPLAIN ON SEPARATE SHEET)
If your system is subject to disinfection benchmarking requirements, §§141.540-141.544, your system must report the following information:	§ 141.570 (d)		
A description of the proposed change in disinfection, your system's disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection, anytime your system is considering a significant change to its disinfection practice.	§ 141.570 (d)(1)		
<b>§ 141.571 WHAT RECORDS DOES SUBPART T REQUIRE MY SYSTEM TO KEEP?</b>			
Your system must keep several types of records based on the requirements of subpart T, in addition to recordkeeping requirements under § 141.75. A description of the necessary records, the length of time these records must be kept, and for which requirement the records pertain follows. Your system is required to maintain the records described, if it is subject to the specific requirement.	§ 141.571		
If your system is subject to individual filter turbidity requirements, §§141.560-141.564, your system must keep results of individual filter monitoring for at least 3 years.	§ 141.571 (a)		
If your system is subject to disinfection profiling, §§141.530-141.536, your system must keep results of profile (including raw data and analysis) indefinitely.	§ 141.571 (b)		
If your system is subject to disinfection benchmarking, §§141.540-141.544, your system must keep the benchmark (including raw data and analysis) indefinitely.	§ 141.571 (c)		

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
<b>PART 142-NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION</b>		
<b>§ 142.14 RECORDS KEPT BY STATES</b>		
Records of turbidity measurements must be kept for not less than one year. The information retained must be set forth in a form which makes possible comparison with the limits specified in §§141.71, 141.73, 141.173 and 141.175, 141.550-141.553 and 141.560-141.564 of this chapter. Until June 29, 1993, for any public water system which is providing filtration treatment and until December 30, 1991, for any public water system not providing filtration treatment and not required by the State to provide filtration treatment, records kept must be set forth in a form which makes possible comparison with the limits contained in §141.13 of this chapter.	§ 142.14 (a) (3)	
Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with §§141.72 and 141.74 of this chapter and the reporting requirements of §§141.75, 141.175, and 141.570, of this chapter must be kept for not less than one year.	§ 142.14 (a) (4) (i)	
Records of decisions made on a system-by-system and case-by-case basis under provisions of part 141, subpart H, subpart P, or subpart T of this chapter, must be made in writing and kept by the State.	§ 142.14 (a) (4) (ii)	
Any decisions made pursuant to the provisions of part 141, subpart P or subpart T of this chapter.	§ 142.14 (a) (7)	
Records of systems consulting with the State concerning a modification to disinfection practice under §§141.170(d), 141.172(c), and 141.542 of this chapter, including the status of the consultation.	§ 142.14 (a) (7) (i)	





SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
Records of decisions that a system using alternative filtration technologies, as allowed under §§141.173(b) and §141.552 of this chapter, can consistently achieve a 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of <i>Cryptosporidium</i> oocysts. The decisions must include State-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised. The State must provide a copy of the decision to the system.	§ 142.14 (a) (7) (ii)	
Records of systems required to do filter self-assessment, CPE, or CCP under the requirements of §141.175 and §141.563 of this chapter.	§ 142.14 (a) (7) (iii)	
<b>§ 142.16 SPECIAL PRIMACY REQUIREMENTS</b>		
Requirements for States to adopt 40 CFR part 141, Subpart T - Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions are no less stringent than the Federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, Subpart T - Enhanced Filtration and Disinfection - Systems Serving Fewer than 10,000 People, must contain the information specified in this paragraph:	§ 142.16 (p)	

SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
Enforceable requirements. States must have rules or other authority to require systems to participate in a Comprehensive Technical Assistance (CTA) activity, the performance improvement phase of the Composite Correction Program (CCP). The State must determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the State that the system is able to receive and implement technical assistance provided through the CTA. A CPE is a thorough review and analysis of a system's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. During the CTA phase, the system must identify and systematically address factors limiting performance. The CTA is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority-setting techniques and maintaining long-term involvement to systematically train staff and administrators.	§ 142.16 (p) (1)	
State practices or procedures.	§ 142.16 (p) (2)	
Section 141.530-141.536 - How the State will approve a more representative data set for optional TTHM and HAA5 monitoring and profiling.	§ 142.16 (p) (2) (i)	
Section 141.535 of this chapter- How the State will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, ozone, or chlorine dioxide for primary disinfection.	§ 142.16 (p) (2) (ii)	
Section 141.542 of this chapter- How the State will consult with the system and approve significant changes to disinfection practices.	§ 142.16 (p) (2) (iii)	



SUMMARY OF FEDERAL REQUIREMENT	FEDERAL CITATION	EXPLANATION OF STATE POLICIES AND PROCEDURES
<p>Section 141.552 of this chapter—For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, how the State will determine that a public water system may use a filtration technology if the PWS demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of §141.72(b) of this chapter, consistently achieves 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of <i>Cryptosporidium</i> oocysts. For a system that makes this demonstration, how the State will set turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time at a level that consistently achieves 99.9 percent removal and/or inactivation of <i>Giardia lamblia</i> cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of <i>Cryptosporidium</i> oocysts.</p>	<p>§ 142.16 (p) (2) (iv)</p>	

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## **Appendix B**

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# **LT1ESWTR Regulatory Language**

This appendix contains the rule language for the LT1ESWTR incorporating the minor technical corrections. Changes to the original rule language are shown as highlighted text. Also included is a complete copy of the LT1ESWTR, including preamble as published on January 14, 2002, and a complete copy of the minor technical corrections, including preamble as published on June 29, 2004.

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For the reasons set forth in the preamble, title 40 chapter I of the Code of Federal Regulations is amended as follows:

**PART 9--[AMENDED]**

1. The authority citation for part 9 continues to read as follows:

**Authority:** 7 U.S.C. 135 et seq., 136-136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601-2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 et seq., 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345 (d) and (e), 1361; Executive Order 11735, 38 FR 21243, 3 CFR, 1971-1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-1, 300j-2, 300j-3, 300j-4, 300j-9, 1857 et seq., 6901-6992k, 7401-7671q, 7542, 9601-9657, 11023, 11048.

2. In Sec. 9.1 the table is amended by adding under the indicated heading:

a. By adding entries 141.530-141.536, 141.540-141.544, 141.550-141.553, 141.560-141.564 and 141.570-141.571 in numerical order.

b. By removing the entry 142.14(a)-(d)(7) and adding in its place a new entry Sec. 142.14(b)-(d)(7).

c. By adding a new entry for 142.14(a) in numerical order.

d. By adding new entries for 142.16(g) and 142.16(j) in numerical order.

The additions read as follows:

**Sec. 9.1 OMB approvals under the Paperwork Reduction Act.**

\* \* \* \* \*

40 CFR citation					OMB control No.
* * * * *					

**National Primary Drinking Water Regulations**

* * * * *					
141.530-141.536.....					2040-0229
141.540-141.544.....					2040-0229
141.550-141.553.....					2040-0229
141.560-141.564.....					2040-0229
141.570-141.57.....					2040-0229

## National Primary Drinking Water Regulations Implementation

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	*	*	*	*	*
142.14(a).....					2040-0229
					2040-0090
142.14(b)-(d)(7).....					2040-0090
	*	*	*	*	*
142.16(g).....					2040-0229
142.16(j).....					2040-0229

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\* \* \* \* \*

### PART 141--NATIONAL PRIMARY DRINKING WATER REGULATIONS

3. The authority citation for part 141 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

4. Section 141.2 is amended by revising the definitions of "Comprehensive performance evaluation" (CPE), "Ground water under the direct influence of surface water" and "Disinfection profile" to read as follows:

#### Sec. 141.2 Definitions.

\* \* \* \* \*

*Comprehensive performance evaluation (CPE)* is a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purpose of compliance with subparts P and T of this part, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

\* \* \* \* \*

*Disinfection profile* is a summary of *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in Sec. 141.172 (Disinfection profiling and benchmarking) in subpart P and Secs. 141.530-141.536 (Disinfection profile) in subpart T of this part.

\* \* \* \* \*

*Ground water under the direct influence of surface water (GWUDI)* means any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*, or significant and



relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the State. The State determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

\* \* \* \* \*

5. Section 141.70 is amended by adding paragraph (e) to read as follows:

**Sec. 141.70 General requirements.**

\* \* \* \* \*

(e) *Additional requirements for systems serving fewer than 10,000 people.* In addition to complying with requirements in this subpart, systems serving fewer than 10,000 people must also comply with the requirements in subpart T of this part.

6. Section 141.73 is amended by adding paragraph (a)(4) and revising paragraph (d) to read as follows:

**Sec. 141.73 Filtration.**

\* \* \* \* \*

(a) \* \* \*

(4) Beginning January 1, 2005, systems serving fewer than 10,000 people must meet the turbidity requirements in Secs. 141.550 through 141.553.

\* \* \* \* \*

(d) Other filtration technologies. A public water system may use a filtration technology not listed in paragraphs (a) through (c) of this section if it demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of Sec. 141.72(b), consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of paragraph (b) of this section apply. Beginning January 1, 2002, systems serving at least 10,000 people must meet the requirements for other filtration technologies in Sec. 141.173(b). Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the requirements for other filtration technologies in Sec. 141.550 through 141.553.

7. Section 141.153 is amended by revising the first sentence of paragraph (d)(4)(v)(C) to read as follows:

**Sec. 141.153 Content of the reports.**

\* \* \* \* \*

(d) \* \* \*

(4) \* \* \*

(v) \* \* \*

(C) When it is reported pursuant to Sec. 141.73 or Sec. 141.173 or Sec. 141.551: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in Sec. 141.73 or Sec. 141.173, or Sec. 141.551 for the filtration technology being used. \* \* \* \* \*

8. The heading to Subpart P is revised to read as follows:

**Subpart P--Enhanced Filtration and Disinfection--Systems Serving 10,000 or More People**  
\* \* \* \* \*

9. Section 141.170 is amended by adding paragraph (d) to read as follows:

**Sec. 141.170 General requirements.**  
\* \* \* \* \*

(d) Subpart H systems that did not conduct optional monitoring under Sec. 141.172 because they served fewer than 10,000 persons when such monitoring was required, but serve more than 10,000 persons prior to January 1, 2005 must comply with Secs. 141.170, 141.171, 141.173, 141.174, and 141.175. These systems must also consult with the State to establish a disinfection benchmark. A system that decides to make a significant change to its disinfection practice, as described in Sec. 141.172(c)(1)(i) through (iv) must consult with the State prior to making such change.

10. Section 141.202 is amended in Table 1 by revising entry 6 to read as follows:

**Sec. 141.202 Tier 1 Public Notice--Form, manner, and frequency of notice.**  
\* \* \* \* \*

(a) \* \* \*

Table 1 to Sec. 141.202.--Violation Categories and Other Situations Requiring a Tier 1 Public Notice

*	*	*	*	*	*	*
(6) Violation of the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A), where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;						
*	*	*	*	*	*	*

\* \* \* \* \*

11. Section 141.203 is amended by revising paragraph (b)(3)(ii) to read as follows:

**Sec. 141.203 Tier 2 Public Notice--Form, manner, and frequency of notice.**

\*\*\*\*\*

(b) \*\*\*

(3) \*\*\*

(ii) Violation of the SWTR, IESWTR or **LT1ESWTR** treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

\*\*\*\*\*

12. Appendix A to subpart Q is amended:

a. Under I.A. by revising entry 5.

b. Under I.A. by revising entry 7.

c. Adding a new entry 9.

d. Under I.G. by revising entry 10.

e. Revising endnote 6.

The additions and revisions read as follows:

Appendix A to Subpart Q of Part 141.--NPDWR Violations and Other Situations Requiring Public Notice \1\					
Contaminant	MCL/MRDL/TT violations \2\		Monitoring & testing procedure violations		
	Tier of public notice required	Citation	Tier of public notice required	Citation	
I. Violations of National Primary Drinking Water Regulations (NPDWR):\3\					
*	*	*	*	*	*
A. Microbiological Contaminants					
*	*	*	*	*	*
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level).	\6\ 2,1	141.71(a)(2), 141.71(c)(2)(i), 141.73(a)(2), 141.73(b)(2), 141.73(c)(2), 141.73(d), 141.173(a)(2), 141.173(b), 141.551(b)	3	141.74(a)(1), 141.74(b)(2), 141.74(c)(1), 141.174, 141.560(a)-(c), 141.561.	
*	*	*	*	*	*
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT).	\7\ 2	141.170-141.173, 141.500-141.553	3	141.172, 141.174, 141.530-141.544, 141.560-141.564.	

*	*	*	*	*	*	*
9. Long Term 1 Enhanced Surface Water Treatment Rule violations	2	141.500-141.553.....	3	141.530-141.544, 141.560-141.564.		

*	*	*	*	*	*	*
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G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).\9\

	*	*	*	*	*	*
10. Bench marking and disinfection profiling			N/A	N/A	3	141.172 141.530-141.544.

*	*	*	*	*	*	*
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#### Appendix A--Endnotes:

\1\ Violations and other situations not listed in this table (e.g., ~~reporting violations and~~ failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under Sec. 141.202(a) and Sec. 141.203(a).

\2\ MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique

\3\ The term Violations of National Primary Drinking Water Regulations (NPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

*	*	*	*	*	*	*
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\6\ Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (LTIESWTR) are required to consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.

\7\ Most of the requirements of the Interim Enhanced Surface Water Treatment Rule (63 FR 69477) (Secs. 141.170-- 141.171, 141.173--141.174) become effective January 1, 2002 for the Subpart H systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons. However, Sec. 141.172 has some requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supercede the SWTR.

*	*	*	*	*	*	*
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\9\ Subpart H community and non-transient non-community systems serving 10,000 must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non-community systems serving fewer than 10,000 persons and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

#### Appendix B--[Amended]

13. Appendix B to subpart Q is amended by:

a. Revising entry A.2c.

- b. Revising heading B.
- c. Revising entries B.3., B.4, B.5, B.6., and B.7.
- d. Revising endnotes 4, 6 and 10.
- e. Revising endnote 8.

The revisions read as follows:

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Appendix B to Subpart Q of Part 141.--Standard Health Effects Language for Public Notification

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Contaminant	MCLG \1\, mg/L	MCL \2\ mg/L	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR):			
A. Microbiological Contaminants			
* * *	*	*	*
2c. Turbidity (IESWTR TT and LTIESWTR TT) \8\.	None.....	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
* * *	*	*	*
B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LTIESWTR) and the Filter Backwash Recycling Rule (FBRR) violations:			
* * *	*	*	*
3. <i>Giardia lamblia</i> ..... (SWTR/IESWTR/LTIESWTR).....	Zero.....	TT \10\	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4. Viruses (SWTR/IESWTR/LTIESWTR)			
5. Heterotrophic plate count (HPC) bacteria \9\ (SWTR/IESWTR/LTIESWTR)			
6. <i>Legionella</i> (SWTR/IESWTR/LTIESWTR)			
7. <i>Cryptosporidium</i> (IESWTR/FBRR/LTIESWTR)			
* * *	*	*	* *

\1\ MCLG--Maximum contaminant level goal.

12) MCL—Maximum contaminant level.

14) There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

16) There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the primacy agency.

18) There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 1, 2005, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.

19) The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

110) SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

14. Part 141 is amended by adding a new subpart T to read as follows:

## **Subpart T--Enhanced Filtration and Disinfection--Systems Serving Fewer Than 10,000 People**

### **General Requirements**

141.500 General requirements

141.501 Who is subject to the requirements of subpart T?

141.502 When must my system comply with these requirements?

141.503 What does subpart T require?

### **Finished Water Reservoirs**

141.510 Is my system subject to the new finished water reservoir requirements?

141.511 What is required of new finished water reservoirs?

### **Additional Watershed Control Requirements for Unfiltered Systems**

141.520 Is my system subject to the updated watershed control requirements?

141.521 What updated watershed control requirements must my unfiltered system implement to continue to avoid filtration?

141.522 How does the State determine whether my system's watershed control requirements are adequate?

### **Disinfection Profile**

141.530 What is a Disinfection Profile and who must develop one?

141.531 What criteria must a State use to determine that a profile is unnecessary?

141.532 How does my system develop a Disinfection Profile and when must it begin?

141.533 What data must my system collect to calculate a Disinfection Profile?

141.534 How does my system use this data to calculate an inactivation ratio?

141.535 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?

141.536 My system has developed an inactivation ratio; what must we do now?

#### **Disinfection Benchmark**

141.540 Who has to develop a Disinfection Benchmark?

141.541 What are significant changes to disinfection practice?

141.542 What must my system do if we are considering a significant change to disinfection practices?

141.543 How is the Disinfection Benchmark calculated?

141.544 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?

#### **Combined Filter Effluent Requirements**

141.550 Is my system required to meet subpart T combined filter effluent turbidity limits?

141.551 What strengthened combined filter effluent turbidity limits must my system meet?

141.552 My system consists of "alternative filtration" and is required to conduct a demonstration. What is required of my system and how does the State establish my turbidity limits?

141.553 My system practices lime softening--is there any special provision regarding my combined filter effluent?

#### **Individual Filter Turbidity Requirements**

141.560 Is my system subject to individual filter turbidity requirements?

141.561 What happens if my system's turbidity monitoring equipment fails?

141.562 My system only has two or fewer filters--is there any special provision regarding individual filter turbidity monitoring?

141.563 What follow-up action is my system required to take based on continuous turbidity monitoring?

141.564 My system practices lime softening--is there any special provision regarding my individual filter turbidity monitoring?

#### **Reporting and Recordkeeping Requirements**

141.570 What does subpart T require that my system report to the State?

141.571 What records does subpart T require my system to keep?

#### **Subpart T--Enhanced Filtration and Disinfection--Systems Serving Fewer Than 10,000 People**

#### **General Requirements**

##### **Sec. 141.500 General requirements.**

The requirements of this subpart constitute national primary drinking water regulations. These regulations establish requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under subpart H of this part. The regulations in this subpart establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, *Cryptosporidium* and turbidity. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

(a) At least 99 percent (2 log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the

first customer for filtered systems, or *Cryptosporidium* control under the watershed control plan for unfiltered systems; and

(b) Compliance with the profiling and benchmark requirements in Secs. 141.530 through 141.544.

#### **Sec. 141.501 Who is subject to the requirements of subpart T?**

You are subject to these requirements if your system:

- (a) Is a public water system;
- (b) Uses surface water or GWUDI as a source; and
- (c) Serves fewer than 10,000 persons.

#### **Sec. 141.502 When must my system comply with these requirements?**

You must comply with these requirements in this subpart beginning **January 1, 2005**, except where otherwise noted.

#### **Sec. 141.503 What does subpart T require?**

There are seven requirements of this subpart, and you must comply with all requirements that are applicable to your system. These requirements are:

- (a) You must cover any finished water reservoir that you began to construct on or after March 15, 2002 as described in Secs. 141.510 and 141.511;
- (b) If your system is an unfiltered system, you must comply with the updated watershed control requirements described in Secs. 141.520-141.522;
- (c) If your system is a community or non-transient non-community water systems you must develop a disinfection profile as described in Secs. 141.530-141.536;
- (d) If your system is considering making a significant change to its disinfection practices, you must develop a disinfection benchmark and consult with the State for approval of the change as described in Secs. 141.540-141.544;
- (e) If your system is a filtered system, you must comply with the combined filter effluent requirements as described in Secs. 141.550-141.553;
- (f) If your system is a filtered system that uses conventional or direct filtration, you must comply with the individual filter turbidity requirements as described in Secs. 141.560-141.564; and
- (g) You must comply with the applicable reporting and recordkeeping requirements as described in Secs. 141.570 and 141.571.

#### **Finished Water Reservoirs**



**Sec. 141.510 Is my system subject to the new finished water reservoir requirements?**

All subpart H systems which serve fewer than 10,000 are subject to this requirement.

**Sec. 141.511 What is required of new finished water reservoirs?**

If your system begins construction of a finished water reservoir on or after March 15, 2002 the reservoir must be covered. Finished water reservoirs for which your system began construction prior to March 15, 2002 are not subject to this requirement.

**Additional Watershed Control Requirements for Unfiltered Systems**

**Sec. 141.520 Is my system subject to the updated watershed control requirements?**

If you are a subpart H system serving fewer than 10,000 persons which does not provide filtration, you must continue to comply with all of the filtration avoidance criteria in Sec. 141.71, as well as the additional watershed control requirements in Sec. 141.521.

**Sec. 141.521 What updated watershed control requirements must my unfiltered system implement to continue to avoid filtration?**

Your system must take any additional steps necessary to minimize the potential for contamination by *Cryptosporidium* oocysts in the source water. Your system's watershed control program must, for *Cryptosporidium*:

- (a) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and
- (b) Monitor the occurrence of activities which may have an adverse effect on source water quality.

**Sec. 141.522 How does the State determine whether my system's watershed control requirements are adequate?**

During an onsite inspection conducted under the provisions of Sec. 141.71(b)(3), the State must determine whether your watershed control program is adequate to limit potential contamination by *Cryptosporidium* oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of your program to monitor and control detrimental activities occurring in the watershed; and the extent to which your system has maximized land ownership and/or controlled land use within the watershed.

**Disinfection Profile**

**Sec. 141.530 What is a Disinfection Profile and who must develop one?**

A disinfection profile is a graphical representation of your system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. If you are a subpart H community or non-transient non-community water systems which serves fewer than 10,000 persons, your system must develop a disinfection profile unless your State determines that your system's

profile is unnecessary. Your State may approve the use of a more representative data set for disinfection profiling than the data set required under Secs. 141.532-141.536.

**Sec. 141.531 What criteria must a State use to determine that a profile is unnecessary?**

States may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in your distribution system. Your State may approve a more representative TTHM and HAA5 data set to determine these levels.

**Sec. 141.532 How does my system develop a Disinfection Profile and when must it begin?**

A disinfection profile consists of three steps:

(a) First, your system must collect data for several parameters from the plant as discussed in Sec. 141.533 over the course of 12 months. If your system serves between 500 and 9,999 persons you must begin to collect data no later than July 1, 2003. If your system serves fewer than 500 persons you must begin to collect data no later than January 1, 2004.

(b) Second, your system must use this data to calculate weekly log inactivation as discussed in Secs. 141.534 and 141.535; and

(c) Third, your system must use these weekly log inactivations to develop a disinfection profile as specified in Sec. 141.536.

**Sec. 141.533 What data must my system collect to calculate a Disinfection Profile?**

Your system must monitor the following parameters to determine the total log inactivation using the analytical methods in Sec. 141.74 (a), once per week on the same calendar day, over 12 consecutive months:

(a) The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(b) If your system uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(c) The disinfectant contact time(s) ("T") during peak hourly flow; and

(d) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

**Sec. 141.534 How does my system use this data to calculate an inactivation ratio?**

Use the tables in Sec. 141.74(b)(3)(v) to determine the appropriate CT<sub>99.9</sub> value. Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

(a) Uses only one point of disinfectant application.	(1) One inactivation ratio (CT <sub>calc</sub> /CT <sub>99.9</sub> ) before or at the first customer during peak hourly flow or (2) Successive CT <sub>calc</sub> /CT <sub>99.9</sub> values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, your system must calculate the total inactivation ratio by determining (CT <sub>calc</sub> /CT <sub>99.9</sub> ) for each sequence and then adding the (CT <sub>calc</sub> /CT <sub>99.9</sub> ) values together to determine ( $\Sigma$ CT <sub>calc</sub> /CT <sub>99.9</sub> ).
(b) Uses more than one point of disinfectant application before the first customer.	The (CT <sub>calc</sub> /CT <sub>99.9</sub> ) value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in paragraph (a)(2) of this section.

**Sec. 141.535 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?**

If your system uses chloramines, ozone, or chlorine dioxide for primary disinfection, you must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the State.

**Sec. 141.536 My system has developed an inactivation ratio; what must we do now?**

Each log inactivation serves as a data point in your disinfection profile. Your system will have obtained 52 measurements (one for every week of the year). This will allow your system and the State the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (your Disinfection Profile). Your system must retain the Disinfection Profile data in graphic form, such as a spreadsheet, which must be available for review by the State as part of a sanitary survey. Your system must use this data to calculate a benchmark if you are considering changes to disinfection practices.

**Disinfection Benchmark**

**Sec. 141.540 Who has to develop a Disinfection Benchmark?**

If you are a subpart H system required to develop a disinfection profile under Sec. Sec. 141.530 through 141.536, your system must develop a Disinfection Benchmark if you decide to make a significant change to your disinfection practice. Your system must consult with the State for approval before you can implement a significant disinfection practice change.

**Sec. 141.541 What are significant changes to disinfection practice?**

Significant changes to disinfection practice include:

- (a) Changes to the point of disinfection;
- (b) Changes to the disinfectant(s) used in the treatment plant;
- (c) Changes to the disinfection process; or
- (d) Any other modification identified by the State.

**Sec. 141.542 What must my system do if we are considering a significant change to disinfection practices?**

If your system is considering a significant change to its disinfection practice, your system must calculate a disinfection benchmark(s) as described in Secs. 141.543 and 141.544 and provide the benchmark(s) to your State. Your system may only make a significant disinfection practice change after consulting with the State for approval. Your system must submit the following information to the State as part of the consultation and approval process:

- (a) A description of the proposed change;
- (b) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark;
- (c) An analysis of how the proposed change will affect the current levels of disinfection; and
- (d) Any additional information requested by the State.

**Sec. 141.543 How is the Disinfection Benchmark calculated?**

If your system is making a significant change to its disinfection practice, it must calculate a disinfection benchmark using the procedure specified in the following table.

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To calculate a disinfection benchmark your system must perform the following steps

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Step 1: Using the data your system collected to develop the Disinfection Profile, determine the average *Giardia lamblia* inactivation for each calendar month by dividing the sum of all *Giardia lamblia* inactivations for that month by the number of values calculated for that month.

Step 2: Determine the lowest monthly average value out of the twelve values. This value becomes the disinfection benchmark.

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**Sec. 141.544 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?**

If your system uses chloramines, ozone or chlorine dioxide for primary disinfection your system must calculate the disinfection benchmark from the data your system collected for viruses to develop the disinfection profile in addition to the *Giardia lamblia* disinfection benchmark

calculated under Sec. 141.543. This viral benchmark must be calculated in the same manner used to calculate the *Giardia lamblia* disinfection benchmark in Sec. 141.543.

## Combined Filter Effluent Requirements

### Sec. 141.550 Is my system required to meet subpart T combined filter effluent turbidity limits?

All subpart H systems which serve populations fewer than 10,000, are required to filter, and utilize filtration other than slow sand filtration or diatomaceous earth filtration must meet the combined filter effluent turbidity requirements of Secs. 141.551-141.553 . If your system uses slow sand or diatomaceous earth filtration you are not required to meet the combined filter effluent turbidity limits of subpart T, but you must continue to meet the combined filter effluent turbidity limits in Sec. 141.73.

### Sec. 141.551 What strengthened combined filter effluent turbidity limits must my system meet?

Your system must meet two strengthened combined filter effluent turbidity limits.

(a) The first combined filter effluent turbidity limit is a ``95th percentile" turbidity limit that your system must meet in at least 95 percent of the turbidity measurements taken each month. Measurements must continue to be taken as described in Sec. 141.74(a) and (c). Monthly reporting must be completed according to Sec. 141.570. The following table describes the required limits for specific filtration technologies.

If your system consists of * * *	Your 95th percentile turbidity value is * * *
(1) Conventional Filtration or Direct Filtration.	0.3 NTU.
(2) All other ``Alternative"	A value determined by the State ( <del>nonot</del> to exceed 1 NTU) based on the demonstration described in Sec. 141.552.

(b) The second combined filter effluent turbidity limit is a ``maximum" turbidity limit which your system may at no time exceed during the month. Measurements must continue to be taken as described in Sec. 141.74(a) and (c). Monthly reporting must be completed according to Sec. 141.570. The following table describes the required limits for specific filtration technologies.

If your system consists of * * *	Your maximum turbidity value is * * *
(1) Conventional Filtration or Direct Filtration.	1 NTU.
(2) All other <del>Alternative</del> ``Alternative"	A value determined by the State (not to exceed

**Sec. 141.552 My system consists of “alternative filtration” and is required to conduct a demonstration--what is required of my system and how does the State establish my turbidity limits?**

(a) If your system consists of alternative filtration (filtration other than slow sand filtration, diatomaceous earth filtration, conventional filtration, or direct filtration) you are required to conduct a demonstration (see tables in Sec. 141.551). Your system must demonstrate to the State, using pilot plant studies or other means, that your system's filtration, in combination with disinfection treatment, consistently achieves:

- (1) 99 percent removal of *Cryptosporidium* oocysts;
- (2) 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts; and
- (3) 99.99 percent removal and/or inactivation of viruses.

(b) [Reserved]

**Sec. 141.553 My system practices lime softening--is there any special provision regarding my combined filter effluent?**

If your system practices lime softening, you may acidify representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the State.

**Individual Filter Turbidity Requirements**

**Sec. 141.560 Is my system subject to individual filter turbidity requirements?**

If your system is a subpart H system serving fewer than 10,000 people and utilizing conventional filtration or direct filtration, you must conduct continuous monitoring of turbidity for each individual filter at your system. The following requirements apply to continuous turbidity monitoring:

- (a) Monitoring must be conducted using an approved method in Sec. 141.74(a);
- (b) Calibration of turbidimeters must be conducted using procedures specified by the manufacturer;
- (c) Results of turbidity monitoring must be recorded at least every 15 minutes;
- (d) Monthly reporting must be completed according to Sec. 141.570; and
- (e) Records must be maintained according to Sec. 141.571.

**Sec. 141.561 What happens if my system's turbidity monitoring equipment fails?**

If there is a failure in the continuous turbidity monitoring equipment, your system must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. Your system has 14 days to resume continuous monitoring before a violation is incurred.

**Sec. 141.562 My system only has two or fewer filters--is there any special provision regarding individual filter turbidity monitoring?**

Yes, if your system only consists of two or fewer filters, you may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in Sec. 141.560(a) through (d) and Sec. 141.561.

**Sec. 141.563 What follow-up action is my system required to take based on continuous turbidity monitoring?**

Follow-up action is required according to the following tables:

If * * *	Your system must * * *
(a) The turbidity of an individual of filter (or the turbidity of combined filter effluent (CFE) for systems with 2 filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart.	Report to the State by the 10th the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).

If a system was required to report to the State * * *	Your system must * * *
(b) For three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).	Conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a CPE as specified in paragraph (c) of this section was required. Systems with 2 filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self- assessment report. <del>If a self-assessment is required, the date that it was triggered and the date that it was completed.</del>

(c) For two months in a row and turbidity exceeded 2.0 NTU in 2 consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).

Arrange to have a comprehensive performance evaluation (CPE) conducted by the State or a third party approved by the State not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the State or a third party approved by the State within the 12 prior months or the system and State are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the State no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

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**Sec. 141.564 My system practices lime softening--is there any special provision regarding my individual filter turbidity monitoring?**

If your system utilizes lime softening, you may apply to the State for alternative turbidity exceedance levels for the levels specified in the table in Sec. 141.563. You must be able to demonstrate to the State that higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.

**Reporting and Recordkeeping Requirements**

**Sec. 141.570 What does subpart T require that my system report to the State?**

This subpart T requires your system to report several items to the State. The following table describes the items which must be reported and the frequency of reporting. Your system is required to report the information described in the following table, if it is subject to the specific requirement shown in the first column.

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Corresponding requirement	Description of information to report	Frequency
(a) Combined Filter Effluent Requirements. (Secs. 141.550-141.553).....	(1) The total number of filtered water turbidity measurements taken during the month.	By the 10th of the following month.
	(2) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to your system's required 95th percentile limit.	By the 10th of the following month.

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	(3) The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system.	By the 10th of the following month.
(b) Individual Turbidity Requirements. (Secs. 141.560-141.564).....	(1) That your system conducted individual filter turbidity monitoring during the month.	By the 10th of the following month.
	(2) The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, <b>and the cause (if known) for the exceedance(s)</b> , but only if 2 consecutive measurements exceeded 1.0 NTU.	By the 10th of the following month.
	(3) If a self-assessment is required, the date that it was triggered and the date that it was completed.	By the 10th of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month)
	(4) If a CPE is required, that the CPE is required and the date that it was triggered.	By the 10th of the following month.
	(5) Copy of completed CPE report.	Within 120 days after the CPE was triggered.
(c) Disinfection Profiling.... (Secs. 141.530-141.536).....	(1) Results of optional monitoring which show TTHM levels 0.064 mg/l and HAA5 levels 0.048 mg/l (Only if your system wishes to forgo profiling) or	(i) For systems serving 500-9,999 by July 1, 2003;  (ii) For systems serving fewer than 500 by January 1, 2004.

that your system has begun disinfection profiling.

(d) Disinfection Benchmarking. (Secs. 141.540-141.544).....	(1) A description of the proposed change in disinfection, your system's disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection.	Anytime your system is considering a significant change to its disinfection practice.
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#### Sec. 141.571 What records does subpart T require my system to keep?

Your system must keep several types of records based on the requirements of subpart T, in addition to recordkeeping requirements under Sec. 141.75. The following table describes the necessary records, the length of time these records must be kept, and for which requirement the records pertain. Your system is required to maintain records described in this table, if it is subject to the specific requirement shown in the first column.

Corresponding requirement	Description of necessary records	Duration of time records must be kept
(a) Individual Filter Turbidity Requirements. (Secs. 141.560-141.564)	Results of individual filter monitoring.	At least 3 years.
(b) Disinfection Profiling..... (Secs. 141.530-141.536)	Results of Profile (including raw data and analysis).	Indefinitely.
(c) Disinfection Benchmarking..... (Secs. 141.540-141.544)	Benchmark (including raw data and analysis).	Indefinitely.

### PART 142--NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

15. The authority citation for Part 142 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

16. Section 142.14 is amended by revising paragraphs (a)(3), (a)(4)(i), (a)(4)(ii) introductory text, and (a)(7) to read as follows:

## **Sec. 142.14 Records kept by States.**

(a) \* \* \*

(3) Records of turbidity measurements must be kept for not less than one year. The information retained must be set forth in a form which makes possible comparison with the limits specified in Secs. 141.71, 141.73, 141.173 and 141.175, 141.550-141.553 and 141.560-141.564 of this chapter. Until June 29, 1993, for any public water system which is providing filtration treatment and until December 30, 1991, for any public water system not providing filtration treatment and not required by the State to provide filtration treatment, records kept must be set forth in a form which makes possible comparison with the limits contained in Sec. 141.13 of this chapter.

(4)(i) Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with Secs. 141.72 and 141.74 of this chapter and the reporting requirements of Secs. 141.75, 141.175, and 141.570, of this chapter must be kept for not less than one year.

(ii) Records of decisions made on a system-by-system and case-by-case basis under provisions of part 141, subpart H, subpart P, or subpart T of this chapter, must be made in writing and kept by the State.

\* \* \* \* \*

(7) Any decisions made pursuant to the provisions of part 141, subpart P or subpart T of this chapter.

(i) Records of systems consulting with the State concerning a modification to disinfection practice under Secs. 141.170(d), 141.172(c), and 141.542 of this chapter, including the status of the consultation.

(ii) Records of decisions that a system using alternative filtration technologies, as allowed under Secs. 141.173(b) and Sec. 141.552 of this chapter, can consistently achieve a 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The decisions must include State-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised. The State must provide a copy of the decision to the system.

(iii) Records of systems required to do filter self-assessment, CPE, or CCP under the requirements of Secs. 141.175 and 141.563 of this chapter.

\* \* \* \* \*

17. Section 142.16 is amended by revising paragraph (g) introductory text and adding paragraph (j) to read as follows:

## **Sec. 142.16 Special primacy requirements.**

\* \* \* \* \*

(g) Requirements for States to adopt 40 CFR part 141, Subpart P Enhanced Filtration and Disinfection--Systems Serving 10,000 or More People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions

are no less stringent than the Federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, Subpart P Enhanced Filtration and Disinfection--Systems Serving 10,000 or More People, must contain the information specified in this paragraph:

\* \* \* \* \*

(m) [Reserved]

(n) [Reserved]

( o) [Reserved]

(jp) Requirements for States to adopt 40 CFR part 141, Subpart T Enhanced Filtration and Disinfection--Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions are no less stringent than the Federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, Subpart T Enhanced Filtration and Disinfection--Systems Serving Fewer than 10,000 People, must contain the information specified in this paragraph:

(1) Enforceable requirements. States must have rules or other authority to require systems to participate in a Comprehensive Technical Assistance (CTA) activity, the performance improvement phase of the Composite Correction Program (CCP). The State must determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the State that the system is able to receive and implement technical assistance provided through the CTA. A CPE is a thorough review and analysis of a system's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. During the CTA phase, the system must identify and systematically address factors limiting performance. The CTA is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority-setting techniques and maintaining long-term involvement to systematically train staff and administrators.

(2) State practices or procedures.

(i) Section 141.530-141.536--How the State will approve a more representative data set for optional TTHM and HAA5 monitoring and profiling.

(ii) Section ~~141.536~~ 141.535 of this chapter--How the State will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, ozone, or chlorine dioxide for primary disinfection.

(iii) Section 141.542 of this chapter--How the State will consult with the system and approve significant changes to disinfection practices.

(iv) Section 141.552 of this chapter--For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, how the State will determine that a public water system may use a filtration technology if the PWS demonstrates to the State, using pilot plant studies or other means, that the alternative filtration

technology, in combination with disinfection treatment that meets the requirements of Sec. 141.72(b) of this chapter, consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. For a system that makes this demonstration, how the State will set turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time at a level that consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts.

[FR Doc. 02-409 Filed 1-11-02; 8:45 am]

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**Complete Copy of the LT1ESWTR  
Including Preamble as  
Published on January 14, 2002**

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# Federal Register

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Monday,  
January 14, 2002

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## Part II

### Environmental Protection Agency

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40 CFR Parts 9, 141, and 142  
National Primary Drinking Water  
Regulations: Long Term 1 Enhanced  
Surface Water Treatment Rule; Final Rule

# ENVIRONMENTAL PROTECTION AGENCY

## 40 CFR Parts 9, 141, and 142

[WH-FRL-7124-2]

RIN 2040-AD18

### National Primary Drinking Water Regulations: Long Term 1 Enhanced Surface Water Treatment Rule

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** In this document, EPA is finalizing the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). The purposes of the LT1ESWTR are to improve control of microbial pathogens, specifically the protozoan *Cryptosporidium*, in drinking water and address risk trade-offs with disinfection byproducts. The rule will require systems to meet strengthened filtration requirements as well as to calculate levels of microbial inactivation to ensure that microbial protection is not jeopardized if systems make changes to comply with disinfection requirements of the Stage 1 Disinfection and Disinfection Byproducts Rule (DBPR). The LT1ESWTR applies to public water systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 persons. The LT1ESWTR builds upon the framework established for systems serving a population of 10,000 or more in the Interim Enhanced Surface Water Treatment Rule (IESWTR). This rule was proposed in combination with the Filter Backwash Recycling Rule (FBRR) in April 2000.

**DATES:** This regulation is effective February 13, 2002. As discussed in the supplementary information section and consistent with sections 1412(b)(10) and 1445 of SDWA, regulated entities must comply with this rule starting March 15, 2002. For judicial review purposes, this final rule is promulgated as of 1 p.m. eastern time on January 14, 2002.

**ADDRESSES:** Public comments, the comment/response document, applicable **Federal Register** notices, other major supporting documents, and a copy of the index to the public docket for this rulemaking (W-99-10, Final Long Term 1 Enhanced Surface Water Treatment Rule) are available for review at EPA's Drinking Water Docket: 401 M Street, SW., Rm. EB57, Washington, DC 20460 from 9 a.m. to 4 p.m., Eastern Time, Monday through Friday, excluding legal holidays. For access to

docket materials or to schedule an appointment please call (202) 260-3027.

**FOR FURTHER INFORMATION CONTACT:** For technical inquiries contact Tom Grubbs at 1200 Pennsylvania Avenue, NW., MC4607, Washington, DC 20460, (202) 564-5262. For general information contact the Safe Drinking Water Hotline, telephone (800) 426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding Federal holidays, from 9 a.m. to 5:30 p.m. Eastern Time.

#### SUPPLEMENTARY INFORMATION:

##### Regulated Entities

Entities potentially regulated by the LT1ESWTR are public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI) and serve fewer than 10,000 persons. Regulated categories and entities include:

Category	Examples of regulated entities
Industry .....	PWSs that use surface water or GWUDI.
State, Local, Tribal or Federal Governments.	PWSs that use surface water or GWUDI.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by the LT1ESWTR. This table lists the types of entities that EPA is now aware could potentially be regulated by this rule. Other types of entities not listed in this table could also be regulated. To determine whether your facility is regulated by this action, you should carefully examine the definition of PWS in § 141.2 of title 40 of the Code of Federal Regulations and applicability criteria in § 141.501 of today's final rule. If you have questions regarding the applicability of the LT1ESWTR to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

##### List of Abbreviations Used in This Document:

AWWA American Water Works Association  
 AWWSCo American Water Works Service Company  
 °C Degrees Celsius  
 CCP Composite Correction Program  
 CCR Consumer Confidence Report  
 CDC Centers for Disease Control  
 CFR Code of Federal Regulations  
 CFSII Continuing Survey of Food Intakes by Individuals  
 COI Cost of Illness

CPE Comprehensive Performance Evaluation  
 CTA Comprehensive Technical Assistance  
 DAF Dissolved Air Flotation  
 DBP Disinfection Byproducts  
 DBPR Disinfectants and Disinfection Byproduct Rule  
 EPA Environmental Protection Agency  
 ESWTR Enhanced Surface Water Treatment Rule  
 FACA Federal Advisory Committee Act  
 FBRR Filter Backwash Recycle Rule  
 FR Federal Register  
 gpm Gallons per Minute  
 GWUDI Ground Water Under Direct Influence of Surface Water  
 HAA5 Haloacetic Acids (Monochloroacetic, Dichloroacetic, Trichloroacetic, Monobromoacetic and Dibromoacetic Acids)  
 HRRCA Health Risk Reduction and Cost Analysis  
 ICR Information Collection Request  
 IESWTR Interim Enhanced Surface Water Treatment Rule  
 LT1ESWTR Long Term 1 Enhanced Surface Water Treatment Rule  
 MCLG Maximum Contaminant Level Goal  
 M-DBP Microbial and Disinfectants/Disinfection Byproducts  
 NDWAC National Drinking Water Advisory Council  
 NPDWR National Primary Drinking Water Regulation  
 NODA Notice of Data Availability  
 NTTAA National Technology Transfer and Advancement Act  
 NTU Nephelometric Turbidity Units  
 O&M Operation and Maintenance  
 OMB Office of Management and Budget  
 PBMS Performance-based Measurement System  
 PRA Paperwork Reduction Act  
 PWS Public Water System  
 PWSS Public Water Supply Supervision  
 RFA Regulatory Flexibility Act  
 RIA Regulatory Impact Analysis  
 SAB Science Advisory Board  
 SBA Small Business Administration  
 SBAR Small Business Advocacy Review  
 SBREFA Small Business Regulatory Enforcement Fairness Act of 1996  
 SDWA Safe Drinking Water Act  
 SDWIS Safe Drinking Water Information System  
 SWTR Surface Water Treatment Rule  
 TTHM Total Trihalomethanes  
 UMRA Unfunded Mandates Reform Act  
 WTP Willingness to Pay

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## I. Summary

### A. Why Is EPA Promulgating the LT1ESWTR?

The Safe Drinking Water Act (SDWA) requires EPA to set enforceable standards to protect public health from contaminants that may occur in drinking water. As explained in more detail in the April 10, 2000 proposal for today's rule (65 FR 19046), EPA has determined that the presence of microbiological contaminants is a substantial health concern. If finished water supplies contain microbiological contaminants, disease outbreaks may result. Disease symptoms may include diarrhea, cramps, nausea, jaundice, headaches, and fatigue. EPA has set enforceable drinking water treatment techniques to reduce the risk of waterborne disease outbreaks. Treatment technologies such as filtration and disinfection can remove or inactivate microbiological contaminants.

Physical removal is critical to the control of *Cryptosporidium* because it is highly resistant to standard disinfection practices. Cryptosporidiosis, the infection caused by *Cryptosporidium*, may manifest itself as a severe infection that can last several weeks and may cause the death of individuals with compromised immune systems. In 1993, *Cryptosporidium* caused over 400,000 people in Milwaukee, WI to experience

intestinal illness. More than 4,000 were hospitalized and at least 50 deaths were attributed to the cryptosporidiosis outbreak. There have also been cryptosporidiosis outbreaks in Nevada, Oregon, and Georgia over the past several years.

In 1990, the EPA Science Advisory Board (SAB) cited drinking water contamination as one of the most important environmental risks and indicated that disease causing microbial contaminants (i.e., bacteria, protozoa, and viruses) are probably the greatest remaining health risk management challenge for drinking water suppliers (USEPA/SAB, 1990). The LT1ESWTR addresses this challenge by improving the control of a wide range of microbial pathogens in public drinking water systems and, specifically addressing *Cryptosporidium* for the first time in systems serving fewer than 10,000 people.

### B. What Is *Cryptosporidium*?

*Cryptosporidium* is a protozoan parasite found in humans, other mammals, birds, fish, and reptiles. It is common in the environment and widely found in surface water supplies (Rose, 1998; LeChevallier and Norton, 1995; Atherholt *et al.*, 1998; EPA, 2000a). In the infected animal, the parasite multiplies in the gastrointestinal tract. The animal then excretes oocysts of the parasite in its feces. These oocysts are tiny spore-like organisms 4 to 6 microns in diameter (too small to be seen without a microscope), which carry within them the infective sporozoites. The oocysts of *Cryptosporidium* are very resistant to adverse factors in the environment and can survive dormant for months in cool, dark conditions such as moist soil, or for up to a year in clean water. When ingested by another animal they can transmit the cryptosporidiosis disease and start a new cycle of infection. Cryptosporidiosis is primarily a waterborne disease, but has also been transmitted by consumption of contaminated food, unhygienic diaper changing practices (and other person-to-person contact), and contact with young farm animals.

*Cryptosporidium* oocysts are not easily killed by commonly-used disinfectants. They are relatively unaffected by chlorine and chloramines in the concentrations that are used for drinking water treatment. Oocyst infectivity appears to persist under normal temperatures, although oocysts may lose infectivity if sufficiently cooled or heated (USEPA, 2000a). Research indicates that oocysts may remain viable even after freezing (Fayer and Nerad, 1996).

### C. What Are the Health Concerns Associated With *Cryptosporidium*?

When someone is infected with *Cryptosporidium*, they may contract cryptosporidiosis, a disease which can cause diarrhea, stomach cramps, nausea, loss of appetite, and a mild fever.

*Cryptosporidium* has become recognized as one of the most common causes of waterborne disease (drinking and recreational) in humans in the United States. The parasite is found in every region of the United States and throughout the world ([www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht\\_cryptosporidiosis.htm](http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/factsht_cryptosporidiosis.htm)). The symptoms of cryptosporidiosis begin an average of seven days after infection. Persons with a normal, healthy immune system can expect their illness to last for two weeks or less, with constant or intermittent diarrhea. However, even after symptoms cease, an individual can still pass *Cryptosporidium* in the stool for up to two months, and may be a source of infection for others.

Cryptosporidiosis is not treatable with antibiotics, so prevention of infection is critical. People with weakened immune systems (those with HIV/AIDS, on cancer chemotherapy, or who have received organ transplants) will have cryptosporidiosis for a longer period of time, and it could become life-threatening. Young children, pregnant women, or the elderly infected with cryptosporidiosis can quickly become severely dehydrated.

Twelve waterborne cryptosporidiosis outbreaks have occurred at drinking water systems since 1984 (Craun, 1998; USEPA, 2000a). The largest of the known outbreaks occurred in Milwaukee and was responsible for over 400,000 illnesses and at least 50 deaths (Hoxie, *et al.*, 1997; MacKenzie *et al.*, 1994); other known outbreaks have occurred in smaller communities and have involved many fewer people. An incident such as a rainstorm that flushes many oocysts into the source water or causes a sanitary sewer overflow combined with a water treatment plant upset could allow a large pulse of oocysts to move past the multiple barriers of a water treatment plant.

### D. Does This Regulation Apply to My Water System?

Today's final regulation applies to all small (serving less than 10,000 people) public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI).

### E. How Is the EPA Regulating *Cryptosporidium* in the LT1ESWTR?

In the IESWTR (63 FR 69478), EPA established a maximum contaminant level goal (MCLG) of zero for *Cryptosporidium*. When establishing an MCLG, EPA must also establish either a corresponding Maximum Contaminant Level (MCL) or a treatment technique. In the IESWTR and in today's LT1ESWTR, the Agency chose to establish a treatment technique that relies on strengthening water treatment processes already in place. For filtered systems this means achieving at least 2-log (99 percent) removal of *Cryptosporidium* by meeting strengthened combined filter effluent turbidity limits as established by today's rule. For unfiltered systems it means maintaining and improving *Cryptosporidium* control under existing watershed control plans.

### F. What Other Requirements Are Included in This Rule?

Today's final regulation includes several requirements.

- All surface water and GWUDI systems serving fewer than 10,000 people must meet the requirements for achieving a 2-log removal or control of *Cryptosporidium*;
- Conventional and direct filtration systems must comply with specific combined filter effluent turbidity requirements while alternative filtration systems (systems using filtration other than conventional filtration, direct filtration, slow sand filtration, or diatomaceous earth filtration), must demonstrate the ability to achieve 2-log removal of *Cryptosporidium* and comply with specific State-established combined filter effluent turbidity requirements;
- Conventional and direct filtration systems must continuously monitor the turbidity of individual filters and perform follow-up activities if this monitoring indicates a potential problem;
- Systems must develop a disinfection profile unless they can demonstrate that their TTHM and HAA5 disinfection byproduct (DBP) levels are less than 0.064 mg/L and 0.048 mg/L respectively;
- Systems considering a significant change to their disinfection practice must develop a disinfection inactivation benchmark of their existing level of microbial protection and consult with the State for approval prior to implementing the disinfection change;
- Finished water reservoirs for which construction begins after the effective

date of today's rule must be covered; and

- Unfiltered systems must comply with updated watershed control requirements that add *Cryptosporidium* as a pathogen of concern.

### G. How Will This Regulation Protect Public Health?

Today's rule for the first time establishes *Cryptosporidium* control requirements for small systems by requiring a minimum 2-log removal for *Cryptosporidium*. The rule also strengthens filter performance requirements to ensure 2-log *Cryptosporidium* removal, establishes individual filter monitoring to minimize contaminant pass-through and support improved performance, includes *Cryptosporidium* in the definition of GWUDI, and explicitly considers unfiltered system watershed control provisions. Today's rule also reflects a commitment to the importance of maintaining existing levels of microbial protection in public water systems as plants take steps to comply with newly applicable DBP standards. Systems considering significant changes to their disinfection practices must first evaluate current levels of *Giardia* inactivation (and virus inactivation if applicable) and consult with their State Primacy Agency for approval before implementing those changes to assure that current microbial protection is not significantly reduced. Thus, compliance with the provisions of today's rule will improve public health protection by reducing the risk of exposure to *Cryptosporidium* in small systems serving fewer than 10,000 people even as those systems begin to take steps to comply with related DBP standards.

## II. Background

### A. What Is the Statutory Authority for the LT1ESWTR?

The Safe Drinking Water Act (SDWA or the Act), as amended in 1986, requires EPA to publish a maximum contaminant level goal (MCLG) for each contaminant which in the judgement of the EPA Administrator, may have an adverse effect on the health of persons, occurs in public water systems with a frequency and at a level of public health concern, and whose regulation would represent a meaningful public health risk reduction (Section 1412(b)(1)(A)). MCLGs are non-enforceable health goals to be set at a level at which no known or anticipated adverse effect on the health of persons occur and which allows an adequate margin of safety (Section 1412(b)(4)). The Act was again

amended in August 1996 (Public Law 104-83), resulting in the renumbering and augmentation of certain sections with additional statutory language. New sections were added establishing new drinking water requirements.

The 1986 Amendments to SDWA requires EPA to publish an enforceable National Primary Drinking Water Regulation (NPDWR) that specifies either a maximum contaminant level (MCL) or treatment technique (Sections 1401(1) and 1412(7)(a)) at the same time it publishes an MCLG. EPA is authorized to promulgate a NPDWR that requires the use of a treatment technique in lieu of establishing an MCL, if the Agency finds that it is not economically or technologically feasible to ascertain the level of the contaminant. Today's rule relies upon the treatment technique of improved filter performance based on strengthened turbidity limits to control for *Cryptosporidium* because an analytical method suitable for finished water compliance purposes is currently not economically or technologically feasible. In accordance with a schedule established by Section 1412(b)(2)(C) of SDWA as added by the 1996 Amendments to SDWA, EPA is required to promulgate today's rule by November 2000.

#### B. What Is the Regulatory History for the LT1ESWTR?

In 1989, EPA promulgated the Surface Water Treatment Rule (SWTR) (54 FR 27486, June 29, 1989 (USEPA, 1989)) that set MCLGs of zero for *Giardia lamblia*, viruses, and *Legionella* and promulgated regulatory requirements for all PWSs using surface water or GWUDI. The SWTR includes treatment technique requirements for filtered and unfiltered systems that are intended to protect against the adverse health effects of exposure to *Giardia lamblia*, viruses, and *Legionella*, as well as many other pathogenic organisms. Briefly, those requirements include (1) requirements for maintenance of a disinfectant residual in the distribution system; (2) removal and/or inactivation of 3-log (99.9 percent) for *Giardia* and 4-log (99.99 percent) for viruses; (3) combined filter effluent turbidity performance standard of 5 nephelometric turbidity units (NTU) as a maximum and 0.5 NTU at the 95th percentile monthly, based on 4-hour monitoring for treatment plants using conventional treatment or direct filtration (with separate standards for other filtration technologies); and (4) watershed protection and other requirements for unfiltered systems. Systems seeking to avoid filtration were required to meet avoidance criteria and

obtain avoidance determinations from States by December 30, 1991, otherwise filtration must have been provided by June 29, 1993. For systems properly avoiding filtration, later failures to meet avoidance criteria triggered a requirement that filtration be provided within 18 months.

The intention of the SWTR was to provide appropriate multiple barriers of treatment to control pathogen occurrence in finished drinking water. *Cryptosporidium*, however, was not addressed under the SWTR, because EPA lacked sufficient health, occurrence, and water treatment control data regarding this organism at the time of the rule's development. The IESWTR and today's final rule address these gaps in microbial protection.

In 1992, EPA initiated a negotiated rulemaking (Reg-Neg) to develop a disinfectants and disinfection byproducts rule. The Reg-Neg Committee consisting of a variety of stakeholder groups met from November 1992 through June 1993. As part of this effort, the Committee concluded that the SWTR needed to be revised to address the health risk of high densities of pathogens in poorer quality source waters than the SWTR addressed as well as the health risks of *Cryptosporidium*. The Committee recommended the development of three sets of rules: a two-staged Disinfectants/Disinfection Byproducts Rule (DBPR), an "interim" Enhanced Surface Water Treatment Rule (IESWTR), a "long term" Enhanced Surface Water Treatment Rule (LT1ESWTR), and an Information Collection Rule. The IESWTR was only to apply to those systems serving 10,000 or more persons. The Committee agreed that the "long term" Enhanced Surface Water Treatment Rule would be needed for systems serving fewer than 10,000 persons.

Congress legislatively affirmed this Microbial/Disinfection Byproduct (M-DBP) strategy as part of the 1996 SDWA Amendments. As part of those new Amendments, Congress also established a new schedule for EPA promulgation of these rules (which is the basis for the November 2000 schedule for today's rule). EPA established the M-DBP Advisory Committee under the Federal Advisory Committee Act (FACA) in 1997 to seek advice on how to proceed towards these deadlines in light of new information available since the 1993 negotiated rulemaking discussions. The Committee met five times in March through July 1997 to discuss issues related to the IESWTR and the Stage 1 DBPR. The Committee reached agreement in July of 1997 and its recommendations are embodied in an

Agreement in Principle document dated July 15, 1997, which is also found in two Notices of Data Availability (NODA) (USEPA 1997a,b). The major issues addressed in the Agreement in Principle were discussed in the NODA for the IESWTR (62 FR 59486, November 3, 1997) and Stage 1 DBPR (62 FR 59388, November 3, 1997).

On December 16, 1998, EPA promulgated the IESWTR (63 FR 69478), which applies to surface water and GWUDI systems serving 10,000 or more persons. The purposes of the IESWTR are to improve control of microbial pathogens (specifically *Cryptosporidium*) and to address risk trade-offs with DBPs. Key provisions established in the IESWTR include: (1) An MCLG of zero for *Cryptosporidium*; (2) a 2-log *Cryptosporidium* removal requirements for systems that filter; (3) strengthened combined filter effluent turbidity performance standards and individual filter turbidity provisions; (4) disinfection benchmarking provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with new DBP standards; (5) inclusion of *Cryptosporidium* in the definition of GWUDI, as another pathogen that would indicate the presence of GWUDI, and in the watershed control requirements for unfiltered public water systems; (6) requirements for covers on new finished water reservoirs; and (7) sanitary surveys for all surface water and GWUDI systems regardless of size.

Today's rule is based in large part upon the data, research, and technical analysis that supported the major components included in the 1998 IESWTR. To that degree, it reflects the national interim microbial protection control strategy ratified by a wide range of experts and stakeholders as part of the 1997 M/DBP Agreement in Principle. However, as was discussed in the April 10, 2000 proposal, today's rule also is based on new small system information that became available since 1998 and, equally important, it also reflects a major commitment to significantly reduce small system compliance burdens wherever possible, while maintaining public health protection.

#### C. How Were Stakeholders Involved in the Development of the LT1ESWTR?

EPA began outreach efforts to develop the LT1ESWTR in the summer of 1998 with two public meetings: one in Denver, Colorado and the other in Dallas, Texas (USEPA, 1999a,b). Building on these two public meetings, EPA has also held a number of additional meetings with stakeholders,

trade associations, environmental groups, and representatives of State and local elected officials. Of particular importance for this rule, given its focus on small systems, EPA received valuable input from small entity representatives as part of the Small Business Regulatory Enforcement Fairness Act (SBREFA) panel. The panel was initiated in April of 1998 and officially convened in August of 1998. Many of the panel's recommendations are reflected in today's rule.

EPA provided numerous opportunities for stakeholder and public involvement. In early June 1999, EPA mailed an informal draft of the LT1ESWTR preamble to the approximately 100 stakeholders who attended either of the public stakeholder meetings. Members of trade associations and the SBREFA panel also received the draft preamble. EPA received valuable suggestions and stakeholder input from 15 State representatives, trade associations, environmental interest groups, and individual stakeholders. EPA proposed the LT1ESWTR on April 10, 2000. During the comment period, the Agency held a public meeting in Washington D.C. on April 14, 2000. Additionally, the proposed rule was presented to industry, State representatives, and the public in nearly 50 meetings across the US, including a May 30, 2000 meeting in Washington, D.C. with ten representatives of elected State and local officials (USEPA 2000g,h). Finally, EPA mailed approximately 200 copies of the proposed rule to stakeholders.

#### *D. What Did the April 10, 2000 Proposal Contain?*

The proposed rulemaking package, which is the basis for today's final rule, was entitled The Long Term 1 Enhanced Surface Water Treatment and Filter Backwash Proposed Rule (USEPA, 2000b).

The proposed rule included two distinct sets of provisions: LT1ESWTR provisions and Filter Backwash Recycling Rule (FBRR) provisions. The Agency promulgated the final FBRR in a **Federal Register** announcement on June 8, 2001 (66 FR 31086), separate from today's final rule. The LT1ESWTR proposed rule provisions applied to surface and GWUDI systems serving fewer than 10,000 persons and included the following provisions:

- 2-log removal of *Cryptosporidium*;
- Compliance with specific combined filter effluent turbidity requirements;
- Continuous turbidity monitoring for individual filters with follow-up activities if monitoring results indicated a potential problem;

- Development of a disinfection profile unless optional monitoring at a particular plant demonstrated TTHM and HAA5 levels less than 0.064 mg/L and 0.048 mg/L respectively;
- Development of a *Giardia* inactivation disinfection benchmark and consultation with the State for approval before making a significant change in disinfection practices;
- Mandatory covers for all newly constructed finished water reservoirs; and
- Unfiltered system compliance with updated watershed control requirements that add *Cryptosporidium* as a pathogen of concern.

### **III. Discussion of the Final Rule**

#### *A. What Level of Cryptosporidium Removal Does the LT1ESWTR Require?*

##### **1. What Does Today's Rule Require?**

Today's final rule establishes a treatment technique requirement for 2-log removal of *Cryptosporidium* for surface water and GWUDI systems serving fewer than 10,000 persons. This requirement applies between a point where the raw water is not subject to contamination by surface water runoff and a point downstream before or at the first customer.

##### **2. How Was This Requirement Developed?**

As discussed previously in today's rule, *Cryptosporidium* is a microbiological contaminant that has caused several outbreaks of cryptosporidiosis and poses serious health risks. For these reasons, the Agency set forth to develop requirements to minimize risks associated with *Cryptosporidium* in drinking water. In the IESWTR, EPA established a MCLG of zero for *Cryptosporidium*. EPA decided to establish 2-log removal of *Cryptosporidium* as the accompanying treatment technique for this MCLG. This requirement is based on a number of treatment effectiveness studies that demonstrate the ability of well-operated conventional and direct filtration plants to achieve at least a 2-log removal of *Cryptosporidium* (Patania *et al.*, 1995; Nieminski and Ongerth, 1995; Ongerth and Pecoraro, 1995; LeChevallier and Norton, 1992; LeChevallier *et al.*, 1991; Foundation for Water Research, 1994; Kelly *et al.*, 1995; and West *et al.*, 1994). The information and data in these eight studies provide convincing evidence that conventional and direct filtration plants that employ coagulation, flocculation, sedimentation (in conventional filtration only), and

filtration steps, have the ability to achieve a minimum of 2-log removal of *Cryptosporidium* when meeting specific turbidity limits. EPA has also provided data in the proposal for today's final rule that indicate the ability of slow sand filtration, diatomaceous earth filtration, and alternative filtration (membrane filtration, cartridge filtration, etc.) to achieve at least 2-log removal of *Cryptosporidium* (Jacangelo *et al.*, 1995; Drozd & Scharzbrod, 1997; Hirata & Hashimoto, 1998; Goodrich *et al.*, 1995; Collins *et al.*, 1996; Lykins *et al.*, 1994; Adham *et al.*, 1998; Shuler & Ghosh, 1991; Timms *et al.*, 1995; Shuler *et al.*, 1990; and Ongerth & Hutton, 1997). The Agency believes that the technological feasibility for 2-log removal is demonstrated for both large and small systems and therefore today's rule extends the 2-log *Cryptosporidium* removal requirement established for large and medium systems in the 1998 IESTWR to small systems serving fewer than 10,000 persons.

##### **3. What Major Comments Were Received?**

The majority of the commenters on the proposed rule agreed with the appropriateness of establishing a 2-log removal requirement for *Cryptosporidium*. A few commenters noted that small systems should not be required to meet the same *Cryptosporidium* log removal requirements as large systems. EPA disagrees. The technological feasibility of 2-log removal is well demonstrated (as shown in the studies discussed in the proposal for today's final rule) and the Agency believes that persons served by all sized systems should be afforded comparable levels of public health protection (i.e., the small systems subject to the LT1ESWTR should have the same MCLG, and the 2-log *Cryptosporidium* removal treatment technique as large systems subject to the IESWTR).

#### *B. What Combined Filter Effluent Requirements Does the LT1ESWTR Contain?*

##### **1. What Does Today's Rule Require?**

Today's final rule requires strengthened combined filter effluent performance for conventional filtration, direct filtration, and alternative filtration systems (systems using filtration technologies other than conventional filtration, direct filtration, diatomaceous earth filtration, or slow sand filtration) as the treatment technique for achieving a 2-log removal of *Cryptosporidium*. For conventional and direct filtration systems, the

turbidity level of representative samples of a system's combined filter effluent water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month. The turbidity level of representative samples of a system's filtered water must at no time exceed 1 NTU. Under today's rule, conventional and direct filtration plants meeting these filter performance requirements are presumed to achieve at least a 2-log removal of

*Cryptosporidium*. Slow sand and diatomaceous earth filtration plants are presumed to achieve at least 2-log removal of *Cryptosporidium* if they continue to meet the existing filter performance requirements established in the SWTR. Systems using alternative filtration (i.e., membrane filtration, cartridge filtration, etc.) must demonstrate to the State that their system achieves 2-log removal of *Cryptosporidium*. The State will then establish appropriate turbidity limits to reflect this performance. At the end of each month, systems must report the total number of combined filter effluent turbidity measurements taken each month, as well as the number and percentage of turbidity measurements that exceeded their 95th percentile turbidity limit and the number of measurements that exceeded their maximum turbidity limit. Combined filter effluent turbidity measurements must be kept for at least three years.

## 2. How Was This Requirement Developed?

In establishing the 2-log removal as a treatment technique for *Cryptosporidium*, the Agency relied on the aforementioned studies to demonstrate the technological feasibility of establishing the 2-log removal. These studies demonstrated that specific treatment would achieve 2-log removal of *Cryptosporidium* when operated to achieve specific turbidity performance limits. For conventional and direct filtration systems, studies demonstrated that achieving a turbidity of 0.3 NTU 95 percent of the time and never exceeding 1 NTU would ensure at least 2-log removal of *Cryptosporidium*. For slow sand and diatomaceous earth filtration systems, the studies demonstrated that meeting existing SWTR turbidity limits would ensure at least 2-log removal of *Cryptosporidium*. Alternative filtration systems were shown to achieve at least 2-log removal of *Cryptosporidium* at a variety of turbidities based on the type of filtration and other site-specific characteristics. The requirements of today's final rule reflect the recommendations of the 1997 M-DBP Committee.

As part of the LT1ESWTR development process, EPA analyzed performance data from 211 small systems in 15 different States. That data indicated that a substantial number of small systems are presently meeting the tighter performance standards of today's rule. For example, 50 percent of the 211 systems are currently meeting 0.3 NTU 12 months out of the year. In addition, 93 percent of the 211 systems never exceeded the 1 NTU maximum 12 months out of the year. Therefore, EPA believes that the strengthened filter performance standards established for small systems in today's final rule are feasible and achievable.

## 3. What Major Comments Were Received?

The majority of the commenters on the proposal agreed with the appropriateness of the combined filter effluent requirements. Many commenters raised concerns with the proposal's reliance on turbidity as an indicator for demonstrating that membrane filtration meets the same *Cryptosporidium* removal requirements as conventional and direct filtration systems. Commenters indicated that although turbidity is the most prevalent form of water quality monitoring, establishing a 0.3 NTU 95th percentile limit and 1 NTU maximum limit would not be as appropriate an indicator of the performance of membranes than other parameters such as flux or membrane integrity. They noted that using turbidity was appropriate if site specific turbidity limits were utilized. At most facilities these limits would typically be much lower than 0.3 NTU. Additionally, commenters asserted that since the typical operational turbidities of membranes (< 0.05 NTU) were so much lower than those of conventional filtration, it would be inappropriate to require membranes to meet turbidity limits that were significantly higher than standard operating practices. In response, EPA notes that in the proposed rule, EPA allowed membrane systems to meet either conventional filtration or alternative filtration combined filter effluent requirements. After further evaluating existing studies and information provided by commenters, EPA agrees that other appropriate indicators may be used to determine the treatment efficiency of membrane filtration, and that given the different operational turbidities of conventional filtration and membrane filtration, different turbidity limits are appropriate. Therefore, today's final rule treats membrane filtration as an available alternative filtration technology, instead of requiring

membranes to meet the same turbidity limits as conventional and direct filtration.

## C. What Individual Filter Monitoring Requirements Does the LT1ESWTR Contain?

### 1. What Does Today's Rule Require?

Today's final rule establishes a requirement that all systems using surface water or GWUDI, serving fewer than 10,000 persons, and utilizing conventional or direct filtration must continuously monitor the individual filter turbidity for each filter used at the system. For purposes of this rule, continuous monitoring means at least every 15 minutes. Systems must keep the results of this monitoring for at least three years. Each month systems must report to the State that they have conducted individual filter turbidity monitoring, and are required to indicate the dates, filter number, and turbidities of any measurements that exceeded 1.0 NTU. Today's rule provides that systems with two or fewer filters may monitor combined filter effluent turbidity continuously, in lieu of individual filter turbidity monitoring. Based on this monitoring, if a system exceeds 1.0 NTU in two consecutive measurements the system must include the filter number, date, time and reason for the exceedance at the end of the month in its monthly filter performance report to the State. If this occurs three months in a row for the same filter, a system is required to conduct a self-assessment of the filter. If a self-assessment is required, it must take place within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month. The system must report to the State that the self-assessment was completed. A self-assessment must include at least the following components:

- Assessment of filter performance;
- Development of a filter profile;
- Identification and prioritization of factors limiting filter performance;
- Assessment of the applicability of corrections; and
- Preparation of a self-assessment report.

If a system exceeds 2.0 NTU (in two consecutive measurements 15 minutes apart) for two months in a row, the system must contact the State to arrange for the State or an approved third party to conduct a Comprehensive Performance Evaluation (CPE) not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. The CPE must be completed and



submitted to the State no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

## 2. How Was This Requirement Developed?

Performance of individual filters within a plant is of paramount importance in preventing pathogen breakthrough. Two important concepts regarding individual filters underlie today's individual filter monitoring requirement. First, as discussed in more detail in the April 10, 2000 proposal, poor performance (and potential pathogen breakthrough) of one filter can be masked by optimal performance of the remaining filters, without exceeding combined filter effluent turbidity performance standards. Second, recent filter performance research demonstrates that individual filters are susceptible to turbidity spikes of short duration that may not be captured by four-hour combined filter effluent measurements. Several studies (Amirthatajah, 1988; Bucklin *et al.*, 1988; Cleasby 1990; Hall and Croll 1996; and McTigue *et al.*, 1998) have confirmed the frequency and magnitude of individual filter turbidity spikes. To address these spikes and the potential for masking, and provide system operators with information and advanced warning with regards to individual filter performance problems before they lead to treatment technique violations, the Agency proposed individual filter turbidity monitoring. EPA proposed one option and requested comment on two alternative approaches. The alternatives consisted of an approach identical to the IESWTR that entailed significantly more burden, and an approach that included 95th percentile and maximum triggers instead of a trigger based on two consecutive measurements. The proposed option has been revised in three minor ways. In today's rule:

- Systems with two or fewer filters may monitor combined filter effluent turbidity continuously, in lieu of individual filter turbidity (the proposal required all filters be monitored);
- Systems must schedule CPEs within 60 days and complete them within 120 days (the proposal required 30 and 90 days);
- A system has 14 days following a turbidimeter malfunction to resume continuous individual filter monitoring before a violation occurs (the proposal required 5 days).

## 3. What Major Comments Were Received?

The majority of the commenters on the proposal agreed with the appropriateness of the individual filter monitoring requirements. The Agency requested comment on a variety of issues to which commenters responded. Most commenters supported the modification that States be provided the opportunity to allow systems with two or fewer filters to monitor combined filter effluent turbidity continuously, in lieu of individual filter turbidity indicating that poor performance of one filter could not simply be masked by optimal performance of an additional filter. The Agency has included this modification in today's final rule because it reduces the burden on small systems while still providing continuous monitoring that can be used to indicate whether filters are performing poorly.

Several commenters supported a modification to lengthen CPE schedules by 30 days. The Agency has included this modification in today's final rule in order to provide States added flexibility in performing these activities. The extra 30 days will provide States the opportunity to marshal unique resources (specifically, employees trained in conducting CPEs) and prioritize the conduct of CPEs, when several systems trigger them during the same time period.

Several commenters indicated that allowing only five working days for an on-line turbidimeter to be off-line before a violation resulted would be inappropriate for small systems. Commenters indicated that smaller systems often do not have back-up units onsite and would be required to contact manufacturers and await shipping and installation which could easily exceed the five days. EPA agrees and has modified the requirement to allow systems serving fewer than 10,000 persons, 14 days to resume online monitoring prior to incurring a violation.

Several commenters noted that systems serving fewer than 10,000 persons should be subject to less frequent monitoring of individual filter effluent. EPA believes that continuous individual filter monitoring is feasible and assures improved performance of filtration systems. As explained in the proposal, continuous filter monitoring is necessary to identify short duration turbidity spikes which are likely to be missed with less frequent monitoring. This is true for systems of all sizes. Less frequent monitoring would not identify many turbidity spikes and accordingly

would not provide a comparable level of public health protection as that of continuous monitoring required for large systems under the IESWTR. In fact, the actual frequency of individual filter monitoring has little effect on burden as much of the costs associated with monitoring are derived from the purchase of the necessary equipment and would be incurred regardless of the frequency. Reduced monitoring would represent reduced public health protection and the Agency firmly believes that the consumers of these small systems should be afforded a comparable level of public health protection as larger systems.

## D. What Disinfection Profiling and Benchmarking Requirements Does the LT1ESWTR Contain?

### 1. What Does Today's Rule Require?

Today's final rule requires community and non-transient non-community systems that use surface water or GWUDI and serve fewer than 10,000 persons to develop a disinfection profile based on a 52 week period. Systems serving between 500 and 9,999 must begin profiling and notify the State to this effect by July 1, 2003. Systems serving fewer than 500 must begin profiling and notify the State to this effect by January 1, 2004. To conduct the profile, systems must:

- Monitor disinfectant residual concentration, water temperature in degrees Celsius, pH, and contact time during peak hourly flow once a week (on the same calendar day) during all months that the system is operational;
- Calculate *Giardia lamblia* inactivation for each of the 52 weeks; and
- Plot graphically, the 52 weekly inactivations.

Results of the profile must be kept indefinitely. EPA is developing guidance materials that provide detailed information on this procedure. A State may determine that a system's profile is unnecessary where a system submits TTHM and HAA5 data that:

- Is taken during the month of warmest water temperature (beginning no earlier than 1998);
- Is taken at the point of maximum residence time; and
- Reports levels of TTHM and HAA5 of less than 0.064 mg/L and 0.048 mg/L respectively.

Today's final rule also requires any system which developed a profile and which decides to make a significant change to their disinfection practice to determine their disinfection benchmark (the average microbial inactivation during the month with the lowest



inactivation), consult with the State for approval, and provide the following information during consultation:

- Description of the proposed change;
- Disinfection profile (and data used to develop profile); and
- Analysis of how the proposed change will affect the current levels of disinfection.

Results of the disinfection benchmark (including the raw data and analysis) must be kept indefinitely.

## 2. How Was This Requirement Developed?

The disinfection benchmarking requirements provide the necessary link between simultaneous compliance with microbial protection requirements of the IESWTR and LT1ESWTR and disinfection byproduct requirements of the DBPR. The requirements were established pursuant to the authority of Section 1445 of SDWA to ensure that systems would not jeopardize microbial protection when making changes in disinfection practices to comply with the DBPR.

During the 1997 M/DBP FACA deliberations, all participants agreed to the fundamental premise that new standards for control of DBPs must not lead to significant reductions in existing levels of microbial protection. This premise is reflected in the 1997 M-DBP Advisory Committee Agreement in Principle document. The Advisory Committee reached agreement on the use of a microbial profiling and benchmarking process, whereby a system and State, working together, could assure that there would not be a significant increase in microbial risk as a result of modifying disinfection practices to meet MCLs for TTHM and HAA5. The final IESWTR established the disinfection benchmark procedure to require large systems (serving 10,000 or more persons) that might be considering a significant change to their disinfection practice (defined as systems with TTHM or HAA5 concentrations at or above 80 percent of the respective MCLs (e.g., 0.064 mg/L TTHM or 0.048 mg/L HAA5)) to evaluate the impact on microbial risk. Under the IESWTR, large systems whose TTHM and/or HAA5 average levels exceeded the aforementioned values were required to develop a disinfection profile of microbial inactivation over the course of a year by calculating the daily level of *Giardia* inactivation. Those large systems required to develop a disinfection profile that also plan to make a significant change to disinfection practices were required to develop a "benchmark" of existing

levels of *Giardia* microbial protection and to consult with the State prior to implementing the change.

In developing the disinfection benchmarking requirements of the LT1ESWTR, EPA used the IESWTR requirements as a starting point and, using significant input from stakeholders, modified the requirements to significantly reduce burden yet maintain a comparable level of public health protection. The April 10, 2000 proposal included several alternatives for establishing the microbial profiling and benchmarking process.

Of the four TTHM and HAA5 monitoring alternatives, the first was identical to the IESWTR, and included four quarters of monitoring at four points in the distribution system. The second alternative matched DBP compliance monitoring, requiring systems serving fewer than 500 to monitor once per year, and systems serving 500 or greater to monitor quarterly. A third alternative required only one sample taken at the point of maximum residence time for all systems. The fourth alternative (which was proposed) made TTHM and HAA5 monitoring optional. This alternative was chosen over the others, because it significantly reduces burden and the concern about "early implementation," that is, the need for systems to comply with requirements of a rule before primacy states have adopted new conforming regulations, while still retaining the ability for systems and States to utilize monitoring data to demonstrate low TTHM and HAA5 levels, and therefore avoid profiling. Since this monitoring is no longer required to determine the applicability of systems to conduct profiles, the final LT1ESWTR refers to this monitoring as "optional monitoring." The associated TTHM and HAA5 samples that must be conducted under this optional monitoring, are described in section 141.531. Of the four profiling alternatives, the first was identical to the IESWTR, requiring daily profiling for a year. The second alternative did not require profiling. The third alternative, which was proposed, required weekly profiling for a year. The fourth alternative required daily profiling during a single month. The Agency proposed weekly profiling over the course of a full year because it significantly reduces burden associated with conducting profiling (as compared to the first alternative), but still provides information on the seasonal variation associated with microbial inactivation, and develops an accurate microbial benchmark as systems moved to comply with the Stage 1 DBPR. The second and

fourth profiling alternatives would not provide such information. The Agency has revised the proposed option in one minor way. In today's rule:

- Systems serving between 500 and 9,999 persons must begin weekly profiling no later than July 1, 2003, and systems serving fewer than 500 persons must begin weekly profiling no later than January 1, 2004 (the proposal required all systems to begin profiling no later than January 7, 2003).

## 3. What Major Comments Were Received?

The Agency received significant comment on the disinfection benchmarking provisions of the proposed rule. Commenters both supported and opposed the proposed "optional" TTHM and HAA5 monitoring. Several commenters argued that EPA should not require systems or states to undertake activities, even optional monitoring, before three years from the date a rule is promulgated because it would result in early implementation of the rule. While the Agency agrees that to the extent possible, implementation should be minimized in the first three years after the promulgation of a national primary drinking water regulation, as required by Section 1412(b)(10) of SDWA, the Agency continues to believe that allowing systems to conduct optional monitoring prior to three years after promulgation is appropriate and authorized under section 1445 of SDWA.

Several commenters raised "early implementation" concerns with profiling as well, and suggested profiling should take place only after using the first round of DBP monitoring in 2004 as optional monitoring for profiling activities. The Agency does agree, that to the extent possible, early implementation should be minimized in the first two years after the promulgation of the rule. However, the Agency believes that developing a microbial profile and benchmark prior to compliance monitoring under the Stage 1 DBPR is key to ensuring that systems do not jeopardize existing microbial protection when making changes to their disinfection practices to comply with the Stage 1 DBPR. Consequently, today's final rule requires systems serving fewer than 500 persons to begin profiling in January 2004, while systems serving greater than 500 to 9,999 persons are required to begin profiling in July 2003.

Other commenters believed that the proposed requirement represented burden reduction for small systems and

States while still achieving the goals of optional monitoring and profiling as developed by the 1997 FACA and EPA. Additionally, commenters noted that EPA should provide States and systems the ability to use more representative data if available (i.e., allowing systems to average over several quarters of data similar to the IESWTR requirements). EPA agrees that systems and States should be allowed the opportunity to use more representative samples, and today's final rule affords States the opportunity to allow more representative data for optional monitoring and profiling.

*E. How Does the Definition of Ground Water Under the Direct Influence of Surface Water Change?*

1. What Does Today's Rule Require?

Today's final rule modifies the definition of ground water under the direct influence of surface water (GWUDI) to include *Cryptosporidium*, as another pathogen that would indicate the presence of GWUDI, for all PWSs.

2. How Was This Requirement Developed?

Although ground water is typically protected from microbial contaminants that are characteristic of surface water supplies, some ground water systems are susceptible to microbial contamination from surface water. Ground water that exhibits physical water quality indicators that closely correlate with nearby surface water and which contain surface water indicator organisms is "under the influence," of that surface water. In order to protect customers of such systems from illnesses resulting from exposure to *Giardia* and other microbial pathogens, the Agency addressed this issue during development of the 1989 SWTR. The final SWTR requires that systems with source water found to be GWUDI are subject to the filtration and disinfection requirements of Section 141 subpart H.

During development of today's final rule, the Agency proposed to modify the definition of GWUDI to include *Cryptosporidium*, as another pathogen that would indicate the presence of GWUDI. This is consistent with the approach taken by the Agency in the IESWTR and is further supported by recently available data indicating *Cryptosporidium* occurrence in 21 public water system wells (Hancock et al., 1998). As a result, EPA believes it appropriate and necessary to include *Cryptosporidium* in the definition of GWUDI for systems serving fewer than 10,000 persons in today's rule.

3. What Major Comments Were Received?

Commenters agreed with the appropriateness of modifying the definition of GWUDI to include *Cryptosporidium* for all PWSs. Today's final rule reflects the GWUDI definition as proposed.

*F. What Additional Requirements Does the LT1ESWTR Contain for Unfiltered Systems?*

1. What Does Today's Rule Require?

Today's rule modifies the requirements for surface water or GWUDI systems serving fewer than 10,000 persons that do not provide filtration by including *Cryptosporidium* in the watershed control provisions everywhere *Giardia lamblia* is mentioned.

2. How Was This Requirement Developed?

Watershed control requirements were initially established in 1989 as part of the SWTR. The SWTR contains specific conditions that a system must meet in order to avoid filtration. These conditions include good source water quality disinfection requirements, periodic on-site inspections, the absence of waterborne disease outbreaks, compliance with the Total Coliform Rule, and a watershed control program. The SWTR requires that the watershed control program must be maintained specifically to minimize the potential for contamination by *Giardia lamblia* cysts and viruses in the source water.

During development of today's rule, the Agency proposed that *Cryptosporidium* should also be included as a focus in watershed program for unfiltered systems. For the same public health reasons explained in detail as part of the April 10, 2000 proposal and outlined earlier regarding the risks associated with exposure to *Cryptosporidium*, the Agency believes it is important that watershed control requirements for unfiltered systems be revised to include *Cryptosporidium*. This is particularly important since such systems do not have the additional treatment barrier provided by filtration to protect against possible pass-through of *Cryptosporidium* into the distribution system.

3. What Major Comments Were Received?

Commenters agreed with the appropriateness of including *Cryptosporidium* in the watershed control program requirements for unfiltered systems. No substantive

changes were made to this provision between proposal and today's final rule.

*G. What Does the LT1ESWTR Require for Finished Water Reservoirs*

1. What Does Today's Rule Require?

Today's final rule requires that all finished water reservoirs, holding tanks, or storage water facilities for finished water at systems serving fewer than 10,000 persons, for which construction begins after March 15, 2002 must be covered.

2. How Was This Requirement Developed?

Open finished water reservoirs, holding tanks, and storage tanks are utilized by PWSs throughout the country. Because these reservoirs are open to the environment and outside influences, they can be subject to the reintroduction of contaminants that the treatment plant was designed to remove. Existing EPA guidelines recommend that all finished water reservoirs and storage tanks be covered (USEPA, 1991). Additionally, many States currently require that finished water storage be covered, and the American Water Works Association (AWWA) has issued a policy statement strongly supporting the covering of reservoirs that store potable water (AWWA, 1983). In the July 29, 1994 IESWTR proposal (59 FR 38832), the Agency requested comment on whether to issue regulations requiring systems to cover finished water storage. Most commenters supported either Federal or State requirements, with some suggesting requirements should only apply to newly constructed reservoirs. In the final IESWTR, the Agency required systems using surface water and GWUDI and serving 10,000 persons or more to cover any newly constructed finished water reservoirs, holding tanks, or storage tanks. Through discussions with stakeholders and evaluations of available information, the Agency is unaware of any newly constructed uncovered finished water reservoirs at small systems since discussions with stakeholders regarding the LT1ESWTR began in 1998. The Agency is furthermore unaware of any future plans of small systems to construct uncovered finished water reservoirs. In fact the drinking water industry (regulators, consultants, and industry groups) have discouraged the construction of new uncovered reservoirs for many years. Furthermore, creating a prohibition on newly constructed uncovered finished water reservoirs would not affect current unfinished water reservoirs or even any system, which, despite the industry

standard of constructing only covered finished water reservoirs, may have already commenced construction on an uncovered finished water reservoir unbeknownst to the Agency or stakeholders which provided input on the rule. Therefore, in accordance with Section 1412(b)(10) of SDWA, the Agency has determined it is practicable to require as part of today's rule that systems serving fewer than 10,000 people provide covers for all finished water reservoirs, holding tanks, or

storage reservoirs constructed after March 15, 2002.

### 3. What Major Comments Were Received?

Commenters agreed with the appropriateness of requiring that newly constructed finished water storage be covered. Several States noted that they currently require that all finished water reservoirs be covered. No substantive changes were made to this provision between proposal and today's final rule.

### H. What Is the Compliance Schedule for the LT1ESWTR?

#### 1. When Must My System Comply With Each of the Requirements of the Rule?

Each of the components of the final LT1ESWTR has a specific compliance date. The following table lists each requirement, along with the appropriate **Federal Register** citation and the compliance date:

Rule requirements	FR citation	Compliance date
Cover new finished water reservoirs .....	§ 141.511 .....	March 15, 2002.
Comply with updated watershed control requirements (unfiltered PWSs). Begin Developing Disinfection Profile .....	§§ 141.520, 141.521 & 141.522 .....	January 14, 2005.
Complete the Disinfection Profile .....	§§ 141.530–141.536 .....	July 1, 2003 for systems serving between 500 and 9,999 persons and January 1, 2004 for systems serving fewer than 500 persons.
Combined Filter Effluent Turbidity Limits	§§ 141.550, 141.551, 141.552, & 141.553.	July 1, 2004 for systems serving between 500 and 9,999 persons and January 1, 2005 for systems serving fewer than 500 persons.
Individual Filter Turbidity Monitoring .....	§§ 141.560, 141.561, 141.562, 141.563, 141.564.	January 11, 2005.

### 2. What Major Comments Were Received?

Many commenters noted that they would not support requirements that would take place prior to two years after the promulgation of today's final rule. Several others recommended requiring that no portions of the rule should take effect until three years after the date of promulgation. The Agency does agree that to the extent possible, implementation should be minimized in the first two years after the promulgation of the rule. However, today's final rule requires systems serving fewer than 500 persons to begin profiling in January 2004, while systems serving greater than 500 to 9,999 persons are required to begin profiling in July 2003. This would allow time for States to work with systems, yet still provide profiling data prior to compliance sampling under the Stage 1 DBPR.

#### I. What Public Notification and Consumer Confidence Report Requirements Are Contained in the LT1ESWTR?

Today's final rule modifies the Public Notification (PN) requirements found in Appendix A and B of subpart Q of Part 141 to include public notification requirements for systems subject to the LT1ESWTR that are consistent with those for systems subject to the IESWTR.

Today's rule does not specifically modify the Consumer Confidence Report (CCR) Requirements found in subpart O of Part 141. However, consumer confidence reports must contain any violations of treatment techniques or requirements of NPDWRs as specified in § 141.153(d)(6) and § 141.153(f). This includes any such violations of the LT1ESWTR.

Updated CCR and PN appendices can be found on the Agency's Web site at <http://www.epa.gov/safewater/tables.html>.

### IV. State Implementation

#### A. What Special State Primacy Requirements does the LT1ESWTR Contain?

In addition to adopting drinking water regulations at least as stringent as the Federal regulations of the LT1ESWTR, EPA requires that States adopt certain additional provisions related to this regulation to have their program revision application approved by EPA. This information advises the regulated community of State requirements and assists EPA in its oversight of State programs.

Under the final LT1ESWTR, there are several special primacy requirements that a State's application must include:

- Description of how the State will consult with the system and approve modifications to disinfection practices;

- Description of how the State will approve a more representative data set for optional monitoring and profiling under §§ 141.530–141.536.
- Description of how existing rules, adoption of appropriate rules or other authority under § 142.16(i)(1) require systems to participate in a Comprehensive Technical Assistance (CTA) activity, and the performance improvement phase of the Composite Correction Program (CCP);
- Description of how the State will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, chlorine dioxide, or ozone for primary disinfection; and
- For alternative filtration technologies (filtration other than conventional filtration treatment, direct filtration, slow sand filtration or diatomaceous earth filtration), a description of how the State will determine under § 142.16(i)(2)(iv), that a PWS may use a filtration technology if the PWS demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with the disinfection treatment that meets the requirements of subpart T of this title, consistently achieves 3-log (99.9 percent) removal and/or inactivation of *Giardia lamblia* cysts and 4-log (99.99 percent) removal and/or inactivation of viruses, and 2-log (99 percent) removal of *Cryptosporidium* oocysts; and a description of how, for the

system that makes this demonstration, the State will set turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time.

**B. What State Recordkeeping Requirements Does the LT1ESWTR Contain?**

Today's rule includes changes to the existing recordkeeping provisions to implement the requirements in today's final rule. States must maintain records of the following:

- (1) Records of turbidity measurements;
- (2) Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness;
- (3) Decisions made on a system-by-system basis and case-by-case basis under provisions of section 141, subpart H or subpart P or subpart T;
- (4) Records of systems consulting with the State concerning a significant modification to their disinfection practice (including the status of the consultation);
- (5) Records of decisions that a system using alternative filtration technologies can consistently achieve a 2-log (99 percent) removal of *Cryptosporidium* oocysts, as well as the required levels of removal and/or inactivation of Giardia and viruses for systems using alternative filtration technologies, including State-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised and the State must provide a copy of the decision to the system, and;
- (6) Records of those systems required to perform filter self-assessments, CPE or CCP.

**C. What State Reporting Requirements Does the LT1ESWTR Contain?**

Currently States must report information to EPA under section 142.15 regarding violations, variances and exemptions, enforcement actions and general operations of State public water supply programs. There are no additional requirements under this rule, but States are required to report violations, variances and exemptions, and enforcement actions related to this rule.

**D. How Must a State Obtain Interim Primacy for the LT1ESWTR?**

To maintain primacy for the Public Water Supply Supervision (PWSS) program and to be eligible for interim primacy enforcement authority for future regulations, States must adopt today's final rule. A State must submit

a request for approval of program revisions that adopt the revised MCL or treatment technique and implement regulations within two years of promulgation, unless EPA approves an extension per § 142.12(b). Interim primacy enforcement authority allows States to implement and enforce drinking water regulations once State regulations are effective and the State has submitted a complete and final primacy revision application. To obtain interim primacy, a State must have primacy with respect to each existing NPDWR. Under interim primacy enforcement authority, States are effectively considered to have primacy during the period that EPA is reviewing their primacy revision application.

**V. Economic Analysis (Health Risk Reduction and Cost Analysis)**

This section summarizes the Health Risk Reduction and Cost Analysis (HRRCA) in support of the LT1ESWTR as required by section 1412(b)(3)(C) of the 1996 SDWA. In addition, under Executive Order 12866, Regulatory Planning and Review, EPA must estimate the costs and benefits of the LT1ESWTR. EPA has prepared an economic analysis to comply with the requirements of this order and the SDWA Health Risk Reduction and Cost Analysis (USEPA, 2001a). The final economic analysis has been published on the Agency's Web site, and can be found at <http://www.epa.gov/safewater/Lt1eswtr>. The analysis can also be found in the docket for this rulemaking.

EPA has estimated the total annualized cost for implementing the LT1ESWTR and analyzed the total benefits that result from the rule. Total annual costs for the rule are \$39.5 million, in 1999 dollars, using three percent discount rate [\$44.8 million using a seven percent discount rate]. The cost estimate includes capital costs for treatment changes and start-up and annual labor costs for monitoring and reporting activities. More detailed information, including the basis for these estimates and alternate cost estimates using different cost of capital assumptions are described in the LT1ESWTR economic analysis (USEPA, 2001a). Combining the value of illness and mortalities avoided, the estimate of the total quantified annual benefits of the LT1ESWTR range from \$18.9 million to \$90.9 million. However, this range does not incorporate many of the sources of uncertainty related to quantifying benefits, including many benefits the Agency was unable to evaluate. Accordingly, incorporating additional uncertainties would necessarily increase the size of the

range. For example, the number of avoided cases of cryptosporidiosis might be higher or lower than the number reflected in this range. More detailed information, including the basis for these estimates, are described in the LT1ESWTR economic analysis (USEPA, 2001a).

**A. What Are the Costs of the LT1ESWTR?**

In estimating the costs of today's final rule, the Agency considered impacts on PWSs and on States (including territories and EPA implementation in non-primacy States). The LT1ESWTR will result in increased costs to public water systems for implementing the components of today's final rule. States will also incur implementation costs. EPA estimates that the annualized cost of today's final rule will be \$39.5 million using a three percent discount rate (\$44.8 million using a seven percent discount rate).

Approximately 84 percent (\$33.1 million using a 3 percent discount rate and \$38.2 million using a 7 percent discount rate) of the rule's total annual costs are imposed on drinking water utilities. States incur the remaining 16 percent (\$6.4 million using 3 percent and \$6.6 million using 7 percent) of the LT1ESWTR's total annual cost. The turbidity provisions, which include treatment changes, monitoring, and reporting, account for the largest portion of the total rule costs (\$37.7 million using 3 percent and \$42.7 million using 7 percent). Systems will incur most of the turbidity provision costs and this is discussed in more detail in the next section. The national estimate of annual system costs is based on estimates of system-level costs for the rule and estimates of the number of systems expected to incur each type of cost. Total capital costs for the LT1ESWTR (non-annualized) is \$173.6 million.

**Turbidity Provision Costs**—The turbidity provisions are estimated to cost both public drinking water systems and States approximately \$37.7 million annually using a three percent discount rate (\$42.7 million using 7 percent). However, the majority of these costs will be borne by the systems and are the result of treatment changes to meet the 0.3 NTU turbidity standard as well as the cost for some systems to purchase turbidimeters in order to meet the monitoring requirements of this rule. The Agency estimates that 2,207 systems will modify their water treatment in response to this rule provision while 2,327 conventional and direct filtration systems will need to install turbidimeters. In addition to the capital costs associated with this rule

provision there will also be increases in operation and maintenance (O&M) costs. These combined capital and O&M costs have an estimated cost to systems of \$27.1 million annually using a 3 percent discount rate (\$31.8 million using a 7 percent discount rate). The O&M expenditures account for 59 percent of the \$27.1 million using a 3 percent discount rate (\$31.8 million using a 7 percent discount rate) while the remaining 41 percent represents annualized capital costs. In addition to the turbidity treatment costs, turbidity monitoring costs apply to all small surface water or GWUDI systems using conventional or direct filtration methods. There are an estimated 5,817 systems that fall under this criterion. The annualized individual filter turbidity monitoring cost to PWSs is approximately \$4.5 million using a 3 percent discount rate (\$4.7 million using 7 percent). In addition to the turbidity treatment and monitoring costs, individual filter turbidity exceedance reporting is estimated to cost systems \$0.6 million annually (using either a 3 percent or 7 percent discount rate).

The Agency estimated that the total State cost for the turbidity provision (monitoring and exceptions) is \$6.1 million annually (using either a 3 percent or 7 percent discount rate), with start-up and monitoring comprising of 81 percent of these annual costs (\$4.9 million annually using either a 3 percent or 7 percent discount rate). The remaining \$1.2 million (using either a 3 percent or 7 percent discount rate) in annual costs includes the costs for States to review the individual filter turbidity exceedance reports and individual filter self-assessment costs.

**Disinfection Benchmarking Costs—**The disinfection benchmarking provision involves three components: benchmarking, profiling, and optional monitoring. The start-up costs for this provision are estimated to cost systems \$2.9 million (\$0.2 million annualized using a three percent discount rate and \$0.3 million using a seven percent discount rate). Disinfection benchmarking and profiling are estimated to cost systems approximately \$0.4 million annually using a 3 percent discount rate (\$0.5 million using 7 percent). TTHM and HAA5 monitoring is optional and estimated to cost \$0.3 million annually using a 3 percent discount rate (\$0.4 million using a 7 percent discount rate). State disinfection benchmarking annualized costs are estimated to be \$0.4 million using a 3 percent discount rate (\$0.5 million using a 7 percent discount rate). This estimate includes start-up, compliance

tracking/recordkeeping, and consultation costs.

**Covered Finished Water Reservoir Provision Costs—**The LT1ESWTR requires that small systems cover all newly constructed finished water reservoirs, holding tanks, or other storage facilities for finished water. Total annual costs, including annualized capital costs and one year of O&M costs are expected to be \$0.8 million (using either a 3 percent or 7 percent discount rate) for this provision. This estimate is calculated from a projected construction rate of new reservoirs and unit cost assumptions for covering new finished water reservoirs. Also, the Agency believes that this is an overestimate since there may be additional States that currently require finished water requirement.

Although EPA has estimated the cost of all the rule's components on drinking water systems and States, there are some costs that the Agency did not quantify. These non-quantifiable costs result from uncertainties surrounding rule assumptions and from modeling assumptions. For example, EPA did not estimate a cost for systems to acquire land if they needed to build a treatment facility or significantly expand their current facility because the need for and cost of land is highly system specific. Additionally, if the cost for land was prohibitive, an alternative compliance option may be available (such as connecting to another source). Once again, the Agency has not quantified costs for this scenario due to the high degree of site specificity. However, based on evaluations of Comprehensive Performance Evaluations (CPEs), EPA believes that most systems possess more than adequate property to construct new facilities.

In addition, other LT1ESWTR provisions may affect some systems but the Agency was not able to quantify these costs. These non-quantified costs include those for systems that incur incremental costs increases as a result of including *Cryptosporidium* in the definition of GWUDI and also by including *Cryptosporidium* in the watershed control requirements for unfiltered systems. The Agency lacked data on the number of systems potentially affected by these two provisions and was therefore, unable to estimate their costs. By including *Cryptosporidium* in the definition, more ground water systems may be determined to be under the direct influence of surface water resulting in additional cost because these systems must comply with the 1989 Surface Water Treatment Rule and today's rule. EPA also did not estimate the costs for

unfiltered systems to control *Cryptosporidium* in their watersheds. These systems already control for other pathogens from similar sources as *Cryptosporidium* so it is likely that this provision will have a relatively minor impact.

#### *B. What Are the Household Costs of the LT1ESWTR?*

The mean annual cost per household is \$6.24 and the cost per household is less than \$15 for 90 percent of 6.3 million households potentially affected by today's final rule. Of the remaining households, nine percent will experience a range of annual costs from \$15 to \$120 (\$10/month), while only one percent of households are estimated to experience annual costs exceeding \$120.

As indicated in the economic analysis supporting today's final rule, per-household costs exceed \$240/year for approximately 5,600 households out of the 6.3 million households potentially impacted by the LT1ESWTR. However, this analysis likely overestimates costs for most of these households, allowing that systems might choose to incur costs with up to 28 separate treatment changes when in fact it is likely to be more cost-effective to install a new treatment system. (This can be thought of as building an automobile piece by piece from an auto parts store compared to buying one at a dealership.) The aforementioned 5,600 households are associated with the end of the cost distribution where systems undertake an unrealistically large number of treatment changes.

#### *C. What Are the Benefits of the LT1ESWTR?*

The primary benefits of today's final rule come from reductions in the risks of microbial illness from drinking water. In particular, LT1ESWTR focuses on reducing the risk associated with disinfection resistant pathogens, such as *Cryptosporidium*. Exposure to other pathogenic protozoa, such as *Giardia*, or other waterborne bacteria, viral pathogens, and other emerging pathogens are likely to be reduced by the provisions of this rule as well, but are not quantified. In addition, LT1ESWTR produces non-quantifiable benefits associated with the risk reductions that result from the uncovered reservoir provision, including *Cryptosporidium* in GWUDI definition, and including *Cryptosporidium* in watershed requirements for unfiltered systems. Non-quantifiable benefits also include reducing the risks to sensitive subpopulations and the likelihood of

incurring costs associated with outbreaks.

### 1. Quantifiable Health Benefits

The quantified benefits from this rule are based solely on the reductions in the risk of cryptosporidiosis that result from the turbidity provision. As a result of data limitation, this analysis only addresses endemic illness and not illness that results from epidemic disease outbreaks. *Cryptosporidiosis* is an infection caused by *Cryptosporidium* which is an acute, self-limiting illness lasting 7 to 14 days, with symptoms that include diarrhea, abdominal cramping, nausea, vomiting and fever (Juranek, 1995). The monetized value of an avoided case of cryptosporidiosis is estimated to range from \$796 to \$1,411 per case based on a cost-of-illness methodology (Harrington et al., 1985; USEPA 2001a). The high end of the range includes losses for medical costs, work time, productivity, and leisure time. However, the low end of the range only values medical costs and work time. The medical costs may be overestimated as they are assumed to be the same as medical costs for a case of Giardiasis which has a significantly longer duration. However, the Agency believes it is appropriate not to prorate medical costs for the shorter duration of Cryptosporidiosis because (1) available data suggests that the median length of hospital stays is essentially the same for Cryptosporidiosis compared to Giardiasis; (2) the Harrington et al. study was conducted in the mid-1980's, and consequently, the higher direct medical costs associated with treating individuals with HIV/AIDS, who are more severely impacted by Cryptosporidiosis, was not included; and (3) Cryptosporidiosis has no known medical treatment and available data indicates that the range of the length of hospital stays for immunocompromised individuals is larger for cases of Cryptosporidiosis compared to Giardiasis. The Agency also recognizes however, that many individuals with Cryptosporidiosis do not seek medical treatment and thus have little or no associated medical cost, and that the percentage of such cases may be higher for Cryptosporidiosis than Giardiasis given its shorter duration.

The benefits of the turbidity provisions of LT1ESWTR come from improvements in filtration performance at water systems. The benefits analysis accounts for some of the variability and uncertainty in the analysis by estimating benefits under two different current treatment and three improved removal assumptions. In addition, EPA used Monte Carlo simulations to derive a

distribution of estimates to address uncertainty.

In order to quantify the benefits of this rule, the Agency estimated changes in the incidence of cryptosporidiosis that would result from the rule. The analysis included estimating the baseline (pre-LT1ESWTR) level of exposure and risk from *Cryptosporidium* in drinking water and the reductions in such exposure and risk resulting from the turbidity provisions of the LT1ESWTR. Baseline levels of *Cryptosporidium* in finished water were estimated by assuming national source water occurrence distribution (based on data by LeChevallier and Norton, 1995) and a national distribution of *Cryptosporidium* removal by treatment.

In the LT1ESWTR economic analysis, the following two assumptions were made regarding the current *Cryptosporidium* oocyst removal performance to estimate finished water *Cryptosporidium* concentrations. First, based on treatment removal efficiency data presented in the proposal, EPA assumed a national distribution of physical removal efficiencies with a mean of 2.0 logs and a standard deviation of 0.63 logs. Because the finished water concentrations of oocysts represent the baseline against which improved removal from the LT1ESWTR is compared, variations in the log removal assumption could have considerable impact on the risk assessment. Second, to evaluate the impact of the removal assumptions on the baseline and resulting improvements, an alternative mean log removal/inactivation assumption of 2.5 logs and a standard deviation of 0.63 logs were also used to calculate finished water concentrations of *Cryptosporidium*.

For each of the two baseline assumptions, EPA assumed that a certain number of plants would show low, mid, or high improved removal as a result of the turbidity provisions. The amount of improved removal depends upon factors such as water matrix conditions, filtered water turbidity effluent levels, and coagulant treatment conditions. The low, mid, and high improved removals were derived from Patania et al., (1995). This study demonstrated that an incremental decrease in turbidity from 0.3 NTU to 0.1 NTU (or a 0.2 NTU reduction overall) resulted in increased oocyst removals of up to one-log. The Agency used this data to construct low, mid, and high removal assumptions that would capture uncertainty associated with improved removal. The Agency also utilized different low, mid, and

high removal assumptions for distinct categories of current turbidity performance (<0.2 NTU, 0.2–0.3 NTU, 0.3–0.4 NTU, and > 0.4 NTU). For instance, systems currently operating at greater than 0.4 NTU would need to target 0.2 NTU to ensure compliance with the 0.3 NTU limit and EPA accordingly assumed a low improved removal of 0.5-log, a mid improved removal of 0.75-log and a high improved removal of 0.9-log. However, systems currently operating between 0.2 NTU and 0.3 NTU were only expected to minimally improve turbidity performance and would therefore only expect improved log removals of 0.15, 0.25, and 0.3 (low, mid, and high). As a result, the economic analysis considers various baseline and with-rule scenarios to develop a range of endemic health damages avoided. Additional information is found in the Benefits chapter of the Economic Analysis supporting today's final rule.

The finished water *Cryptosporidium* distributions that would result from additional log removal with the turbidity provisions were derived assuming that additional log removal was dependent on current removal, i.e., that systems currently operating at the highest filtered water turbidity levels would show the largest improvements or high improved removal assumption. For example, plants now failing to meet a 0.4 NTU limit would show greater removal improvements than plants now meeting a 0.3 NTU limit.

In addition to assuming the more conservative baseline and removal assumptions, the lower-end of the LT1ESWTR's benefit estimate does not include valuations for leisure time, productivity losses (returning to work but still experiencing symptoms), and other loss categories that the authors discuss but do not quantify (e.g., "high valued" leisure). The authors (Harrington et al.) were highly confident in the estimates for direct medical expenditures and work losses which comprise the lower benefit estimate; and less confident in the values for leisure time losses and productivity losses which are included in the upper benefit estimate only. The decreased level of confidence was based on the data and methods used to estimate only these losses. The authors also conclude that: " \* \* \* nonetheless, the loss categories in this group—[productivity, leisure time, etc.] are unquestionably present and therefore, raise losses above those reported in [the lower-end benefit estimate]". The Agency believes that these categories have positive value as stated in Harrington et al. consequently the lower-end estimate for the



LT1ESWTR understates the true value of these loss categories.

The Agency further notes that the medical expense component of the valuation may be overstated because it is not prorated for the shorter duration of Cryptosporidiosis relative to Giardiasis (mean duration of 11.5 v. 41.6 days). The Agency believes this is appropriate however, because (1) available data suggests that the median length of hospital stays is essentially the same for Cryptosporidiosis compared to Giardiasis; (2) the Harrington et al. study was conducted in the mid-1980's, and consequently, the higher direct medical costs associated with treating individuals with HIV/AIDS, who are more severely impacted by Cryptosporidiosis, was not included; and (3) Cryptosporidiosis has no known medical treatment and available data indicates that the range of the length of hospital stays for immunocompromised individuals is larger for cases of Cryptosporidiosis compared to Giardiasis. The Agency also recognizes however, that many individuals with Cryptosporidiosis do not seek medical treatment and thus have little or no associated medical cost, and that the percentage of such cases may be higher for Cryptosporidiosis than Giardiasis given its shorter duration.

Table V.1 indicates estimated annual quantified benefits associated with implementing the LT1ESWTR. The benefits analysis examines only the endemic health damages avoided based on the LT1ESWTR for each of the turbidity provision scenarios discussed previously. For each of these scenarios, EPA calculated the mean of the distribution of the number of illnesses avoided. The 10th and 90th percentiles imply that there is a 10 percent chance that the estimated value could be lower

than the 10th percentile and there is a 10 percent chance that the estimated value could be higher than the 90th percentile. The modeling assumptions used to obtain the distribution of illness and mortality avoided for each baseline and the removal scenarios considers both variability and uncertainty. Specifically, the Agency used a 2-dimensional Monte Carlo simulation to include both uncertainty and variability inputs. The components that EPA considered uncertain include the probability of illness given an infection, the variability of *Cryptosporidium* to cause either an infection or illness, and the infectivity dose-response factor. The variability components include: *Cryptosporidium* occurrence in the finished water, individual daily drinking water consumption, and the number of days per year of exposure.

In the 2-dimensional simulation structure, a set of values for the uncertainty parameters is chosen from their respective distributions. This set of values is then "frozen" and a specified number of iterations are run where different values are chosen for the variability factors. This process is repeated for some specified number of sets of uncertainty parameters. For this analysis, 250 sets of uncertainty parameters were used, with 1,000 variability iterations performed on each of the 250 uncertainty sets.

This modeling exercise provides the Agency with 250 sets of statistics for individual annual risk of illness (e.g., mean, standard deviation) that each reflect different possible combinations of uncertainty factors. The 250 estimates for each set of statistics (i.e., mean, confidence intervals) were then used to compute an overall population average annual risk of illness.

Next, the Agency estimates cases of illness and mortality from the average

annual risk of illness estimates. In order to do this, the average annual probability of illness is multiplied by the number of exposed individuals. In a separate Monte Carlo simulation for this calculation, the average annual probability of illness is treated as an uncertainty variable. As a result, the Agency has mean estimates with confidence intervals for various baseline and post LT1ESWTR assumptions regarding *Cryptosporidium* removal from source water. The 90th percentile confidence bounds on the expected values largely reflect the following uncertainty variables: the probability of illness given infection, the variability of *Cryptosporidium* to cause either an infection or illness, and the infectivity dose-response factor.

The Agency has done its best to represent a reasonable range of quantifiable uncertainty using standard modeling techniques. However, the Agency recognizes that additional sources of uncertainty exist which could not be quantified. To the extent that these are significant, the true range of uncertainty may be greater than that reflected in the quantified analysis.

EPA has evaluated drinking water consumption data from USDA's 1994–1996 Continuing Survey of Food Intakes by Individuals (CSFII) Study. EPA's analysis of the CSFII Study using the "all sources, consumer only" information resulted in a daily water ingestion lognormally distributed with a mean of 1.2 liters per person per day (USEPA, 2000j). Results of alternative model calculations based on USDA consumption data for "community water supplies, all respondents" (mean of 0.93 liters per person per day) are presented in the appendix to the economic analysis as a lower bound estimate.

TABLE V.1.—QUANTIFIED BENEFITS FROM ILLNESSES AND MORTALITIES AVOIDED ANNUALLY FROM TURBIDITY PROVISIONS  
[\$Millions]\*

Quantified benefits	Daily drinking water ingestion and baseline <i>Cryptosporidium</i> log-removal assumptions, \$Millions, 1999					
	2.0 log			2.5 log		
	Low	Mild	High	Low	Mid	High
Mean Benefit from Avoided Illnesses .....	\$23.9–\$42.4	\$31.6–\$56.0	\$32.9–\$58.3	\$9.5–\$16.8	\$11.2–\$19.8	\$12.7–\$22.6
10th Percentile .....	11.4–20.3	15.2–27.0	14.1–24.9	2.2–3.9	2.8–5.0	4.2–7.5
90th Percentile .....	50.1–88.8	58.8–104.2	56.5–100.2	26.6–47.2	27.6–48.9	33.6–59.5
Mean Benefits from Avoided Mortalities .....	23.7	31.3	32.5	9.4	11.1	12.6
10th Percentile .....	11.3	15.0	13.9	2.2	2.8	4.2
90th Percentile .....	49.6	58.2	55.9	26.3	27.3	33.2
Total Mean Quantified Benefits .....	47.6–66.1	62.9–87.3	65.4–90.9	18.9–26.2	22.2–30.9	25.4–35.2

\* Totals may not equal due to rounding.

According to the economic analysis performed for the LT1ESWTR published today, the rule is estimated to reduce the mean annual number of illnesses caused by *Cryptosporidium* in water systems with improved filtration performance by 12,000 to 41,000 cases per year depending upon which of the six baseline and improved *Cryptosporidium* removal assumptions was used, and assuming the 1.2 liter drinking water consumption distribution. Based on these values, the mean estimated annual benefits of reducing the illnesses ranges from \$9.5 million to \$58.3 million per year. The economic analysis also indicated that the rule could result in a mean reduction of 1 to 5 fatalities each year,

depending upon the varied baseline and improved removal assumptions. Using a mean value of \$6.3 million per statistical life saved, reducing these fatalities could produce benefits in the range of \$9.4 million to \$32.5 million. Combining the value of illness and mortalities avoided, the estimate of the total quantified annual benefits of the LT1ESWTR range from \$18.9 million to \$90.9 million. However, this range does not incorporate many of the sources of uncertainty related to quantifying benefits, including many benefits the Agency was unable to evaluate. Accordingly, incorporating additional uncertainties would necessarily increase the size of the range.

New occurrence data and infectivity data is currently being evaluated by the

Agency in the context of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The analysis is currently ongoing and peer review has not been completed. EPA conducted a sensitivity analysis in the economic analysis supporting today's final rule to predict the effect that new data may have on the benefits presented earlier. Table V.2 provides a summary of this sensitivity analysis and depicts the cumulative change to the benefits range that each of the four new changes (new occurrence data, new infectivity data, new morbidity data, and new viability data) could have on benefits. The economic analysis includes a more detailed analysis using this data.

TABLE V.2.—SUMMARY OF RESULTS OF SENSITIVITY ANALYSIS TO PREDICT EFFECTS OF NEW DATA AND INFORMATION ON RANGE OF BENEFITS

	Current EA	New occurrence data	New infectivity data	New morbidity data	New viability data
Change .....	No Changes .....	Occurrence changes from 4.7 oocyst/L to 1.06 oocyst/L.	Rate of infection from .00424 to .02317.	Morbidity changes from 0.39 to 0.5.	Viability changes from 16.4 percent to 55.2 percent.
Benefits Range .....	\$18.9–\$90.9 .....	\$5.4–\$25.2 .....	\$17.3–\$74.4 .....	\$22.5–\$88.0 .....	\$51.2–\$195.8

## 2. Non-Quantified Health and Non-Health Related Benefits

The quantified benefits from filter performance improvements do not fully capture all the benefits of the turbidity provision. Even the upper bound estimates, which are based on a cost-of-illness (COI) methodology (expanded to incorporate lost leisure time and lost productivity while working), may not fully capture the willingness-to-pay to avoid a case of Cryptosporidiosis. In addition, the Harrington, et al. study was conducted in the mid-1980's in a rural community and may not be fully representative of the current national population including individuals with HIV/AIDS and chemotherapy patients that are more severely impacted by Cryptosporidiosis. If this population was more accurately represented, it may be that the average per-case valuation would be higher than the range presented in this analysis. Further, the turbidity provisions are also expected to decrease the risk of waterborne disease outbreaks. However, the quantified benefits reflect only the reduction in endemic Cryptosporidiosis and not any outbreak-related illness or mortalities.

Other disinfection resistant pathogens may also be removed more efficiently due to implementation of the LT1ESWTR. Exposure to other pathogenic protozoa, such as *Giardia*, or other waterborne bacterial or viral

pathogens are likely to be reduced by the provisions of this rule as well.

In addition to preventing illnesses, this rule is expected to have other non-health related benefits. During an outbreak, local governments and water systems must issue warnings and alerts and may need to provide an alternative source of water. Systems also face negative publicity and possibly legal costs. Businesses have to supply their customers and employees with alternative sources of water and some, especially restaurants, may even have to temporarily close. Households also have to boil their water, purchase water, or obtain water from another source. A study of a *Giardia* outbreak in Luzerne County, Pennsylvania showed that these non-health related outbreak costs can be quite significant (Harrington *et al.*, 1985). This outbreak resulted in an estimated loss to individuals of \$31 million to \$92 million. Additional losses were also calculated for restaurants and bars (\$2 million to \$7 million), government agencies (\$0.4 million) and the water supply utility (\$3 million).

The remaining rule provisions (disinfection benchmarking, covered finished water reservoirs, inclusion of *Cryptosporidium* in the GWUDI definition, and inclusion of *Cryptosporidium* in watershed control requirements for unfiltered systems) provide additional benefits. However,

EPA is only able to discuss the benefits of these rule provisions qualitatively because of data limitations. The disinfection benchmark provision will ensure that adequate microbial protection is in place if a system must make changes to its disinfection practices as a result of the Stage 1 DBP rule. Covering finished water reservoirs will protect the finished water from becoming re-contaminated from such things as animal or bird droppings, surface water runoff, and algae. If *Cryptosporidium* is found in ground water supplies, they will be required to change treatment practice to prevent illness. Finally, by requiring *Cryptosporidium* control in watersheds of unfiltered systems, this will minimize the potential for illness and may also lower the overall costs of drinking water treatment.

### D. What Are the Incremental Costs and Benefits?

EPA evaluated the incremental or marginal costs of today's final rule turbidity provision by analyzing various turbidity limits, 0.3 NTU, 0.2 NTU, and 0.1 NTU. For each turbidity limit, EPA developed assumptions about which process changes systems might implement to meet the turbidity level and how many systems would adopt each change. The comparison of total compliance cost estimates shows that costs are expected to increase



significantly across other turbidity limits considered by the Agency. The total cost of a 0.2 NTU limit is 346 percent higher than the final rule limit of 0.3 NTU, and a 0.1 NTU limit would be 1,192 percent higher.

#### E. Are There Benefits From the Reduction of Co-Occurring Contaminants?

If a system chooses to install treatment, it may choose a technology that would also address other drinking water contaminants. For example, some membrane technologies installed to remove bacteria or viruses can reduce or eliminate many other drinking water contaminants including arsenic.

The technologies used to reduce individual filter turbidities have the potential to reduce concentrations of other pollutants as well. Reductions in turbidity that result from today's proposed rule are aimed at reducing *Cryptosporidium* by physical removal. However, health risks from *Giardia lamblia* and emerging disinfection resistant pathogens, such as microsporidia, *Toxoplasma*, and *Cyclospora*, are also likely to be reduced as a result of improvements in turbidity removal. The frequency and extent that LT1ESWTR would reduce risk from other contaminants has not been quantitatively evaluated because of the

Agency's lack of data on the removal efficiencies of various technologies for emerging pathogens and the lack of co-occurrence data for microbial pathogens and other contaminants from drinking water systems.

#### F. Is There Increased Risk From Other Contaminants?

It is unlikely that LT1ESWTR will result in any increased risk from other contaminants. Improvements in plant turbidity performance will not result in any increases in risk. In fact the disinfection benchmarking component of today's final LT1ESWTR will provide information to systems so they can minimize the increased risk from microbial contaminants as they take steps to address risks associated with DBPs under the Stage 1 DBPR.

#### G. What Are the Uncertainties in the Risk, Benefit and Cost Estimates for the LT1ESWTR?

EPA has included in the economic analysis, a detailed discussion of the possible sources of uncertainty in risk, benefit and cost estimates. Some sources of possible uncertainty associated with calculation of risk and benefits include occurrence of *Cryptosporidium* oocysts in source waters and finished waters, reduction of *Cryptosporidium* oocysts due to improved treatment, viability and

infectivity of *Cryptosporidium* oocysts, characterization of risk, and willingness to reduce risk and avoid costs.

Uncertainty associated with costs includes assumptions with respect to treatment a system might choose to employ to comply with the rule, assumptions about costs of labor, maintenance, and capital, and the number of systems expected to undertake certain activities. The Agency believes that the risks, benefits, and costs have been accurately portrayed. Discussions and analyses of risks, benefits, and costs in the economic analysis indicate where uncertainty may be introduced and to the extent possible, the effect uncertainty may have on analysis (USEPA, 2001a).

#### H. What Is the Benefit/Cost Determination for the LT1ESWTR?

The Agency has determined that the benefits of the LT1ESWTR justify the costs. As shown in Table V.3, the quantified net benefits of this rule based on the Agency's estimate range from \$20.6 million to \$51.4 million using the 3 percent discount rate (\$25.9 million to \$46.1 million at the 7 percent discount rate). Additionally, EPA believes that quantified net benefits would be larger if both unquantified benefits and costs were able to be monetized.

TABLE V.3.—ANNUALIZED NET BENEFITS OF THE LT1ESWTR, MILLIONS, 1999 DOLLARS

	Benefit range	Costs using a 3 percent discount rate	Costs using a 7 percent discount rate	Net benefits (3 percent)	Net benefits (7 percent)
Estimate of Benefits .....	\$18.9–\$90.9	\$39.5	\$44.8	\$–20.6–\$51.4	\$–25.9–\$46.1

## VI. Other Requirements

#### A. Regulatory Flexibility Act (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

The RFA provides default definitions for each type of small entity. It also authorizes an agency to use alternative definitions for each category of small entity, "which are appropriate to the activities of the agency" after proposing

the alternative definition(s) in the **Federal Register** and taking comment. 5 U.S.C. 601(3)–(5). In addition to the above, to establish an alternative small business definition, agencies must consult with SBA's Chief Counsel for Advocacy.

For purposes of assessing the impacts of today's rule on small entities, EPA considered small entities to be PWSs serving fewer than 10,000 persons. This is the cut-off level specified by Congress in the 1996 Amendments to the SDWA for small system flexibility provisions. In accordance with the RFA requirements, EPA proposed using this alternative definition in the **Federal Register** (63 FR 7620, February 13, 1998), requested comment, consulted with the Small Business Administration (SBA), and expressed its intention to use the alternative definition for all future drinking water regulations in the Consumer Confidence Reports

regulation (63 FR 44511, August 19, 1998). As stated in that final rule, the alternative definition would be applied to this regulation as well.

After considering the economic impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities.

In accordance with section 603 of the RFA, EPA convened a Small Business Advocacy Review (SBAR) Panel to obtain advice and recommendations from representatives of small entities that would potentially be regulated by the rule in accordance with section 609(b) of the RFA. A detailed discussion of the Panel's advice and recommendations is found in the Panel Report found in the docket for today's final rule (USEPA, 1998k). The Panel recommendations emphasized the need to provide small systems flexibility. The Agency has structured today's final

LT1ESWTR with an emphasis on providing flexibility and reducing burden for small systems. For example, the Agency originally contemplated requiring four quarters of TTHM and HAA5 monitoring and disinfection profiling based on daily measurements. Today's final rule requires profiling based on weekly measurements and allows systems the option of using one quarter of TTHM and HAA5 monitoring to opt-out of profiling. Today's rule also provides systems with two or fewer filters the flexibility to monitor combined filter effluent in lieu of individual filter turbidity monitoring, effectively allowing these systems to reduce their recordkeeping burden. A complete summary of the Panel's recommendations is presented in the proposal (65 FR 19046, 19127–19130).

While EPA could have certified the proposed rule based on the proposed rule requirements, the Agency originally developed an IRFA (see 65 FR 19046, 19126–19127) and convened an SBAR Panel because several of the additional alternatives EPA was requesting comment on would have resulted in substantial costs for small systems thereby preventing the Agency from certifying. While EPA included these additional alternatives in the proposal and estimated costs in the economic analysis for the proposal, the Agency re-evaluated the economic effects on small entities after publication of the April 10, 2000 LT1ESWTR proposal using the rule requirements of today's final rule and was able to certify that today's final rule will not have a significant economic impact on a substantial number of small entities.

EPA's analysis showed that of the approximately 11,000 small entities potentially affected by the LT1ESWTR, over 5,000 are expected to incur average annualized costs of less than \$70 dollars (0.003 percent of average annual revenue) while slightly more than 3,000 are expected to incur average annualized costs of less than \$850 dollars (0.03 percent of average annual revenue). Of the remaining systems, approximately 500 systems are expected to incur average annualized costs of approximately \$2,500 dollars (0.1 percent of average annual revenue), approximately 2,000 systems are expected to incur average annualized costs of approximately \$13,000 dollars (0.6 percent of average annual revenue). Less than 100 systems are expected to incur average annualized costs of approximately \$15,700 dollars (0.7 percent of average annual revenue). The Agency has included a detailed description of this analysis in the Regulatory Flexibility Screening

Analysis prepared for the rule (USEPA, 2000e).

#### *B. Paperwork Reduction Act*

The Office of Management and Budget (OMB) has approved the information collection requirements contained in this rule under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq, and has assigned OMB control number 2040–0229. The information collected as a result of this rule will allow the States and EPA to determine appropriate requirements for specific systems, in some cases, and to evaluate compliance with the rule. For the first three years after February 13, 2002, the major information requirements are related to disinfection profiling activities. The information collection requirements in §§ 141.530–141.536, 141.540–141.544, 141.550–141.553, 141.560–141.564, and 141.570–141.571, for systems, and §§ 142.14 and 142.16, for States, are mandatory. The information collected is not confidential. The final estimate of aggregate annual average burden hours for LT1ESWTR is 330,329. Annual average aggregate cost estimate is \$1,583,538 for capital (expenditures for monitoring equipment), and \$1,919,563 for operation and maintenance including lab costs (which is a purchase of service). The burden hours per response is 21.8. The frequency of response (average responses per respondent) is 2.8 annually. The estimated number of likely respondents is 5,404 (the product of burden hours per response, frequency, and respondents does not total the annual average burden hours due to rounding).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information; processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed

in 40 CFR part 9 and 48 CFR Chapter 15. EPA is amending the table in 40 CFR part 9 of currently approved ICR control numbers issued by OMB for various regulations to list the information requirements contained in this final rule.

#### *C. Unfunded Mandates Reform Act*

##### *1. Summary of UMRA Requirements*

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under UMRA section 202, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with “Federal mandates” that may result in expenditures by State, local, and Tribal governments, in the aggregate, or by the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed, under section 203 of the UMRA, a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local and Tribal governments, in the aggregate, or the private sector in any one year. The estimated annual cost of this rule is \$39.5 million. Thus today's rule is not

subject to the requirements of sections 202 and 205 of the UMRA.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. Of the approximately 6,500 small government entities potentially affected by the LT1ESWTR, approximately 3,000 are expected to incur average annualized costs of less than \$70 dollars (0.003 percent of average annual revenue) while approximately 2,000 are expected to incur average annualized costs of less than \$850 dollars (0.03 percent of average annual revenue). Of the remaining systems, less than 300 are expected to incur average annualized costs of approximately \$2,500 dollars (0.1 percent of average annual revenue), approximately 1,200 systems are expected to incur average annualized costs of approximately \$13,000 dollars (0.6 percent of average annual revenue). Less than 100 systems are expected to incur average annualized costs of approximately \$15,700 dollars (0.7 percent of average annual revenue). While today's final rule only applies to systems serving fewer than 10,000, it is not unique as it provides a comparable level of health protection to individuals served by small systems as the IESWTR provided to individuals served by large systems. While there are small differences between the LT1ESWTR and IESWTR, these differences reflect an effort to reduce burden for small systems while still maintaining a comparable level of health protection. Thus, today's rule is not subject to the requirements of section 203 of UMRA.

Nevertheless, EPA has tried to ensure that State, local, and Tribal governments had opportunities to provide comment. EPA consulted with small governments to address impacts of regulatory requirements in the rule that might significantly or uniquely affect small governments. As discussed next, a variety of stakeholders, including small governments, were provided the opportunity for timely and meaningful participation in the regulatory development process. EPA used these opportunities to notify potentially affected small governments of regulatory requirements being considered.

EPA began outreach efforts to develop the LT1ESWTR in the summer of 1998. Two public stakeholder meetings, which were announced in the **Federal Register**, were held on July 22–23, 1998, in Lakewood, Colorado, and on March 3–4, 1999, in Dallas, Texas. Stakeholders include representatives of State, local and Tribal governments, environmental groups and publicly owned and privately owned public

water systems. In addition to these meetings, EPA has held several formal and informal meetings with stakeholders including the Association of State Drinking Water Administrators and representatives of State and local elected officials. A summary of each meeting and attendees is available in the public docket for this rule. EPA also convened a Small Business Advocacy Review (SBAR) Panel in accordance with the RFA, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) to address small entity concerns including those of small local governments. The SBAR Panel allows small regulated entities to provide input to EPA early in the regulatory development process. In early June 1999, EPA mailed an informal draft of the LT1ESWTR preamble to the approximately 100 stakeholders who attended one of the public stakeholder meetings. Members of trade associations and the SBREFA Panel also received the draft preamble. EPA received valuable suggestions and stakeholder input from 15 State representatives, trade associations, environmental interest groups, and individual stakeholders. The majority of concerns dealt with reducing burden on small systems and maintaining flexibility.

To inform and involve Tribal governments in the rulemaking process, EPA presented the LT1ESWTR at three venues: the 16th Annual Consumer Conference of the National Indian Health Board, the annual conference of the National Tribal Environmental Council, and the EPA/Inter Tribal Council of Arizona, Inc. Tribal consultation meeting. Over 900 attendees representing Tribes from across the country attended the National Indian Health Board's Consumer Conference and over 100 Tribes were represented at the annual conference of the National Tribal Environmental Council. At the first two conferences, an EPA representative conducted two workshops on EPA's drinking water program and upcoming regulations, including the LT1ESWTR.

At the EPA/Inter Tribal Council of Arizona meeting, representatives from 15 Tribes participated. The presentation materials and meeting summary were sent to over 500 Tribes and Tribal organizations. Additionally, EPA contacted each of the 12 Native American Drinking Water State Revolving Fund Advisors to invite them, and representatives of their organizations to the stakeholder meetings described previously.

During the comment period for today's final rule, the Agency held a

public meeting in Washington D.C. on April 14, 2000. Additionally, the proposed rule was either presented or discussed in nearly 50 meetings across the U.S. Finally, EPA mailed approximately 200 copies of the proposed rule to stakeholders requesting comment. EPA received 67 comments from a variety of stakeholders including 24 States, 21 municipalities, one Tribe, one elected official, two consultants, eight trade groups, and four private industries.

In addition, EPA will educate, inform, and advise small systems, including those run by small governments, about the LT1ESWTR requirements. The Agency is developing plain-English guidance that will explain what actions a small entity must take to comply with the rule. Also, the Agency has developed a fact sheet that concisely describes various aspects and requirements of the LT1ESWTR. This fact sheet is available by calling the Safe Drinking Water Hotline at 800–426–4791.

#### *D. National Technology Transfer and Advancement Act*

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law No. 104–113, section 12(d) (15 U.S.C. 272 note), directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

Today's rule does not establish any technical standards, thus, NTTAA does not apply to this rule. It should be noted, however, that systems complying with this rule need to use one of three previously approved technical standards already included in § 141.74 (a). Method 2130B (APHA, 1995), is published in *Standard Methods for the Examination of Water and Wastewater* (19th ed.) and is a voluntary consensus standard. The *Great Lakes Instrument Method 2*, has been approved by USEPA as an alternate test procedure (*Great Lakes Instruments*, 1992). EPA Method 180.1 for turbidity measurement was published in August 1993 in *Methods for the Determination of Inorganic*

Substances in Environmental Samples (EPA-600/R-93-100) (USEPA, 1993).

Today's final rule also requires calibration of the individual turbidimeter to be conducted using procedures specified by the manufacturer. EPA encouraged comments on this aspect of the rulemaking and specifically invited the public to identify potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation. EPA received no comments on this issue.

#### *E. Executive Order 12866: Regulatory Planning and Review*

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, Tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or;
- (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of the Executive Order 12866, it has been determined that this rule is a "significant regulatory action." As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public record.

#### *F. Executive Order 12898: Environmental Justice*

Executive Order 12898 establishes a Federal policy for incorporating environmental justice into Federal agency missions by directing agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Agency has considered environmental justice related issues concerning the potential impacts of this action and consulted

with minority and low-income stakeholders.

This preamble has discussed how the IESWTR served as a template for the development of the LT1ESWTR. As such, the Agency also built on the efforts conducted during the IESWTRs development to comply with Executive Order 12898. On March 12, 1998, the Agency held a stakeholder meeting to address various components of pending drinking water regulations and how they may impact sensitive sub-populations, minority populations, and low-income populations. Topics discussed included treatment techniques, costs and benefits, data quality, health effects, and the regulatory process. Participants included national, State, Tribal, municipal, and individual stakeholders. EPA conducted the meetings by video conference call between 11 cities. This meeting was a continuation of stakeholder meetings that started in 1995 to obtain input on the Agency's Drinking Water Programs. The major objectives for the March 12, 1998 meeting were to:

- Solicit ideas from stakeholders on known issues concerning current drinking water regulatory efforts;
- Identify key issues of concern to stakeholders, and;
- Receive suggestions from stakeholders concerning ways to increase representation of communities in EPA's Office of Water drinking water regulatory efforts.

In addition, EPA developed a plain-English guide specifically for this meeting to assist stakeholders in understanding the multiple and sometimes complex issues surrounding drinking water regulation.

The LT1ESWTR applies to community water systems, non-transient non-community water systems, and transient non-community water systems that use surface water or GWUDI as their source water for PWSs serving less than 10,000 people. These requirements will also be consistent with the protection already afforded to people being served by systems serving 10,000 or more persons.

#### *G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks*

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be economically significant as defined under Executive Order 12866, and; (2) concerns an environmental health or safety risk that

EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

While this final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, we nonetheless have reason to believe that the environmental health or safety risk addressed by this action may have a disproportionate effect on children. As a matter of EPA policy, we therefore have assessed the environmental health effects of *Cryptosporidium* on children. The results of this assessment are contained in the LT1ESWTR economic analysis (USEPA, 2001a). A copy of the analysis and supporting documents are found in the public docket for today's final rule (W-99-10, Final Long Term 1 Enhanced Surface Water Treatment Rule. The docket is available for public review at EPA's Drinking Water Docket: 401 M Street, SW., Rm. EB57, Washington, DC 20460.

The risk of illness and death due to cryptosporidiosis depends on several factors, including age, nutrition, exposure, genetic variability, disease and immune status of the individual. Mortality resulting from diarrhea shows the greatest risk of mortality occurring among the very young and elderly (Gerba *et al.*, 1996). For *Cryptosporidium*, young children are a vulnerable population subject to infectious diarrhea (CDC 1994). Cryptosporidiosis is prevalent worldwide, and its occurrence is higher in children than in adults (Fayer and Ungar, 1986).

Cryptosporidiosis appears to be more prevalent in populations, such as infants, that may not have established immunity against the disease and may be in greater contact with environmentally contaminated surfaces (DuPont, *et al.*, 1995). An infected child may spread the disease to other children or family members. Evidence of such secondary transmission of cryptosporidiosis from children to household and other close contacts has been found in a number of outbreak investigations (Casemore, 1990; Cordell *et al.*, 1997; Frost *et al.*, 1997). Chapelle *et al.*, (1999) found that prior exposure to *Cryptosporidium* through the ingestion of a low oocyst dose provides protection from infection and illness. However, it is not known whether this immunity is life-long or temporary. Data

also indicate that either mothers confer short term immunity to their children or that babies have reduced exposure to *Cryptosporidium*, resulting in a decreased incidence of infection during the first year of life. For example, in a survey of over 30,000 stool sample analyses from different patients in the United Kingdom, the one to five year age group suffered a much higher infection rate than individuals less than one year of age. For children under one year of age, those older than six months of age showed a higher rate of infection than individuals aged fewer than six months (Casemore, 1990).

EPA has not been able to quantify the health effects for children as a result of *Cryptosporidium*-contaminated drinking water. However, the result of the LT1ESWTR will be a reduction in the risk of illness for the entire population, including children. Because available evidence indicates that children may be more vulnerable to *Cryptosporidiosis* than the rest of the population, the LT1ESWTR would, therefore, result in greater risk reduction for children than for the general population.

#### *H. Consultations With the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services*

In accordance with section 1412 (d) and (e) of the SDWA, the Agency consulted with the National Drinking Water Advisory Council (NDWAC), the Secretary of Health and Human Services, and the EPA Science Advisory Board (SAB) on the proposed LT1ESWTR. None of the three consultations resulted in substantive comments on the LT1ESWTR.

On March 13 and 14, 2000 in Washington, DC, the Agency met with SAB during meetings open to the public where several of the Agency's drinking water rules were discussed. A copy of the SAB's comments are found in the docket (USEPA, 2000l). Comments on the LT1ESWTR were generally supportive.

On May 10, 2000 in San Francisco, California, the Agency met with NDWAC. A copy of the materials presented to the NDWAC, as well as the charge presented to the council are found in the docket (USEPA, 2000f, NDWAC, 2000).

EPA invited the Secretary of Health and Human Services to the April 14th, 2000 informational meeting regarding the proposed Long Term 1 Enhanced Surface Water Treatment Rule and consulted with the Centers for Disease Control (CDC) during a June 20, 2000 conference call with the Centers'

Working Group on Waterborne *Cryptosporidiosis*. The meeting notes for that call are found in the docket (CDC, 2000). CDC's role as an Agency of the Department of Health and Human Services is to provide a system of health surveillance to monitor and prevent the outbreak of diseases. With the assistance of States and other partners, CDC guards against international disease transmission, maintains national health statistics, and provides for immunization services and supports research into disease and injury prevention.

#### *I. Executive Order 13132: Executive Orders on Federalism*

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Today's final rule does not have a substantial direct effect on local and State governments because it is not expected to impose substantial direct compliance costs. The rule imposes annualized compliance costs on State and local governments of approximately \$30.6 million. \$6.4 million of these costs are attributable to States, while \$24.2 million is attributable to local governments serving fewer than 10,000 persons. As described in Section V1.A of the preamble for today's final rule, this rule will not have a significant economic impact on a substantial number of small entities, including small governments. Furthermore, the rule does not have a substantial direct effect on the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government as specified in Executive Order 13132 because the rule does not change the current roles and relationships of the Federal government,

State governments and local governments in implementing drinking water programs. Thus Executive Order 13132 does not apply to this rule. Although the Executive Order does not apply to this rule, EPA did consult with State and local officials in developing this rule. In addition to our outreach efforts described earlier, on May 30, 2000, the Agency held a meeting in Washington, DC with ten representatives of elected State and local officials to discuss how new Federal drinking water regulations (LT1ESWTR, FBRR, Ground Water Rule, Radon Rule, Radionuclides Rule, and Arsenic Rule) may affect State, county, and local governments. Throughout the consultation, stakeholders asked EPA for clarification of basic concepts and rule elements. EPA addressed these issues throughout the consultation and provided background and clarification to promote better understanding of the issues. For example, stakeholders asked EPA to describe what *Cryptosporidium* is and how individuals are diagnosed with cryptosporidiosis. A detailed summary of this consultation meeting and the concerns raised is found in the docket (USEPA, 2000g). No significant concerns were raised regarding the LT1ESWTR.

#### *J. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

On November 6, 2000, the President issued Executive Order 13175 (65 FR 67249) entitled, "Consultation and Coordination with Indian Tribal Governments." Executive Order 13175 took effect on January 6, 2001, and revoked Executive Order 13084 (also entitled Consultation and Coordination with Indian Tribal Governments.) as of that date. However, EPA developed and proposed this final rule when Executive Order 13084 was in effect, and before the effective date of the consultation requirements of Executive Order 13175. Therefore, the consultation requirements of Executive Order 13084 apply to this rule.

Under Executive Order 13084, EPA could not issue a regulation that was not required by statute, that significantly or uniquely affected the communities of Indian Tribal governments, and that imposed substantial direct compliance costs on those communities, unless the Federal government provided the funds necessary to pay the direct compliance costs incurred by the Tribal governments, or EPA consulted with those governments.

Executive Order 13084 required EPA to provide to the Office of Management and Budget, in a separately identified

section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected Tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 required EPA to develop an effective process permitting elected officials and other representatives of Indian Tribal governments "to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities."

EPA has concluded that this rule will not significantly or uniquely affect communities of Indian Tribal governments, and will not impose substantial direct compliance costs on such communities. This rule will affect approximately 70 of the 700 total Tribal drinking water systems. Of these 70 systems, half are estimated to incur annualized compliance costs of less than \$70 per year (0.003 percent of average annual revenue) and approximately 20 systems are estimated to incur annualized compliance costs of less than \$850 per year (0.03 percent of average annual revenue). The remaining systems would incur an estimated annualized compliance costs of less than \$13,000, or 0.6 percent of average annual revenue.

Nonetheless, EPA provided representatives of Tribal governments with several opportunities to become knowledgeable of the proposed rule and to provide meaningful and timely input in its development. EPA began outreach efforts to develop the LT1ESWTR in the summer of 1998 as discussed in detail above in the UMRA and Federalism sections. To inform and involve the representatives of Tribal governments specifically, EPA presented the LT1ESWTR at three venues: The 16th Annual Consumer Conference of the

National Indian Health Board, the annual conference of the National Tribal Environmental Council, and the EPA/ Inter Tribal Council of Arizona, Inc. Tribal consultation meeting. Summaries of the meetings have been included in the public docket for this rulemaking. EPA's consultation, the nature of the Tribal concerns, and the position supporting the need for this rule are discussed in Section VI.C., which addresses compliance with UMRA.

Over 900 Tribal representatives from across the country attended the National Indian Health Board's Consumer Conference and over 100 Tribes were represented at the annual conference of the National Tribal Environmental Council. At the first two conferences, an EPA representative conducted two workshops on EPA's drinking water program and upcoming regulations, including the LT1ESWTR. At the EPA/ Inter Tribal Council of Arizona meeting, representatives from 15 Tribes participated. The presentation materials and meeting summary were sent to over 500 Tribes and Tribal organizations. Additionally, EPA contacted and invited each of the 12 Native American Drinking Water State Revolving Fund Advisors to attend the meetings described above.

During the comment period for today's final rule, the Agency held a public meeting in Washington, DC on April 14, 2000 which was announced in the **Federal Register**. Additionally, the proposed rule was either presented or discussed in nearly 50 meetings across the country. Finally, EPA mailed approximately 200 copies of the proposed rule to stakeholders, including Tribal representatives, requesting comment. EPA received 67 comments, one of which was from a Tribe. The Tribe indicated that they operated one surface water treatment plant and asked several clarifying questions with respect

to optional monitoring and turbidity monitoring.

#### *K. Likely Effect of Compliance With the LT1ESWTR on the Technical, Financial, and Managerial Capacity of Public Water Systems*

Section 1420(d)(3) of the SDWA as amended requires that, in promulgating a NPDWR, the Administrator shall include an analysis of the likely effect of compliance with the regulation on the technical, financial, and managerial capacity of public water systems. This analysis can be found in the LT1ESWTR economic analysis (USEPA, 2001a). Overall water system capacity is defined in EPA guidance (USEPA, 1998j) as the ability to plan for, achieve, and maintain compliance with applicable drinking water standards. Capacity has three components: Technical, managerial, and financial. Technical capacity is the physical and operational ability of a water system to meet SDWA requirements. Technical capacity refers to the physical infrastructure of the water system, including the adequacy of source water and the adequacy of treatment, storage, and distribution infrastructure. It also refers to the ability of system personnel to adequately operate and maintain the system and to otherwise implement requisite technical knowledge. Managerial capacity is the ability of a water system to conduct its affairs to achieve and maintain compliance with SDWA requirements. Managerial capacity refers to the system's institutional and administrative capabilities. Financial capacity is a water system's ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with SDWA requirements. Technical, managerial, and financial capacity can be assessed through key issues and questions, including:

#### **Technical Capacity**

Source water adequacy .....	Does the system have a reliable source of drinking water? Is the source of generally good quality and adequately protected?
Infrastructure adequacy .....	Can the system provide water that meets SDWA standards? What is the condition of its infrastructure, including well(s) or source water intakes, treatment, storage, and distribution? What is the infrastructure's life expectancy? Does the system have a capital improvement plan?
Technical knowledge and implementation.	Is the system's operator certified? Does the operator have sufficient technical knowledge of applicable standards? Can the operator effectively implement this technical knowledge? Does the operator understand the system's technical and operational characteristics? Does the system have an effective operation and maintenance program?

#### **Managerial Capacity**

Ownership accountability .....	Are the system owner(s) clearly identified? Can they be held accountable for the system?
Staffing and organization .....	Are the system operator(s) and manager(s) clearly identified? Is the system properly organized and staffed? Do personnel understand the management aspects of regulatory requirements and system operations? Do they have adequate expertise to manage water system operations? Do personnel have the necessary licenses and certifications?



Effective external linkages .....	Does the system interact well with customers, regulators, and other entities? Is the system aware of available external resources, such as technical and financial assistance?
<b>Financial Capacity</b>	
Revenue sufficiency .....	Do revenues cover costs? Are water rates and charges adequate to cover the cost of water?
Credit worthiness .....	Is the system financially healthy? Does it have access to capital through public or private sources?
Fiscal management and controls ....	Are adequate books and records maintained? Are appropriate budgeting, accounting, and financial planning methods used? Does the system manage its revenues effectively?

Systems not making significant modifications to the treatment process to meet LT1ESWTR requirements are not expected to require significantly increased technical, financial, or managerial capacity. As noted previously, less than 1 percent of affected systems are expected to incur annual costs exceeding 1 percent of their annual revenue as described in Section VI.A. Accordingly, most systems are not expected to require significantly increased technical, financial, or managerial capacity. EPA does recognize that a very small number of facilities may realize some technical, managerial, or financial capacity concerns as a result of the rule. EPA works closely with organizations such as the National Rural Water Association and the American Water Works Association to develop technical and managerial tools, materials, and assistance to aid small systems. Additionally, the Safe Drinking Water Act, as amended in 1996, established the Drinking Water State Revolving Fund (DWSRF) to make funds available to drinking water systems to finance infrastructure improvements. The program emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.

#### L. Plain Language

Executive Order 12866 requires each agency to write its rules in plain language. Readable regulations help the public find requirements quickly and understand them easily. They increase compliance, strengthen enforcement, and decrease mistakes, frustration, phone calls, appeals, and distrust of government. Of the several techniques typically utilized for writing readably, using a question and answer format, and using the word 'you' for whoever must comply, do the most to improve the look and sound of a regulation. Today's preamble and final rule use both of these principles and was developed using a plain language format, except in the case of modifications or additions to existing subparts of parts 141 and 142, where such a format would not fit into existing rule language. The Agency

requested comment on this approach and several commenter's indicated that the proposal was clear and easy to understand.

#### M. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective February 13, 2002.

#### N. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a "significant energy action" as defined in Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" 66 FR 28355, (May 22, 2001), because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The requirements in this rule would have a negligible impact upon the energy demands of some public water supply systems. Therefore, there is not a significant adverse effect on energy supply, distribution, or use.

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## List of Subjects

### 40 CFR Parts 9

Reporting and recordkeeping requirements.

### 40 CFR Part 141

Environmental protection, Chemicals, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

### 40 CFR Part 142

Environmental protection, Administrative practice and procedure, Chemicals, Indians-lands, Radiation protection, Reporting and recordkeeping requirements, Water supply.

Dated: December 20, 2001.

**Christine Todd Whitman,**  
Administrator.

For the reasons set forth in the preamble, title 40 chapter I of the Code of Federal Regulations is amended as follows:

### PART 9—[AMENDED]

1. The authority citation for part 9 continues to read as follows:

**Authority:** 7 U.S.C. 135 *et seq.*, 136–136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601–2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 *et seq.*, 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345 (d) and (e), 1361; Executive Order 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–1, 300j–2, 300j–3, 300j–4, 300j–9, 1857 *et seq.*, 6901–6992k, 7401–7671q, 7542, 9601–9657, 11023, 11048.

2. In § 9.1 the table is amended by adding under the indicated heading:

a. By adding entries 141.530–141.536, 141.540–141.544, 141.550–141.553, 141.560–141.564 and 141.570–141.571 in numerical order.

b. By removing the entry 142.14(a)–(d)(7) and adding in its place a new entry § 142.14(b)–(d)(7).

c. By adding a new entry for 142.14(a) in numerical order.

d. By adding new entries for 142.16(g) and 142.16(j) in numerical order.

The additions read as follows:

### § 9.1 OMB approvals under the Paperwork Reduction Act.

40 CFR citation	OMB control No.
* * * * *	
<b>National Primary Drinking Water Regulations</b>	
* * * * *	
141.530–141.536 .....	2040–0229
141.540–141.544 .....	2040–0229
141.550–141.553 .....	2040–0229
141.560–141.564 .....	2040–0229
141.570–141.571 .....	2040–0229

40 CFR citation	OMB control No.
<b>National Primary Drinking Water Regulations Implementation</b>	
* * * * *	
142.14(a) .....	2040–0229
142.14(b)–(d)(7) .....	2040–0090
* * * * *	
142.16(g) .....	2040–0229
142.16(j) .....	2040–0229
* * * * *	

### PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

3. The authority citation for part 141 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

4. Section 141.2 is amended by revising the definitions of “Comprehensive performance evaluation” (CPE), “Ground water under the direct influence of surface water” and “Disinfection profile” to read as follows:

### § 141.2 Definitions.

\* \* \* \* \*

*Comprehensive performance evaluation (CPE)* is a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purpose of compliance with subparts P and T of this part, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

\* \* \* \* \*

*Disinfection profile* is a summary of *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in § 141.172 (Disinfection profiling and benchmarking) in subpart P and §§ 141.530–141.536 (Disinfection profile) in subpart T of this part.

\* \* \* \* \*

*Ground water under the direct influence of surface water* (GWUDI) means any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the State. The State determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

\* \* \* \* \*

5. Section 141.70 is amended by adding paragraph (e) to read as follows:

**§ 141.70 General requirements.**

\* \* \* \* \*

(e) *Additional requirements for systems serving fewer than 10,000 people.* In addition to complying with requirements in this subpart, systems serving fewer than 10,000 people must also comply with the requirements in subpart T of this part.

6. Section 141.73 is amended by adding paragraph (a)(4) and revising paragraph (d) to read as follows:

**§ 141.73 Filtration.**

\* \* \* \* \*

(a) \* \* \*

(4) Beginning January 14, 2005, systems serving fewer than 10,000

people must meet the turbidity requirements in §§ 141.550 through 141.553.

\* \* \* \* \*

(d) *Other filtration technologies.* A public water system may use a filtration technology not listed in paragraphs (a) through (c) of this section if it demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of § 141.72(b), consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of paragraph (b) of this section apply. Beginning January 1, 2002, systems serving at least 10,000 people must meet the requirements for other filtration technologies in § 141.173(b). Beginning January 14, 2005, systems serving fewer than 10,000 people must meet the requirements for other filtration technologies in § 141.550 through 141.553.

7. Section 141.153 is amended by revising the first sentence of paragraph (d)(4)(v)(C) to read as follows:

**§ 141.153 Content of the reports.**

\* \* \* \* \*

(d) \* \* \*

(4) \* \* \*

(v) \* \* \*

(C) When it is reported pursuant to § 141.73 or § 141.173 or § 141.551: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in

§ 141.73 or § 141.173, or § 141.551 for the filtration technology being used.

\* \* \*

\* \* \* \* \*

8. The heading to Subpart P is revised to read as follows:

**Subpart P—Enhanced Filtration and Disinfection—Systems Serving 10,000 or More People**

\* \* \* \* \*

9. Section 141.170 is amended by adding paragraph (d) to read as follows:

**§ 141.170 General requirements.**

\* \* \* \* \*

(d) Subpart H systems that did not conduct optional monitoring under § 141.172 because they served fewer than 10,000 persons when such monitoring was required, but serve more than 10,000 persons prior to January 14, 2005 must comply with §§ 141.170, 141.171, 141.173, 141.174, and 141.175. These systems must also consult with the State to establish a disinfection benchmark. A system that decides to make a significant change to its disinfection practice, as described in § 141.172(c)(1)(i) through (iv) must consult with the State prior to making such change.

10. Section 141.202 is amended in Table 1 by revising entry 6 to read as follows:

**§ 141.202 Tier 1 Public Notice—Form, manner, and frequency of notice.**

\* \* \* \* \*

(a) \* \* \*

TABLE 1 TO SEC. 141.202.—VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A TIER 1 PUBLIC NOTICE

(6) Violation of the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A), where the primacy agency determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;

\* \* \* \* \*

\* \* \* \* \*

11. Section 141.203 is amended by revising paragraph (b)(3)(ii) to read as follows:

**§ 141.203 Tier 2 Public Notice—Form, manner, and frequency of notice.**

\* \* \* \* \*

(b) \* \* \*

(3) \* \* \*

(ii) Violation of the SWTR, IESWTR or LT1ESWTR treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

\* \* \* \* \*

12. Appendix A to subpart Q is amended:

- a. Under I.A. by revising entry 5.
- b. Under I.A. by revising entry 7.
- c. Adding a new entry 9.
- d. Under I.G. by revising entry 10.
- e. Revising endnote 6.

The additions and revisions read as follows:



APPENDIX A TO SUBPART Q OF PART 141.—NPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE <sup>1</sup>

Contaminant	MCL/MRDL/TT violations <sup>2</sup>		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
<b>I. Violations of National Primary Drinking Water Regulations (NPDWR): <sup>3</sup></b>				
* * * * *				
<b>A. Microbiological Contaminants</b>				
* * * * *				
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level).	<sup>6</sup> 2,1	141.71(a)(2), 141.71(c)(2)(i), 141.73(a)(2), 141.73 (b)(2), 141.73 (c)(2), 141.73(d), 141.173(a)(2), 141.173(b), 141.551(b).	3	141.74(a)(1), 141.74(b)(2), 141.74(c)(1), 141.174, 141.560(a)–(c), 141.561.
* * * * *				
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT).	<sup>7</sup> 2	141.170–141.173, 141.500–141.553.	3	141.172, 141.174, 141.530–141.544, 141.560–141.564.
* * * * *				
9. Long Term 1 Enhanced Surface Water Treatment Rule violations.	2	141.500–141.553 .....	3	141.530–141.544, 141.560–141.564.
* * * * *				
<b>G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals.</b> Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs). <sup>9</sup>				
* * * * *				
10. Bench marking and disinfection profiling.	N/A	N/A .....	3	141.172 141.530–141.544.
* * * * *				

**Appendix A—Endnotes:**

<sup>1</sup> Violations and other situations not listed in this table (e.g., reporting violations and failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under § 141.202(a) and § 141.203(a).

<sup>2</sup> MCL—Maximum contaminant level, MRDL—Maximum residual disinfectant level, TT—Treatment technique

<sup>3</sup> The term Violations of National Primary Drinking Water Regulations (NPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

<sup>6</sup> Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) are required to consult with the primacy agency within 24 hours after learning of the violation. Based on this consultation, the primacy agency may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the primacy agency in the 24-hour period, the violation is automatically elevated to Tier 1.

<sup>7</sup> Most of the requirements of the Interim Enhanced Surface Water Treatment Rule (63 FR 69477) (§§ 141.170–141.171, 141.173–141.174) become effective January 1, 2002 for the Subpart H systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons. However, § 141.172 has some requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supercede the SWTR.

<sup>9</sup> Subpart H community and non-transient non-community systems serving ≥10,000 must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Subpart H transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Subpart H transient non-community systems serving fewer than 10,000 persons and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

## Appendix B—[Amended]

13. Appendix B to subpart Q is amended by:

- a. Revising entry A.2c.
- b. Revising heading B.
- c. Revising entries B.3., B.4, B.5, B.6., and B.7.

- d. Revising endnotes 4, 6 and 10.
  - e. Revising endnote 8.
- The revisions read as follows:

## APPENDIX B TO SUBPART Q OF PART 141.—STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION

Contaminant	MCLG <sup>1</sup> , mg/L	MCL <sup>2</sup> mg/L	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR):			
A. Microbiological Contaminants			
2c. Turbidity (IESWTR TT and LT1ESWTR TT) <sup>8</sup> .	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) and the Filter Backwash Recycling Rule (FBRR) violations:			
3. Giardia lamblia (SWTR/IESWTR/LT1ESWTR)	Zero	TT <sup>10</sup>	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4. Viruses (SWTR/IESWTR/LT1ESWTR)			
5. Heterotrophic plate count (HPC) bacteria <sup>9</sup> (SWTR/IESWTR/LT1ESWTR)			
6. Legionella (SWTR/IESWTR/LT1ESWTR)			
7. Cryptosporidium (IESWTR/FBRR/LT1ESWTR)			

<sup>1</sup> MCLG—Maximum contaminant level goal.

<sup>2</sup> MCL—Maximum contaminant level.

<sup>4</sup> There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

<sup>6</sup> There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the primacy agency.

<sup>8</sup> There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 14, 2005 the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.

<sup>9</sup> The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

<sup>10</sup> SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

14. Part 141 is amended by adding a new subpart T to read as follows:

**Subpart T—Enhanced Filtration and Disinfection—Systems Serving Fewer Than 10,000 People**

**General Requirements**

- 141.500 General requirements
- 141.501 Who is subject to the requirements of subpart T?
- 141.502 When must my system comply with these requirements?
- 141.503 What does subpart T require?

**Finished Water Reservoirs**

- 141.510 Is my system subject to the new finished water reservoir requirements?
- 141.511 What is required of new finished water reservoirs?

**Additional Watershed Control Requirements for Unfiltered Systems**

- 141.520 Is my system subject to the updated watershed control requirements?
- 141.521 What updated watershed control requirements must my unfiltered system implement to continue to avoid filtration?
- 141.522 How does the State determine whether my system's watershed control requirements are adequate?

**Disinfection Profile**

- 141.530 What is a Disinfection Profile and who must develop one?
- 141.531 What criteria must a State use to determine that a profile is unnecessary?
- 141.532 How does my system develop a Disinfection Profile and when must it begin?
- 141.533 What data must my system collect to calculate a Disinfection Profile?
- 141.534 How does my system use this data to calculate an inactivation ratio?
- 141.535 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?
- 141.536 My system has developed an inactivation ratio; what must we do now?

**Disinfection Benchmark**

- 141.540 Who has to develop a Disinfection Benchmark?
- 141.541 What are significant changes to disinfection practice?
- 141.542 What must my system do if we are considering a significant change to disinfection practices?
- 141.543 How is the Disinfection Benchmark calculated?
- 141.544 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?

**Combined Filter Effluent Requirements**

- 141.550 Is my system required to meet subpart T combined filter effluent turbidity limits?
- 141.551 What strengthened combined filter effluent turbidity limits must my system meet?
- 141.552 My system consists of "alternative filtration" and is required to conduct a demonstration. What is required of my system and how does the State establish my turbidity limits?

- 141.553 My system practices lime softening—is there any special provision regarding my combined filter effluent?

**Individual Filter Turbidity Requirements**

- 141.560 Is my system subject to individual filter turbidity requirements?
- 141.561 What happens if my system's turbidity monitoring equipment fails?
- 141.562 My system only has two or fewer filters—is there any special provision regarding individual filter turbidity monitoring?
- 141.563 What follow-up action is my system required to take based on continuous turbidity monitoring?
- 141.564 My system practices lime softening—is there any special provision regarding my individual filter turbidity monitoring?

**Reporting and Recordkeeping Requirements**

- 141.570 What does subpart T require that my system report to the State?
- 141.571 What records does subpart T require my system to keep?

**Subpart T—Enhanced Filtration and Disinfection—Systems Serving Fewer Than 10,000 People**

**General Requirements**

**§ 141.500 General requirements.**

The requirements of this subpart constitute national primary drinking water regulations. These regulations establish requirements for filtration and disinfection that are in addition to criteria under which filtration and disinfection are required under subpart H of this part. The regulations in this subpart establish or extend treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, *Cryptosporidium* and turbidity. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

- (a) At least 99 percent (2 log) removal of *Cryptosporidium* between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or *Cryptosporidium* control under the watershed control plan for unfiltered systems; and
- (b) Compliance with the profiling and benchmark requirements in §§ 141.530 through 141.544.

**§ 141.501 Who is subject to the requirements of subpart T?**

You are subject to these requirements if your system:

- (a) Is a public water system;
- (b) Uses surface water or GWUDI as a source; and

- (c) Serves fewer than 10,000 persons.

**§ 141.502 When must my system comply with these requirements?**

You must comply with these requirements in this subpart beginning January 14, 2005 except where otherwise noted.

**§ 141.503 What does subpart T require?**

There are seven requirements of this subpart, and you must comply with all requirements that are applicable to your system. These requirements are:

- (a) You must cover any finished water reservoir that you began to construct on or after March 15, 2002 as described in §§ 141.510 and 141.511;
- (b) If your system is an unfiltered system, you must comply with the updated watershed control requirements described in §§ 141.520–141.522;
- (c) If your system is a community or non-transient non-community water systems you must develop a disinfection profile as described in §§ 141.530–141.536;
- (d) If your system is considering making a significant change to its disinfection practices, you must develop a disinfection benchmark and consult with the State for approval of the change as described in §§ 141.540–141.544;
- (e) If your system is a filtered system, you must comply with the combined filter effluent requirements as described in §§ 141.550–141.553;
- (f) If your system is a filtered system that uses conventional or direct filtration, you must comply with the individual filter turbidity requirements as described in §§ 141.560–141.564; and
- (g) You must comply with the applicable reporting and recordkeeping requirements as described in §§ 141.570 and 141.571.

**Finished Water Reservoirs**

**§ 141.510 Is my system subject to the new finished water reservoir requirements?**

All subpart H systems which serve fewer than 10,000 are subject to this requirement.

**§ 141.511 What is required of new finished water reservoirs?**

If your system begins construction of a finished water reservoir on or after March 15, 2002 the reservoir must be covered. Finished water reservoirs for which your system began construction prior to March 15, 2002 are not subject to this requirement.

**Additional Watershed Control Requirements for Unfiltered Systems**

**§ 141.520 Is my system subject to the updated watershed control requirements?**

If you are a subpart H system serving fewer than 10,000 persons which does

not provide filtration, you must continue to comply with all of the filtration avoidance criteria in § 141.71, as well as the additional watershed control requirements in § 141.521.

**§ 141.521 What updated watershed control requirements must my unfiltered system implement to continue to avoid filtration?**

Your system must take any additional steps necessary to minimize the potential for contamination by *Cryptosporidium* oocysts in the source water. Your system's watershed control program must, for *Cryptosporidium*:

(a) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and

(b) Monitor the occurrence of activities which may have an adverse effect on source water quality.

**§ 141.522 How does the State determine whether my system's watershed control requirements are adequate?**

During an onsite inspection conducted under the provisions of § 141.71(b)(3), the State must determine whether your watershed control program is adequate to limit potential contamination by *Cryptosporidium* oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of your program to monitor and control detrimental activities occurring in the watershed; and the extent to which your system has maximized land ownership and/or controlled land use within the watershed.

**Disinfection Profile**

**§ 141.530 What is a Disinfection Profile and who must develop one?**

A disinfection profile is a graphical representation of your system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. If you are a subpart H community or non-transient non-community water systems which serves fewer than 10,000 persons, your system must develop a disinfection profile unless your State determines that your system's profile is unnecessary. Your State may approve the use of a more representative data set for disinfection profiling than the data set required under §§ 141.532–141.536.

**§ 141.531 What criteria must a State use to determine that a profile is unnecessary?**

States may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in your distribution system.

**§ 141.532 How does my system develop a Disinfection Profile and when must it begin?**

A disinfection profile consists of three steps:

(a) First, your system must collect data for several parameters from the plant as discussed in § 141.533 over the course of 12 months. If your system serves between 500 and 9,999 persons you must begin to collect data no later

than July 1, 2003. If your system serves fewer than 500 persons you must begin to collect data no later than January 1, 2004.

(b) Second, your system must use this data to calculate weekly log inactivation as discussed in §§ 141.534 and 141.535; and

(c) Third, your system must use these weekly log inactivations to develop a disinfection profile as specified in § 141.536.

**§ 141.533 What data must my system collect to calculate a Disinfection Profile?**

Your system must monitor the following parameters to determine the total log inactivation using the analytical methods in § 141.74 (a), once per week on the same calendar day, over 12 consecutive months:

(a) The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(b) If your system uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow;

(c) The disinfectant contact time(s) ("T") during peak hourly flow; and

(d) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

**§ 141.534 How does my system use this data to calculate an inactivation ratio?**

Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

If your system * * *	Your system must determine * * *
(a) Uses only one point of disinfectant application.	(1) One inactivation ratio ( $CT_{calc}/CT_{99.9}$ ) before or at the first customer during peak hourly flow or (2) Successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, your system must calculate the total inactivation ratio by determining ( $CT_{calc}/CT_{99.9}$ ) for each sequence and then adding the ( $CT_{calc}/CT_{99.9}$ ) values together to determine ( $3CT_{calc}/CT_{99.9}$ ).
(b) Uses more than one point of disinfectant application before the first customer.	The ( $CT_{calc}/CT_{99.9}$ ) value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure specified in paragraph (a)(2) of this section.

**§ 141.535 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?**

If your system uses chloramines, ozone, or chlorine dioxide for primary disinfection, you must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the State.

**§ 141.536 My system has developed an inactivation ratio; what must we do now?**

Each log inactivation serves as a data point in your disinfection profile. Your system will have obtained 52 measurements (one for every week of the year). This will allow your system and the State the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (your Disinfection Profile). Your system must retain the Disinfection Profile data in

graphic form, such as a spreadsheet, which must be available for review by the State as part of a sanitary survey. Your system must use this data to calculate a benchmark if you are considering changes to disinfection practices.

**Disinfection Benchmark**

**§ 141.540 Who has to develop a Disinfection Benchmark?**

If you are a subpart H system required to develop a disinfection profile under

§§ 141.530 through 141.536, your system must develop a Disinfection Benchmark if you decide to make a significant change to your disinfection practice. Your system must consult with the State for approval before you can implement a significant disinfection practice change.

**§ 141.541 What are significant changes to disinfection practice?**

Significant changes to disinfection practice include:

- (a) Changes to the point of disinfection;
- (b) Changes to the disinfectant(s) used in the treatment plant;
- (c) Changes to the disinfection process; or

(d) Any other modification identified by the State.

**§ 141.542 What must my system do if we are considering a significant change to disinfection practices?**

If your system is considering a significant change to its disinfection practice, your system must calculate a disinfection benchmark(s) as described in §§ 141.543 and 141.544 and provide the benchmark(s) to your State. Your system may only make a significant disinfection practice change after consulting with the State for approval. Your system must submit the following information to the State as part of the consultation and approval process:

(a) A description of the proposed change;

(b) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark;

(c) An analysis of how the proposed change will affect the current levels of disinfection; and

(d) Any additional information requested by the State.

**§ 141.543 How is the Disinfection Benchmark calculated?**

If your system is making a significant change to its disinfection practice, it must calculate a disinfection benchmark using the procedure specified in the following table.

To calculate a disinfection benchmark your system must perform the following steps

- Step 1: Using the data your system collected to develop the Disinfection Profile, determine the average *Giardia lamblia* inactivation for each calendar month by dividing the sum of all *Giardia lamblia* inactivations for that month by the number of values calculated for that month.
- Step 2: Determine the lowest monthly average value out of the twelve values. This value becomes the disinfection benchmark.

**§ 141.544 What if my system uses chloramines, ozone, or chlorine dioxide for primary disinfection?**

If your system uses chloramines, ozone or chlorine dioxide for primary disinfection your system must calculate the disinfection benchmark from the data your system collected for viruses to develop the disinfection profile in addition to the *Giardia lamblia* disinfection benchmark calculated under § 141.543. This viral benchmark must be calculated in the same manner used to calculate the *Giardia lamblia* disinfection benchmark in § 141.543.

**Combined Filter Effluent Requirements**

**§ 141.550 Is my system required to meet subpart T combined filter effluent turbidity limits?**

All subpart H systems which serve populations fewer than 10,000, are required to filter, and utilize filtration other than slow sand filtration or diatomaceous earth filtration must meet the combined filter effluent turbidity requirements of §§ 141.551–141.553. If your system uses slow sand or diatomaceous earth filtration you are not required to meet the combined filter effluent turbidity limits of subpart T, but you must continue to meet the combined filter effluent turbidity limits in § 141.73.

**§ 141.551 What strengthened combined filter effluent turbidity limits must my system meet?**

Your system must meet two strengthened combined filter effluent turbidity limits.

(a) The first combined filter effluent turbidity limit is a “95th percentile” turbidity limit that your system must meet in at least 95 percent of the turbidity measurements taken each month. Measurements must continue to be taken as described in § 141.74(a) and (c). Monthly reporting must be completed according to § 141.570. The following table describes the required limits for specific filtration technologies.

If your system consists of * * *	Your 95th percentile turbidity value is * * *
(1) Conventional Filtration or Direct Filtration .....	0.3 NTU.
(2) All other “Alternative” Filtration .....	A value determined by the State (no to exceed 1 NTU) based on the demonstration described in § 141.552.

(b) The second combined filter effluent turbidity limit is a “maximum” turbidity limit which your system may at no time exceed during the month.

Measurements must continue to be taken as described in § 141.74(a) and (c). Monthly reporting must be completed according to § 141.570. The following

table describes the required limits for specific filtration technologies.

If your system consists of * * *	Your maximum turbidity value is * * *
(1) Conventional Filtration or Direct Filtration .....	1 NTU.
(2) All other “Alternative” .....	A value determined by the State (not to exceed 5 NTU) based on the demonstration as described in § 141.552.

**§ 141.552 My system consists of "alternative filtration" and is required to conduct a demonstration—what is required of my system and how does the State establish my turbidity limits?**

(a) If your system consists of alternative filtration (filtration other than slow sand filtration, diatomaceous earth filtration, conventional filtration, or direct filtration) you are required to conduct a demonstration (see tables in § 141.551). Your system must demonstrate to the State, using pilot plant studies or other means, that your system's filtration, in combination with disinfection treatment, consistently achieves:

- (1) 99 percent removal of *Cryptosporidium* oocysts;
- (2) 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts; and
- (3) 99.99 percent removal and/or inactivation of viruses.

(b) [Reserved]

**§ 141.553 My system practices lime softening—is there any special provision regarding my combined filter effluent?**

If your system practices lime softening, you may acidify

representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the State.

#### **Individual Filter Turbidity Requirements**

**§ 141.560 Is my system subject to individual filter turbidity requirements?**

If your system is a subpart H system serving fewer than 10,000 people and utilizing conventional filtration or direct filtration, you must conduct continuous monitoring of turbidity for each individual filter at your system. The following requirements apply to continuous turbidity monitoring:

- (a) Monitoring must be conducted using an approved method in § 141.74(a);
- (b) Calibration of turbidimeters must be conducted using procedures specified by the manufacturer;
- (c) Results of turbidity monitoring must be recorded at least every 15 minutes;
- (d) Monthly reporting must be completed according to § 141.570; and
- (e) Records must be maintained according to § 141.571.

**§ 141.561 What happens if my system's turbidity monitoring equipment fails?**

If there is a failure in the continuous turbidity monitoring equipment, your system must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. Your system has 14 days to resume continuous monitoring before a violation is incurred.

**§ 141.562 My system only has two or fewer filters—is there any special provision regarding individual filter turbidity monitoring?**

Yes, if your system only consists of two or fewer filters, you may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in § 141.560(a) through (d) and § 141.561.

**§ 141.563 What follow-up action is my system required to take based on continuous turbidity monitoring?**

Follow-up action is required according to the following tables:

If * * *	Your system must * * *
(a) The turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for systems with 2 filters that monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings 15 minutes apart.	Report to the State by the 10th of the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).
If a system was required to report to the State * * *	Your system must * * *
(b) For three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).	Conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a CPE as specified in paragraph (c) of this section was required. Systems with 2 filters that monitor CFE in lieu of individual filters must conduct a self assessment on both filters. The self-assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report. If a self-assessment is required, the date that it was triggered and the date that it was completed.
(c) For two months in a row and turbidity exceeded 2.0 NTU in 2 consecutive recordings 15 minutes apart at the same filter (or CFE for systems with 2 filters that monitor CFE in lieu of individual filters).	Arrange to have a comprehensive performance evaluation (CPE) conducted by the State or a third party approved by the State not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If a CPE has been completed by the State or a third party approved by the State within the 12 prior months or the system and State are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the State no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.

**§ 141.564 My system practices lime softening—is there any special provision regarding my individual filter turbidity monitoring?**

If your system utilizes lime softening, you may apply to the State for alternative turbidity exceedance levels for the levels specified in the table in

§ 141.563. You must be able to demonstrate to the State that higher turbidity levels are due to lime carryover only, and not due to degraded filter performance.

#### **Reporting and Recordkeeping Requirements**

**§ 141.570 What does subpart T require that my system report to the State?**

This subpart T requires your system to report several items to the State. The following table describes the items which must be reported and the



frequency of reporting. Your system is required to report the information described in the following table, if it is

subject to the specific requirement shown in the first column.

Corresponding requirement	Description of information to report	Frequency
(a) Combined Filter Effluent Requirements. (§§ 141.550–141.553)	(1) The total number of filtered water turbidity measurements taken during the month.  (2) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to your system's required 95th percentile limit. (3) The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system.	By the 10th of the following month.  By the 10th of the following month.  By the 10th of the following month.
(b) Individual Turbidity Requirements. (§§ 141.560–141.564)	(1) That your system conducted individual filter turbidity monitoring during the month.  (2) The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, but only if 2 consecutive measurements exceeded 1.0 NTU. (3) If a self-assessment is required, the date that it was triggered and the date that it was completed.  (4) If a CPE is required, that the CPE is required and the date that it was triggered. (5) Copy of completed CPE report .....	By the 10th of the following month.  By the 10th of the following month.  By the 10th of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month) By the 10th of the following month.
(c) Disinfection Profiling .....	(1) Results of optional monitoring which show TTHM levels <0.064 mg/l and HAA5 levels <0.048 mg/l (Only if your system wishes to forgo profiling) or that your system has begun disinfection profiling.	Within 120 days after the CPE was triggered. (i) For systems serving 500–9,999 by July 1, 2003; (ii) For systems serving fewer than 500 by January 1, 2004.
(d) Disinfection Benchmarking .. (§§ 141.540–141.544)	(1) A description of the proposed change in disinfection, your system's disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection.	Anytime your system is considering a significant change to its disinfection practice.

**§ 141.571 What records does subpart T require my system to keep?**

Your system must keep several types of records based on the requirements of subpart T, in addition to recordkeeping

requirements under § 141.75. The following table describes the necessary records, the length of time these records must be kept, and for which requirement the records pertain. Your

system is required to maintain records described in this table, if it is subject to the specific requirement shown in the first column.

Corresponding requirement	Description of necessary records	Duration of time records must be kept
(a) Individual Filter Turbidity Requirements .....	Results of individual filter monitoring .....	At least 3 years.
(b) Disinfection Profiling .....	Results of Profile (including raw data and analysis) .....	Indefinitely.
(c) Disinfection Benchmarking .....	Benchmark (including raw data and analysis) .....	Indefinitely.

**PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION**

15. The authority citation for Part 142 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

16. Section 142.14 is amended by revising paragraphs (a)(3), (a)(4)(i), (a)(4)(ii) introductory text, and (a)(7) to read as follows:

**§ 142.14 Records kept by States.**

(a) \* \* \*

(3) Records of turbidity measurements must be kept for not less than one year. The information retained must be set forth in a form which makes possible comparison with the limits specified in §§ 141.71, 141.73, 141.173 and 141.175, 141.550–141.553 and 141.560–141.564 of this chapter. Until June 29, 1993, for any public water system which is providing filtration treatment and until December 30, 1991, for any public water system not providing filtration treatment and not required by the State

to provide filtration treatment, records kept must be set forth in a form which makes possible comparison with the limits contained in § 141.13 of this chapter.

(4)(i) Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with §§ 141.72 and 141.74 of this chapter and the reporting requirements of §§ 141.75, 141.175, and 141.570, of this chapter must be kept for not less than one year.

(ii) Records of decisions made on a system-by-system and case-by-case basis

under provisions of part 141, subpart H, subpart P, or subpart T of this chapter, must be made in writing and kept by the State.

\* \* \* \* \*

(7) Any decisions made pursuant to the provisions of part 141, subpart P or subpart T of this chapter.

(i) Records of systems consulting with the State concerning a modification to disinfection practice under §§ 141.170(d), 141.172(c), and 141.542 of this chapter, including the status of the consultation.

(ii) Records of decisions that a system using alternative filtration technologies, as allowed under §§ 141.173(b) and § 141.552 of this chapter, can consistently achieve a 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The decisions must include State-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised. The State must provide a copy of the decision to the system.

(iii) Records of systems required to do filter self-assessment, CPE, or CCP under the requirements of §§ 141.175 and 141.563 of this chapter.

\* \* \* \* \*

17. Section 142.16 is amended by revising paragraph (g) introductory text and adding paragraph (j) to read as follows:

**§ 142.16 Special primacy requirements.**

\* \* \* \* \*

(g) Requirements for States to adopt 40 CFR part 141, Subpart P Enhanced Filtration and Disinfection—Systems Serving 10,000 or More People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions are no less stringent than the Federal requirements, an

application for approval of a State program revision that adopts 40 CFR part 141, Subpart P Enhanced Filtration and Disinfection—Systems Serving 10,000 or More People, must contain the information specified in this paragraph:

\* \* \* \* \*

(j) Requirements for States to adopt 40 CFR part 141, Subpart T Enhanced Filtration and Disinfection—Systems Serving Fewer than 10,000 People. In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions are no less stringent than the Federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, Subpart T Enhanced Filtration and Disinfection—Systems Serving Fewer than 10,000 People, must contain the information specified in this paragraph:

(1) *Enforceable requirements.* States must have rules or other authority to require systems to participate in a Comprehensive Technical Assistance (CTA) activity, the performance improvement phase of the Composite Correction Program (CCP). The State must determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the State that the system is able to receive and implement technical assistance provided through the CTA. A CPE is a thorough review and analysis of a system's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. During the CTA phase, the system must identify and systematically address factors limiting performance. The CTA is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority-setting techniques and maintaining

long-term involvement to systematically train staff and administrators.

(2) *State practices or procedures.*

(i) Section 141.530–141.536—How the State will approve a more representative data set for optional TTHM and HAA5 monitoring and profiling.

(ii) Section 141.536 of this chapter—How the State will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines, ozone, or chlorine dioxide for primary disinfection.

(iii) Section 141.542 of this chapter—How the State will consult with the system and approve significant changes to disinfection practices.

(iv) Section 141.552 of this chapter—For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration, how the State will determine that a public water system may use a filtration technology if the PWS demonstrates to the State, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of § 141.72(b) of this chapter, consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts and 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. For a system that makes this demonstration, how the State will set turbidity performance requirements that the system must meet 95 percent of the time and that the system may not exceed at any time at a level that consistently achieves 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts.

[FR Doc. 02–409 Filed 1–11–02; 8:45 am]

BILLING CODE 6560–50–P

**Complete Copy of the  
Minor Technical Corrections  
Including Preamble as  
Published on June 29, 2004**

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This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility is regulated by this action, you should carefully examine the applicability criteria in §§ 141.2 and 141.3 of title 40 of the Code of Federal Regulations. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

## II. Changes and Clarifications

EPA is promulgating today, all of the changes and clarifications proposed on March 2, 2004 (69 FR 9781), with the exception of two proposed clarifications discussed in section F concerning calibration of turbidimeters. Each clarification and change promulgated today is discussed under the heading of the drinking water rule that it amends (e.g., LT1ESWTR). EPA is also promulgating today an additional clarification, which was not in the March 2, 2004, Minor Corrections and Clarification to Drinking Water Regulations proposal. This clarification is discussed in section III.

In addition to clarifications of typographical and editorial errors, EPA is revising the LT1ESWTR to add optional monitoring for disinfection profiling and an earlier compliance date for some requirements in that rule. EPA is also promulgating a detection limit for the uranium methods. These three changes are discussed first.

### A. LT1ESWTR Compliance Date Change and Optional Monitoring for Disinfection Profiling

The final LT1ESWTR was published on January 14, 2002 (67 FR 1812). In § 141.502 of the LT1ESWTR, EPA directed PWSs to “comply with these requirements in this subpart beginning January 14, 2005, except where otherwise noted.” Today’s rule changes the compliance date from January 14, 2005, to January 1, 2005, in § 141.502 as well as in endnote 8 of Subpart Q, Appendix B. EPA’s reasons for moving the compliance date forward by two weeks are set forth in the preamble to the proposed rule at 69 FR 9782.

EPA is also changing the compliance date in two additional sections, §§ 141.73(a)(4) and 141.170(d), which reference the January 14, 2005, date. These two citations should have been

included in the March 2, 2004, proposal.

By changing § 141.502, the following 12 requirements will have a compliance deadline of January 1, 2005, instead of January 14, 2005: §§ 141.520, 141.521, 141.522, 141.550, 141.551, 141.552, 141.553, 141.560, 141.561, 141.562, 141.563, and 141.564. July 1, 2003 (or January 1, 2004, for systems serving fewer than 500 persons), remains the compliance date for §§ 141.530–141.536. March 15, 2002, remains the compliance date for § 141.511.

In addition to changing the compliance date, EPA is adding a sentence to § 141.531 to clarify that States may approve a more representative total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5) data set (optional monitoring) to avoid the disinfection profile monitoring required in § 141.530. EPA’s intent was to allow this flexibility in the final LT1ESWTR rule (67 FR 1820, January 14, 2002). EPA had failed to make this flexibility explicit in that regulation.

### B. Detection Limit for Compliance Monitoring of Uranium

The December 7, 2000, final Radionuclides Rule (65 FR 76708) included a detection limit for gross alpha, radium-226 and radium-228, and reserved a place for a uranium detection limit in Table B at § 141.25(c)(1). In today’s action, EPA is amending Table B at § 141.25(c)(1) to add a detection limit of 1 µg/L for uranium. Establishing a uranium detection limit permits States the flexibility to substantially reduce the number of compliance samples and the frequency of repeat monitoring for uranium.

### C. Radionuclide Rule Clarifications

In addition to amending the detection limit for uranium, EPA is making two clarifications to the final Radionuclide Rule (December 7, 2000, 65 FR 76708). In § 141.26(b)(2)(iv), EPA is adding “screening level” to the first sentence. (Note also, that the second “beta” in this sentence is a typographical error, and under today’s rule is being removed.) Similarly, EPA is clarifying in § 141.26(b)(5), that there are two screening levels by adding the word “appropriate” to the first sentence so that it reads “\* \* \* exceeds the appropriate screening level \* \* \*.” In addition, in the text that proposed to revise § 141.26(b)(5), we inadvertently referenced a nonexistent Table E, “or Table E in 141.66(d)” —this reference is deleted in this final rule.

In § 141.26(b)(6), EPA is revising the citation “(b)(1)(ii)” to read “(b)(1)(i),”

and is revising citation “(b)(2)(i)” to read “(b)(2)(iv).” These were typographical errors and should have been (b)(1)(i) and (b)(2)(iv), which refer to meeting the screening level requirements until the system meets the requirements for reduced monitoring.

### D. LT1ESWTR Clarifications

In addition to changing the date in § 141.502 to reduce monitoring burden as well as to allow States to approve alternative data sets for optional monitoring in § 141.531, EPA is clarifying typographical errors in the final LT1ESWTR. In Subpart Q, Appendix B, in endnotes 4 and 8, the year of publication for the Long Term 1 Enhanced Surface Water Treatment Rule is incorrectly identified as 2001 when it should be 2002. Also in endnote 4, the word “monthly” is misspelled. In § 141.530 EPA is removing the grammatically incorrect, plural “s” from “systems” in the sentence “If you are a subpart H community or non-transient non-community water systems which serves fewer \* \* \*.”

Two typographical errors are being corrected in § 141.534. In the introductory paragraph for § 141.534, EPA inadvertently omitted a reference to § 141.74(b)(3)(v), which provides tables for determining the appropriate CT99.9 value to calculate the inactivation ratio. EPA is changing the introductory paragraph of § 141.534 to: “Use the tables in § 141.74(b)(3)(v) to determine the appropriate CT99.9 value. Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*.”

In the table in § 141.534(a)(2), EPA is changing the “3” to “Σ” in the CT calculation formula. EPA inadvertently changed the “Σ” to a “3” during a text file conversion.

In § 141.551(a)(2), EPA is adding a “t” to the “no” in “A value determined by the State (no to exceed 1 NTU) \* \* \*.” In § 141.551(b)(2), EPA is adding the word “Filtration” to the phrase “All other ‘Alternative’” so that it matches related language in § 141.551(a)(2).

EPA is deleting the last sentence in the second column in the table in § 141.563(b), because it is redundant. Also in the same table in § 141.563(c), the first column contains a typographical error. The acronym “BTU” will read “NTU” (Nephelometric Turbidity Units).

In the table in § 141.570(b)(2), EPA is adding the phrase: “and the cause (if known) for the exceedance(s)” to the description of information to report under § 141.570(b)(2). As a result, the entire paragraph will read: “The filter

number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, and the cause (if known) for the exceedance(s), but only if 2 consecutive measurements exceeded 1.0 NTU."

This action redesignates the LT1ESWTR special primacy text as § 142.16(p). In addition, EPA is revising a citation in § 142.16 (p)(2)(ii) to "141.536" to read "141.535." This was a typographical error and should have been "141.535," which refers to calculating inactivation.

#### *E. Stage 1 Disinfectants and Disinfection Byproducts Rule*

The Stage 1 Disinfectants and Disinfection Byproducts Rule was promulgated on December 16, 1998 (63 FR 69390). This rule required systems to measure and report, among other things, violations of maximum residual disinfectant levels (MRDLs), see § 141.134(c)(1)(iv) (see 63 FR 69422 and 69472). However, EPA failed to add compliance with the applicable MRDL to the compliance requirements in § 141.133(a)(3). EPA is correcting this, and the language in § 141.133(a)(3) now reads "If, during the first year of monitoring under § 141.132, any individual quarter's average will cause the running annual average of that system to exceed the MCL for total trihalomethanes, haloacetic acids (five), or bromate; or the MRDL for chlorine or chloramine, the system is out of compliance at the end of that quarter." The burden for this requirement was already accounted for in the approved Information Collection Request No. 1895.02.

Also, in the final Stage 1 Disinfectants and Disinfection Byproducts Rule, EPA incorrectly cited in § 142.14(d)(12)(iv) and § 142.14(d)(13) a reference to § 142.16(f). The reference for both sections is now being revised to read § 142.16(h)(2) and § 142.16(h)(5) respectively.

#### *F. Surface Water Treatment Rule*

The Surface Water Treatment Rule (SWTR) was promulgated on June 29, 1989 (54 FR 27486). In that final rule, EPA incorrectly cited in § 141.74(b)(4)(ii) a reference to § 142.72(a). This citation is being corrected to read § 141.72(a).

Today's rule does not include the proposed clarifications (March 2, 2004, 69 FR 9784) concerning the calibration of turbidimeters in § 141.174(a) (Interim Enhanced Surface Water Treatment Rule (IESWTR)) and in § 141.560(b) (LT1ESWTR). EPA is deferring a decision on this clarification

until additional information provided in a public comment can be evaluated.

EPA is changing all citations to § 141.74(a)(3) or (4) to § 141.74(a)(1), and all citations to § 141.74(a)(5) to § 141.74(a)(2) to reflect revisions to the SWTR as described in the proposal.

**TABLE 1.—REFERENCES TO THE SURFACE WATER TREATMENT RULE**

SWTR provisions with incorrect cross references	Amendment
141.71(a)(2) .....	"(a)(4)" to (a)(1)
141.71(c)(2)(i) .....	"(a)(4)" to (a)(1)
141.72(a)(3) .....	"(a)(5)" to (a)(2)
141.72(a)(4)(i) .....	"(a)(3)" to (a)(1) and "(a)(5)" to (a)(2)
141.72(a)(4)(ii) .....	"(a)(3)" to (a)(1)
141.72(b)(2) .....	"(a)(5)" to (a)(2)
141.72(b)(3)(i) .....	"(a)(5)" to (a)(2) and, "(a)(3)" to (a)(1)
141.72(b)(3)(ii) .....	"(a)(3)" to (a)(1)
141.73(a)(1) .....	"(a)(4)" to (a)(1)
141.73(a)(2) .....	"(a)(4)" to (a)(1)
141.73(b)(1) .....	"(a)(4)" to (a)(1)
141.73(b)(2) .....	"(a)(4)" to (a)(1)
141.73(c)(1) .....	"(a)(4)" to (a)(1)
141.73(c)(2) .....	"(a)(4)" to (a)(1)
141.74(b)(6)(ii) .....	"(a)(3)" to (a)(1)
141.74(c)(3)(i) .....	"(a)(3)" to (a)(1)
141.74(c)(3)(ii) .....	"(a)(3)" to (a)(1)
141.75(a)(2)(viii)(G) .....	"(a)(3)" to (a)(1)
141.75(b)(2)(iii)(G) .....	"(a)(3)" to (a)(1)

#### *G. Filter Backwash Recycling Rule*

The Filter Backwash Recycling Rule (FBRR) was promulgated on June 8, 2001 (66 FR 31086). EPA inadvertently provided incomplete citations in subpart Q, Appendix A of the Public Notification rule for the FBRR violations. In entry I.A.(8) of 40 CFR part 141, subpart Q, Appendix A, EPA is adding a "(c)" to the "MCL/MRDL/TT violations Citation" column of § 141.76; and, in the "Monitoring & testing procedure violations Citation" column EPA has added "(b), (d)" to § 141.76.

The FBRR preamble (66 FR 31086, 31094) explicitly states that violations of the recordkeeping and reporting portions of this treatment technique trigger public notification (PN) obligations under 40 CFR part 141, subpart Q. EPA is clarifying the PN rule by striking the reference to reporting violations in Appendix A, endnote 1, and explicitly adding §§ 141.76(b), (c) and (d) to the list of categories requiring reporting in Appendix A (previous reference was to the entire § 141.76).

#### *H. Bottled Water*

In a November 1995 final rule (60 FR 57132), the Food and Drug Administration (FDA) moved their

standards of quality for bottled water from 21 CFR 103.35 to 21 CFR 165.110. EPA is correcting a reference in our regulations in § 142.62(g)(2) to reflect the updated citation of these FDA regulations.

#### *I. Information Collection Rule*

The Information Collection Rule (ICR) was promulgated on May 14, 1996 (61 FR 24354). The requirements promulgated in the ICR expired on December 31, 2000. As a result, the ICR requirements (referred to as subpart M—Information Collection Requirements (ICRs) for Public Water Systems) were removed from the Code of Federal Regulations in 2001. However, there were remaining references to the data collected as a result of the ICR in other sections of part 141 that refer to "subpart M." EPA is deleting the phrase "or subpart M of this part" from § 141.132(a)(5). EPA is not deleting or revising the other references to subpart M because the data collected under the ICR are still being used.

#### *J. Phase V Rule*

In the final Phase V Rule (July 17, 1992, 57 FR 31776), EPA published a list of Best Available Technologies (BATs) for cyanide, see § 141.62(c). EPA is making the list more specific as to the type of chlorination ("alkaline chlorination").

### **III. Correction in the Lead and Copper Rule Public Education Requirement**

In this final version of the rule, EPA is reinstating the list of the facilities that must be sent public education brochures by a public water system that has exceeded the action level for lead or copper. This list was included in the final Lead and Copper Rule, in § 141.85(c)(2)(iii) (June 7, 1991, 56 FR 26460; 26555) and published in the Code of Federal Regulations (CFR) from 1991 to 1999. However, a technical drafting error in the way in which EPA drafted its language of amendment for revisions to the LCR in 2000 caused the Office of Federal Register to delete this text from the 2001 edition of the CFR (January 12, 2000, 65 FR 1950, 2007). Thus, the current CFR text contains only a requirement to deliver public education materials "to facilities and organizations, including the following:" with no text following the colon. To remedy this, EPA is reinstating the missing text, specifically subparagraphs (A) through (G). Section 141.85(c)(2)(iii) will once again read as follows:

(iii) Deliver pamphlets and/or brochures that contain the public education materials in paragraphs (a)(1)(ii) and (a)(1)(iv) of this section to

facilities and organizations, including the following:

- (A) Public schools, and/or local school boards;
- (B) City or county health department;
- (C) Women, Infants, and Children and/or Head Start Program(s) whenever available;
- (D) Public and private hospitals and/or clinics;
- (E) Pediatricians;
- (F) Family planning clinics; and
- (G) Local welfare agencies.

Section 553 of the Administrative Procedure Act, 5 U.S.C. 553(b)(B), provides that, when an agency for good cause finds that notice and public procedure are impracticable, unnecessary, or contrary to the public interest, the agency may issue a rule without providing prior notice and an opportunity for public comment. EPA is reinstating the list of facilities that must be sent public education brochures by a public water system that has exceeded the action level for lead or copper. EPA has determined that there is "good cause" for making this rule change final without prior proposal and opportunity for comment because this list was the product of a prior notice-and-comment rulemaking, *see* (June 7, 1991, 56 FR 26502), it had appeared in the CFR for several years, the deletion was due solely to a technical drafting error in a subsequent rule, and the list is not controversial. Thus, additional notice and public comment is not necessary. EPA finds that this constitutes "good cause" under 5 U.S.C. 553(b)(B). For the same reasons, EPA is making this rule change effective upon publication. 5 U.S.C. 553(d)(3).

#### IV. Statutory and Executive Order Reviews

##### A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the Agency must determine whether the regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this rule is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review.

##### B. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* This action modifies and clarifies existing regulations. It does not add monitoring, recordkeeping or reporting requirements.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

##### C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small government jurisdictions.

Small entities are defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a

small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any "not-for-profit enterprise which is independently owned and operated and is not dominant in its field." However, the RFA also authorizes an agency to use alternative definitions for each category of small entity, "which are appropriate to the activities of the agency" after proposing the alternative definition(s) in the **Federal Register** and taking comment. 5 U.S.C. 601(3)-(5). In addition, to establish an alternative small business definition, agencies must consult with SBA's Chief Counsel for Advocacy.

For purposes of assessing the impacts of today's rule on small entities, EPA considered small entities to be public water systems serving 10,000 or fewer persons. This is the cut-off level specified by Congress in the 1996 Amendments to the Safe Drinking Water Act for small system flexibility provisions. As required by the RFA requirements, EPA proposed using this alternative definition in the **Federal Register**, (63 FR 7620, February 13, 1998), requested public comment, consulted with the Small Business Administration (SBA), and finalized in the alternative definition in the Consumer Confidence Reports regulation (63 FR 44511, August 19, 1998). As stated in that final rule, the alternative definition would be applied to this regulation as well.

The optional monitoring for disinfection profiling provides flexibility for PWSs complying with LT1ESWTR. The earlier compliance date will not increase the cost of complying with LT1ESWTR since the monitoring and reporting requirements are unchanged. By specifying the detection limit for uranium, States have the flexibility to waive some monitoring for PWSs with samples below the detection limit. This action will not add new requirements.

This final rule imposes no cost on any entities over and above those imposed by previously published drinking water rules. This action corrects and clarifies existing regulations.

After considering the economic impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. The small entities directly regulated by this final rule are public water systems serving 10,000 or fewer persons. We have determined that no number of small entities will experience an impact.

recordkeeping requirements, Volatile organic compounds.

Dated: May 27, 2004.

James W. Newsom,

Acting Regional Administrator, Region III.

■ 40 CFR part 52 is amended as follows:

#### PART 52—[AMENDED]

■ 1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

#### Subpart V—Maryland

■ 2. Section 52.1070 is amended by adding paragraph (c)(184) to read as follows:

##### § 52.1070 Identification of plan.

\* \* \* \* \*

(c) \* \* \*

(184) Revisions to the Code of Maryland Administrative Regulations (COMAR) for the Control of VOC Emissions from Portable Fuel Containers submitted on March 8, 2002 by the Maryland Department of the Environment:

(i) Incorporation by reference.

(A) Letter of March 8, 2002 from the Maryland Department of the Environment transmitting an addition to Maryland's State Implementation Plan pertaining to the control of volatile organic compounds (VOC) emissions from portable fuel containers.

(B) Addition of new regulation .07 under COMAR 26.11.13—*Control of VOC Emissions from Portable Fuel Containers*, adopted by the Secretary of the Environment on December 21, 2001, and effective on January 21, 2002.

(ii) Additional Material.—Remainder of the State submittal pertaining to the revisions listed in paragraph (c)(184)(i) of this section.

[FR Doc. 04-14602 Filed 6-28-04; 8:45 am]

BILLING CODE 6560-50-P

#### ENVIRONMENTAL PROTECTION AGENCY

#### 40 CFR Parts 141 and 142

[OW-2003-0066; FRL-7779-4]

RIN 2040-AE58

#### National Primary Drinking Water Regulations: Minor Corrections and Clarification to Drinking Water Regulations; National Primary Drinking Water Regulations for Lead and Copper

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

**SUMMARY:** This rule makes minor changes to clarify and correct EPA's Drinking Water regulations. This rule clarifies typographical errors, inadvertent omissions, editorial errors, and outdated language in the final Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), the Surface Water Treatment Rule, and other rules. In addition to these clarifications, EPA is adding optional monitoring for disinfection profiling and an earlier compliance date for some requirements in the LT1ESWTR, and a detection limit for the Uranium Methods.

Also, EPA is reinstating text that was inadvertently dropped from the Lead and Copper Rule which listed the facilities that must be sent public education brochures by a public water system that has exceeded the action level for lead or copper.

**DATES:** This final rule is effective on July 29, 2004, except for the amendment to § 141.85(c)(2)(iii) which is effective June 29, 2004. For purposes of judicial review, this final rule is promulgated as of 1 p.m., eastern time on July 13, 2004, as provided in 40 CFR 23.7.

**ADDRESSES:** EPA has established a docket for this action under Docket ID No. OW-2003-0066. All documents in the docket are listed in the EDOCKET index at <http://www.epa.gov/edocket>. Although listed in the index, some information is not publicly available, *i.e.*, CBI or other information whose

disclosure is restricted by statute.

Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the Water Docket, EPA/DC, EPA West, Room B102, 1301 Constitution Avenue, NW., Washington DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Water Docket is (202) 566-2426. If you would like to schedule an appointment for access to docket material, please call (202) 566-2426.

**FOR FURTHER INFORMATION CONTACT:** For general information, contact the Safe Drinking Water Hotline, telephone (800) 426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding legal holidays, from 9 a.m. to 5:30 p.m., eastern time. For technical inquiries, contact Tracy Bone, Office of Ground Water and Drinking Water, U. S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; telephone: (202) 564-5257; fax: (202) 564-3767; e-mail address: [bone.tracy@epa.gov](mailto:bone.tracy@epa.gov).

#### SUPPLEMENTARY INFORMATION:

##### I. General Information

Entities potentially regulated by this action are public water systems (PWS). The following table provides examples of the regulated entities under this rule. A public water system, as defined by section 1401 of the Safe Drinking Water Act (SDWA), is "a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals." EPA defines "regularly served" as receiving water from the system 60 or more days per year. Categories and entities potentially regulated by this action include the following:

Category	Examples of potentially regulated entities
State, Tribal and Local Government .....	State, tribal or local government-owned/operated water supply systems using ground water, surface water or mixed ground water and surface water.
Federal Government .....	Federally owned/operated community water supply systems using ground water, surface water or mixed ground water and surface water.
Industry .....	Privately owned/operated community water supply systems using ground water, surface water or mixed ground water and surface water.



#### *D. Unfunded Mandates Reform Act*

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Today's rule contains no Federal mandates (under the regulatory provisions of Title II of the UMRA) for State, local, or tribal governments or the private sector. This final rule imposes no enforceable duty on any State, local or tribal governments or the private sector. This action corrects and clarifies existing regulations. The optional monitoring for disinfection profiling provides flexibility for PWSs to comply with LT1ESWTR. The earlier compliance date will not increase the cost of complying with LT1ESWTR since the monitoring and reporting requirements are unchanged. By specifying the detection limit for uranium, EPA provides States with the flexibility to waive some monitoring for

PWSs with samples below the detection limit. Thus, today's final rule is not subject to the requirements of sections 202 and 205 of the UMRA.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. This action corrects and clarifies existing regulations. Thus, today's proposed rule is not subject to the requirements of section 203 of the UMRA.

#### *E. Executive Order 13132: Federalism*

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This final rule does not have Federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. There is no cost to State and local governments, and the final rule does not preempt State law. This action corrects and clarifies existing regulations. The optional monitoring for disinfection profiling provides flexibility for PWSs to comply with LT1ESWTR. The earlier compliance date will not increase the cost of complying with LT1ESWTR since the monitoring and reporting requirements are unchanged. By specifying the detection limit for uranium, States have the flexibility to waive some monitoring for PWSs with samples below the detection limit. Thus, Executive Order 13132 does not apply to this final rule. In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicited comment on the proposed rule from State and local officials.

#### *F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR

67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." "Policies that have tribal implications" is defined in the Executive Order to include regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes."

This final rule does not have tribal implications. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes, as specified in Executive Order 13175. There is no cost to tribal governments, and the rule does not preempt tribal law. This action corrects and clarifies existing regulations. Thus, Executive Order 13175 does not apply to this rule. Moreover, in the spirit of Executive Order 13175, and consistent with EPA policy to promote communications between EPA and tribal governments, EPA specifically solicited comment on the proposed rule from tribal officials.

#### *G. Executive Order 13045: Protection of Children From Environmental Health & Safety Risks*

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this action present a disproportionate risk to children.

*H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

This rule is not subject to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355 (May 22, 2001)) because it is not a significant regulatory action under Executive Order 12866.

*I. National Technology Transfer and Advancement Act*

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Public Law 104-113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This action does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

*J. Congressional Review Act*

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective July 29, 2004, except for the amendment to § 141.85(c)(2)(iii) which is effective June 29, 2004.

**List of Subjects**

*40 CFR Part 141*

Environmental protection, Chemicals, Indians-lands, Intergovernmental relations, Radiation protection,

Reporting and recordkeeping requirements, Water supply.

*40 CFR Part 142*

Environmental protection, Administrative practice and procedure, Chemicals, Indians-lands, Radiation protection, Reporting and recordkeeping requirements, Water supply.

Dated: June 22, 2004.

**Michael O. Leavitt**,  
Administrator.

■ For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

**PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS**

■ 1. The authority citation for part 141 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

**§ 141.25 [Amended]**

■ 2. Section 141.25(c)(1) is amended in the entry for uranium in the second column of Table B by removing the word "reserve" and adding in its place "1 µg/L".

■ 3. Section 141.26 is amended as follows:

■ a. Revise paragraphs (b)(2)(iv) and (b)(5); and

■ b. In paragraph (b)(6) remove the citation "(b)(1)(ii)" and add in its place "(b)(1)(i)" and remove the citation "(b)(2)(i)" and add in its place "(b)(2)(iv)".

The revisions read as follows:

**§ 141.26 Monitoring frequency and compliance requirements for radionuclides in community water systems.**

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(iv) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L (screening level), the State may reduce the frequency of monitoring at that sampling point to every 3 years. Systems must collect the same type of samples required in paragraph (b)(2) of this section during the reduced monitoring period.

\* \* \* \* \*

(5) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate screening level, an analysis of the sample must be performed to identify the major radioactive constituents present in the sample and the appropriate doses must

be calculated and summed to determine compliance with § 141.66(d)(1), using the formula in § 141.66(d)(2). Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

\* \* \* \* \*

**§ 141.62 [Amended]**

■ 4. Section 141.62(c) is amended as follows:

■ a. In the Table "BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(b)" amend the entry for "cyanide" by replacing the "10" with "13"; and

■ b. In the list "Key to BATS in Table 1", add to the end of the list, "13 = Alkaline Chlorination (pH ≥ 8.5)".

**§ 141.71 [Amended]**

■ 5. Section 141.71 is amended as follows:

■ a. In paragraph (a)(2) introductory text remove the citation "\$ 141.74(a)(4)" and add in its place "\$ 141.74(a)(1)" and

■ b. In paragraph (c)(2)(i) remove the citation "\$ 141.74(a)(4)" and add in its place "\$ 141.74(a)(1)".

**§ 141.72 [Amended]**

■ 6. Section 141.72 is amended as follows:

■ a. In paragraph (a)(3) remove the citation "\$ 141.74(a)(5)" and add in its place "\$ 141.74(a)(2)";

■ b. In paragraph (a)(4)(i) remove the citation "\$ 141.74(a)(5)" and add in its place "\$ 141.74(a)(2)" and remove the citation "\$ 141.74(a)(3)" and add in its place "\$ 141.74(a)(1)";

■ c. In paragraph (a)(4)(ii) remove the citation "\$ 141.74(a)(3)" and add in its place "\$ 141.74(a)(1)";

■ d. In paragraph (b)(2) remove the citation "\$ 141.74(a)(5)" and add in its place "\$ 141.74(a)(2)";

■ e. In paragraph (b)(3)(i) remove the citation "\$ 141.74(a)(5)" and add in its place "\$ 141.74(a)(2)", remove the citation "\$ 141.74(a)(3)" and add in its place "\$ 141.74(a)(1)"; and

■ f. In paragraph (b)(3)(ii) remove the citation "\$ 141.74(a)(3)" and add in its place "\$ 141.74(a)(1)".

**§ 141.73 [Amended]**

■ 7. Section 141.73 is amended as follows:

■ a. In paragraph (a)(1) remove both citations "\$ 141.74(a)(4)" and add in their place "\$ 141.74(a)(1)";

■ b. In paragraph (a)(2) remove the citation "\$ 141.74(a)(4)" and add in its place "\$ 141.74(a)(1)";

■ c. In paragraph (a)(4) remove the date "January 14, 2005" and add in its place "January 1, 2005";

- d. In paragraph (b)(1) remove the citation “§ 141.74(a)(4)” and add in its place “§ 141.74(a)(1)”;
- e. In paragraph (b)(2) remove the citation “§ 141.74(a)(4)” and add in its place “§ 141.74(a)(1)”;
- f. In paragraph (c)(1) remove the citation “§ 141.74(a)(4)” and add in its place “§ 141.74(a)(1)”;
- g. In paragraph (c)(2) remove the citation “§ 141.74(a)(4)” and add in its place “§ 141.74(a)(1)”.

#### § 141.74 [Amended]

- 8. Section 141.74 is amended as follows:
  - a. In paragraph (b)(4)(ii) remove the citation “§ 142.72(a)” and add in its place “§ 141.72(a)”;
  - b. In paragraph (b)(6)(ii) remove the citation “(a)(3)” and add in its place “(a)(1)”;
  - c. In paragraph (c)(3)(i) remove the citation “(a)(3)” and add in its place “(a)(1)”;
  - d. In paragraph (c)(3)(ii) remove the citation “(a)(3)” and add in its place “(a)(1)”.

#### § 141.75 [Amended]

- 9. Section 141.75 is amended as follows:
  - a. In paragraph (a)(2)(viii)(G) remove the citation “§ 141.74(a)(3)” and add in its place “§ 141.74(a)(1)”;
  - b. In paragraph (b)(2)(iii)(G) remove the citation “§ 141.74(a)(3)” and add in its place “§ 141.74(a)(1)”.
- 10. Amend § 141.85 by adding paragraphs (c)(2)(iii) (A) through (G) to read as follows:

#### § 141.85 Public education and supplemental monitoring requirements.

- \* \* \* \* \*
- (c) \* \* \*
- (2) \* \* \*
- (iii) \* \* \*
- (A) Public schools, and/or local school boards;
- (B) City or county health department;
- (C) Women, Infants, and Children and/or Head Start Program(s) whenever available;
- (D) Public and private hospitals and/or clinics;
- (E) Pediatricians;
- (F) Family planning clinics; and
- (G) Local welfare agencies.
- \* \* \* \* \*

#### § 141.132 [Amended]

- 11. Section 141.132 is amended in paragraph (a)(5) by removing the reference to “or subpart M of this part”.
- 12. In § 141.133 revise paragraph (a)(3) to read as follows:

#### § 141.133 Compliance requirements.

- (a) \* \* \*

(3) If, during the first year of monitoring under § 141.132, any individual quarter's average will cause the running annual average of that system to exceed the MCL for total trihalomethanes, haloacetic acids (five), or bromate; or the MRDL for chlorine or chloramine, the system is out of compliance at the end of that quarter.

\* \* \* \* \*

#### § 141.170 [Amended]

- 13. In paragraph (d) remove the date “January 14, 2005” and add in its place “January 1, 2005”.

#### Appendix A to Subpart Q of Part 141 [Amended]

- 14. In Subpart Q, Appendix A is amended as follows:
  - a. In entry I.A.(8) remove the citation in the third column “141.76” and add in its place “141.76(c)” and remove the citation in the fifth column “141.76” and add in its place “141.76 (b), (d)”.
  - b. Amend endnote 1 by removing the words “reporting violations and” from the first parenthetical phrase.
- 15. In Subpart Q, Appendix B revise endnotes 4 and 8 to read as follows:

#### Appendix B to Subpart Q of Part 141—Standard Health Effects Language for Public Notification

\* \* \* \* \*

<sup>4</sup> There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, and the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

\* \* \* \* \*

<sup>8</sup> There are various regulations that set turbidity standards for different types of systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR) and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency. For systems subject to the LT1ESWTR (systems serving fewer than

10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 1, 2005, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the primacy agency.

\* \* \* \* \*

- 16. Revise § 141.502 to read as follows:

#### § 141.502 When must my system comply with these requirements?

You must comply with these requirements in this subpart beginning January 1, 2005, except where otherwise noted.

#### § 141.530 [Amended]

- 17. In § 141.530 in the second sentence, revise “water systems” to read “water system”.
- 18. Amend § 141.531 by adding the following sentence to the end of the section, to read as follows:

#### § 141.531 What criteria must a State use to determine that a profile is unnecessary?

\* \* \* Your State may approve a more representative TTHM and HAA5 data set to determine these levels.

- 19. Section 141.534 is amended as follows:
  - a. By revising the introductory paragraph,
  - b. In the table in paragraph (a)(2), remove the “3” and add in its place “Σ”.

#### § 141.534 How does my system use this data to calculate an inactivation ratio?

Use the tables in § 141.74(b)(3)(v) to determine the appropriate CT99.9 value. Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

\* \* \* \* \*

#### § 141.551 [Amended]

- 20. Section 141.551 is amended as follows:
  - a. In paragraph (a)(2) remove “no” and add in its place “not”; and
  - b. In paragraph (b)(2) remove “Alternative” and add in its place “Alternative Filtration”.

#### § 141.563 [Amended]

- 21. Section 141.563 is amended as follows:
  - a. In paragraph (b) remove the last sentence in the second column of the table, and

■ b. In paragraph (c) remove “BTU” and add in its place “NTU” in the first column of the table.

■ 22. In § 141.570, revise paragraph (b)(2) in the table to read as follows:

**§ 141.570 What does subpart T require that my system report to the State?**

Corresponding requirement	Description of information to report	Frequency
(b) Individual Filter Turbidity Requirements (§§ 141.560–141.564).	(2) The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month, and the cause (if known) for the exceedance(s), but only if 2 consecutive measurements exceeded 1.0 NTU.	By the 10th of the following month.

## PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

■ 23. The authority citation for part 142 continues to read as follows:

**Authority:** 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

### § 142.14 [Amended]

■ 24. Section § 142.14 is amended as follows:

■ a. In paragraph (d)(12)(iv) remove the citation “§ 142.16(f)(2)” and add in its place “§ 142.16(h)(2)”; and

■ b. In paragraph (d)(13) remove the citation “§ 142.16(f)(5)” and add in its place “§ 142.16(h)(5)”.

### § 142.16 [Amended]

■ 25. Section 142.16 is amended as follows:

■ a. In paragraph (l)(2) remove the citation “§ 142.16(e)(5)” and add in its place “§ 142.16(e)(2)”; and

■ b. Add and reserve paragraphs (m), (n), and (o);

■ c. Redesignate paragraph (j) which was added on January 14, 2002, at 67 FR 1812 as paragraph (p); and

■ d. In newly designated paragraph (p)(2)(ii) remove the citation “141.536” and add in its place “141.535”.

### § 142.62 [Amended]

■ 26. Section 142.62(g)(2) is amended by removing the citation “103.35” and add in its place “165.110”.

[FR Doc. 04–14604 Filed 6–28–04; 8:45 am]

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 660

[Docket No. 031216314–3314–01; I.D. 062304A]

#### Fisheries Off West Coast States and in the Western Pacific; Pacific Coast Groundfish Fishery; Annual Specifications and Management Measures; Inseason Adjustments

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Inseason adjustments to management measures; request for comments.

**SUMMARY:** NMFS announces changes to the commercial limited entry fixed gear primary season sablefish tier limits for the Pacific Coast groundfish fishery. These actions, which are authorized by the Pacific Coast Groundfish Fishery Management Plan (FMP), will allow fisheries to access more abundant groundfish stocks while protecting overfished and depleted stocks. **DATES:** Effective 0001 hours (local time) June 29, 2004, until the 2005–06 annual specifications and management measures are effective; unless modified, superseded, or rescinded through a publication in the **Federal Register**. Comments on this rule will be accepted through July 28, 2004.

**ADDRESSES:** You may submit comments, identified by (I.D. 062304A), by any of the following methods:

- E-mail: [GroundfishInseason#4.nwr@noaa.gov](mailto:GroundfishInseason#4.nwr@noaa.gov). Include the I.D. number in the subject line of the message.
- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Mail: D. Robert Lohn, Administrator, Northwest Region,

NMFS, 7600 Sand Point Way NE, Seattle, WA 98115–0070; or Rod McInnis, Acting Administrator, Southwest Region, NMFS, 501 West Ocean Blvd, Suite 4200, Long Beach, CA 90802–4213.

• Fax: 206–526–6736

#### FOR FURTHER INFORMATION CONTACT:

Jamie Goen (Northwest Region, NMFS), phone: 206–526–6150; fax: 206–526–6736; and e-mail: [jamie.goen@noaa.gov](mailto:jamie.goen@noaa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Electronic Access

This **Federal Register** document is available on the Government Printing Office's website at: [www.gpoaccess.gov/fr/index.html](http://www.gpoaccess.gov/fr/index.html).

Background information and documents are available at the NMFS Northwest Region website at: [www.nwr.noaa.gov/1sustfsh/gdfsh01.htm](http://www.nwr.noaa.gov/1sustfsh/gdfsh01.htm) and at the Pacific Fishery Management Council's website at: [www.pcouncil.org](http://www.pcouncil.org).

##### Background

The Pacific Coast Groundfish FMP and its implementing regulations at 50 CFR part 660, subpart G, regulate fishing for over 80 species of groundfish off the coasts of Washington, Oregon, and California. Groundfish specifications and management measures are developed by the Pacific Fishery Management Council (Pacific Council), and are implemented by NMFS. The specifications and management measures for the 2004 fishing year (January 1 - December 31, 2004) were initially published in the **Federal Register** as an emergency rule for January 1 - February 29, 2004 (69 FR 1322, January 8, 2004), and as a proposed rule for March 1 - December 31, 2004 (69 FR 1380, January 8, 2004). The emergency rule was amended at 69 FR 4084, January 28, 2004, and the final rule for March 1 - December 31, 2004, was published in the **Federal Register** on March 9, 2004 (69 FR 11064), and subsequently amended at 69 FR 23440 (April 29, 2004), 69 FR 23667 (April 30,

## **Appendix C**

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### **Rule Fact Sheets/Quick Reference Guide**

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## U.S. Environmental Protection Agency

# Ground Water & Drinking Water

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## Final Long Term 1 Enhanced Surface Water Treatment Rule

EPA 815-F-02-001  
January 2002

### F • A • C • T • S • H • E • E • T

EPA has finalized the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). The purposes of the LT1ESWTR are to improve control of microbial pathogens, specifically the protozoan *Cryptosporidium*, in drinking water, and address risk trade-offs with disinfection byproducts. The rule was published in the Federal Register on January 14th, 2002. ( [read online](#) ) ~ ( [PDF](#) )

You will need Adobe Acrobat Reader to view the Adobe PDF files on this page. See [EPA's PDF](#) page for more information about getting and using the free Acrobat Reader.

*The rule will require certain public water systems to meet strengthened filtration requirements. It will also require systems to calculate levels of microbial inactivation to ensure that microbial protection is not jeopardized if systems make changes to comply with requirements of the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1-DBPR). This rule, which addresses subpart H systems serving fewer than 10,000 persons, builds upon the framework established for larger systems in the Interim Enhanced Surface Water Treatment Rule (IESWTR).*

### Which public water systems must comply with the rule?

The LT1ESWTR applies to all public water systems that:

- use surface water or ground water under the direct influence of surface water (GWUDI); and
- serve fewer than 10,000 persons.

The rule is expected to apply to more than 11,000 systems that serve nearly 18.5 million Americans.

### What does the rule require?

The LT1ESWTR provisions fall into the four following categories:

#### 1) *Cryptosporidium* Removal

- All systems must achieve a 2-log removal (99 percent) of *Cryptosporidium*.

#### 2) *Enhanced Filtration Requirements*

- Filtered systems must comply with strengthened combined filter effluent (CFE) turbidity performance requirements to assure 2-log removal of *Cryptosporidium*; and
- Conventional and direct filtration systems must continuously monitor the turbidity of individual filters and comply with follow-up activities based on this monitoring.

### 3) Microbial Inactivation Benchmarking

- Systems will be required to develop a profile of microbial inactivation levels unless they perform monitoring which demonstrates their disinfection byproduct levels are less than 80 percent of the maximum contaminant levels (MCLs) established in the Stage 1 DBPR; and
- Systems considering making a significant change to their disinfection practice must determine their current lowest level of microbial inactivation and consult with the state for approval prior to implementing the change.

### 4) Other Requirements

- Finished water reservoirs for which construction begins 60 days after promulgation of the rule must be covered; and
- Unfiltered systems must comply with updated watershed control requirements that add *Cryptosporidium* as a pathogen of concern.

These requirements were developed based on the IESWTR, but have been modified to reduce the burden on small systems.

### How soon will the changes take effect?

The rule is effective 30 days after publication in the *Federal Register*; however, each of the requirements has a different compliance date. The table below provides the applicable dates.

Rule Requirement	Compliance Date
New reservoirs must be covered	60 days after LT1ESWTR promulgation
Systems 500 or greater begin to develop profile	July 1, 2003
Systems < 500 begin to develop profile	January 1, 2004
2-log <i>Cryptosporidium</i> removal	3 years after LT1ESWTR promulgation
New CFE Turbidity Limits	3 years after LT1ESWTR promulgation
Individual Filter Turbidity Monitoring	3 years after LT1ESWTR promulgation
Unfiltered systems must meet updated watershed control requirements	3 years after LT1ESWTR promulgation

### What is the significance of this rule?

In 1990, the Science Advisory Board (SAB) cited drinking water contamination as one of the most important environmental risks and indicated that disease-causing



microbiological contaminants (i.e., pathogens such as, bacteria, protozoa, and viruses) are probably the greatest remaining health risk management challenge for drinking water suppliers. The final LT1ESWTR addresses this challenge by improving the control of microbiological pathogens such as *Cryptosporidium* in public drinking water systems serving fewer than 10,000 persons. It will also protect the public against increases in risk from such pathogens in cases where systems alter their disinfection practices to meet new disinfection byproduct standards promulgated under the Stage 1 Disinfectants and Disinfection Byproducts Rule (DBPR).

The final LT1ESWTR is part of the larger Microbial and Disinfection Byproducts (M-DBP) cluster of rules. These rules include the IESWTR and the Stage 1 DBPR, which were promulgated on December 16, 1998. Implementing the provisions contained in the LT1ESWTR will provide protections against the potentially lethal microorganism *Cryptosporidium* and *Giardia* to persons served by small public water systems using surface waters. The IESWTR afforded the 165 million people served by large water systems added protection against *Cryptosporidium*. The LT1ESWTR completes this effort by extending protection to the remaining 18.5 million Americans served by smaller public water systems.

#### **How will this rule protect public health?**

EPA has determined that the presence of microbiological pathogens in public water supplies is a health concern. If finished water supplies contain microbiological contaminants, illnesses and disease outbreaks may result. Twelve waterborne cryptosporidiosis outbreaks caused by contamination in public water systems were reported to the Center for Disease Control and Prevention between 1984 and 1998. In 1993, *Cryptosporidium* caused more than 400,000 people in Milwaukee, WI, to experience intestinal illness. More than 4,000 were hospitalized and at least 50 deaths were attributed to this cryptosporidiosis outbreak. Other recent cryptosporidiosis outbreaks attributable to public water system contamination occurred in Nevada, Oregon, and Georgia.

The IESWTR set enforceable drinking water treatment technique requirements to reduce the risk of *Cryptosporidium* from surface water for systems serving at least 10,000 persons. The LT1ESWTR extends further this necessary protection from *Cryptosporidium* to communities of fewer than 10,000 persons.

Today's rule for the first time establishes *Cryptosporidium* control requirements for systems serving less than 10,000 persons by requiring a minimum 2-log removal for *Cryptosporidium*. The rule also strengthens filter performance requirements to ensure 2-log *Cryptosporidium* removal, establishes individual filter monitoring to minimize poor performance in individual units, includes *Cryptosporidium* in the definition of GWUDI, and explicitly considers unfiltered system watershed control provisions.

The rule also reflects a commitment to the importance of maintaining existing levels of microbial protection in public water systems as plants take steps to comply with newly applicable DBP standards. Systems considering significant changes to their disinfection practices must first evaluate current levels of *Giardia* inactivation (and virus inactivation if applicable) and consult with their state primacy agency for approval before implementing those changes. Thus, compliance with the provisions of the rule will improve public health protection by reducing the risk of exposure to *Cryptosporidium* in small systems serving fewer than 10,000 people even as those systems begin to take steps to comply with related DBP standards.

#### **How much will this rule cost?**

In estimating the costs of the LT1ESWTR, the Agency considered impacts on

PWSs and States (including territories and EPA implementation in non-primacy States). The LT1ESWTR will result in increased costs to public water systems for implementing the components of the rule. States will also incur implementation costs. EPA estimates that the annual cost of the rule will be \$39.5 million.

Approximately 84 percent (\$33.1 million) of the rule's total annual costs are imposed on drinking water utilities. States incur the remaining 16 percent (\$6.4 million annually) of the LT1ESWTR's total annual cost. The turbidity provisions, which include treatment changes, monitoring and reporting, account for the largest portion of the total rule costs (\$37.7 million annually). Systems will incur most of the turbidity provision costs. The national estimate of annual system costs is based on estimates of system-level costs for the rule and estimates of the number of systems expected to incur each type of cost.

The average annual household cost is estimated to be \$6.24 per year. Ninety percent of households will experience costs of less than \$15 per year, and fewer than one percent of households are estimated to incur annual costs of greater than \$120 per year; however, this estimate is conservative because systems with fewer households are likely to choose less costly improvements.

#### **What are the benefits of this rule?**

The primary benefits of today's final rule come from reductions in the risk of illness from pathogens in drinking water. In particular, the LT1ESWTR focuses on reducing the risk associated with disinfection-resistant pathogens, such as *Cryptosporidium*. Other pathogens may also be removed more efficiently due to implementation of these provisions. Exposure to other pathogenic protozoa or other waterborne bacterial or viral pathogens are likely to be reduced by the provisions of this rule as well. In addition to preventing illnesses, this rule is expected to have other non-health related benefits. These benefits result from avoiding non-health related costs associated with waterborne disease outbreaks.

The annual monetized benefits of the proposed rule are conservatively calculated to be \$18.9-\$90.9 million. EPA estimates that implementation of the LT1ESWTR will result in a reduction of cryptosporidiosis illness of between 12,000 and 41,000 cases per year, and a reduction in mortalities due to cryptosporidiosis of between 1 and 5 deaths per year. Most of the avoided deaths would be among immunocompromised and other sensitive subpopulations.

#### **Is funding available to help systems comply with this rule?**

Since 1996, the Drinking Water State Revolving Loan Fund has made over \$4.4 billion available to states, which have used the funding to provide loans to help water systems improve their infrastructure. Through December 31, 2000, states had made close to 1,600 loans for more than \$3.2 billion. Other federal funds for infrastructure financing are available through the U. S. Department of Housing and Urban Development's Community Development Block Grant Program and the Rural Utilities Service of the U.S. Department of Agriculture. EPA also provides program management funding to states that have primary enforcement responsibility for their drinking water programs through the Public Water Systems Supervision (PWSS) grants program.

#### **How did EPA consult with stakeholders in developing this rule?**

EPA began outreach efforts to develop the LT1ESWTR in the summer of 1998 with two public meetings: one in Denver, Colorado and the other in Dallas, Texas. Building on these two public meetings, EPA held a number of additional meetings with stakeholders, trade associations, environmental groups, and representatives of

state and local elected officials. Of particular importance to this rule, given its focus on small systems, EPA received valuable input from small entity representatives who were consulted in accordance with the Small Business Regulatory Enforcement Fairness Act (SBREFA). The Small Business Advocacy Review Panel was initiated in April of 1998 and officially convened in August of 1998. Many of the Panel's recommendations are reflected in today's rule.

EPA provided numerous opportunities for stakeholder and public involvement. In June 1999, EPA mailed an informal draft of the LT1ESWTR preamble to the approximately 100 stakeholders who attended either of the public stakeholder meetings. Members of trade associations and the small entity representatives consulted in accordance with SBREFA also received the draft preamble. EPA received valuable suggestions and stakeholder input from 15 state representatives, trade associations, environmental interest groups, and individual stakeholders. EPA proposed the LT1ESWTR on April 10, 2000. During the comment period, the Agency held a public meeting in Washington, DC, on April 14, 2000. Additionally, the proposed rule was presented to industry, state representatives, and the public in nearly 50 meetings across the US, including a May 30, 2000 meeting in Washington, DC, with ten representatives of elected state and local officials. Finally, EPA mailed approximately 200 copies of the proposed rule to stakeholders.

#### **Where can the public get more information about this final rule?**

For general information on the LT1ESWTR, contact the Safe Drinking Water Hotline, at (800) 426-4791, or visit the EPA Safewater website, [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html). For copies of the *Federal Register* notice of the final regulation or technical fact sheets, contact the Safe Drinking Water Hotline at (800) 426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding Federal holidays, from 9:00 a.m. to 5:30 p.m. Eastern Time.

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Last updated on Tuesday, November 26th, 2002  
URL: [http://www.epa.gov/safewater/mdbp/lt1eswtr\\_fact.html](http://www.epa.gov/safewater/mdbp/lt1eswtr_fact.html)

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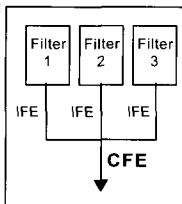
# Long Term 1 Enhanced Surface Water Treatment Rule: A Quick Reference Guide

## Overview of the Rule

Title	Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) 67 FR 1812, January 14, 2002, Vol. 67, No. 9
Purpose	Improve public health protection through the control of microbial contaminants, particularly <i>Cryptosporidium</i> . Prevent significant increases in microbial risk that might otherwise occur when systems implement the Stage 1 Disinfectants and Disinfection Byproducts Rule.
General Description	Builds upon the requirements of the 1989 Surface Water Treatment Rule (SWTR). Smaller system counterpart of the Interim Enhanced Surface Water Treatment Rule (IESWTR).
Utilities Covered	Public water systems that use surface water or ground water under the direct influence of surface water (GWUDI) and serve fewer than 10,000 people.

## Major Provisions

Control of <i>Cryptosporidium</i>	<ul style="list-style-type: none"> <li>▶ The maximum contaminant level goal (MCLG) is set at zero.</li> <li>▶ Filtered systems must physically remove 99% (2-log) of <i>Cryptosporidium</i>.</li> <li>▶ Unfiltered systems must update their watershed control programs to minimize the potential for contamination by <i>Cryptosporidium</i> oocysts.</li> <li>▶ <i>Cryptosporidium</i> is included as an indicator of GWUDI.</li> </ul>
Combined Filter Effluent (CFE) Turbidity Performance Standards	<p><b>Specific CFE turbidity requirements depend on the type of filtration used by the system.</b></p> <p><b>Conventional and direct filtration:</b></p> <ul style="list-style-type: none"> <li>▶ ≤ 0.3 nephelometric turbidity units (NTU) in at least 95% of measurements taken each month.</li> <li>▶ Maximum level of turbidity: 1 NTU.</li> </ul> <p><b>Slow sand and diatomaceous earth (DE) filtration:</b></p> <ul style="list-style-type: none"> <li>▶ Continue to meet CFE turbidity limits specified in the SWTR: <ul style="list-style-type: none"> <li>• 1 NTU in at least 95% of measurements taken each month.</li> <li>• Maximum level of turbidity: 5 NTU.</li> </ul> </li> </ul> <p><b>Alternative technologies (other than conventional, direct, slow sand, or DE):</b></p> <ul style="list-style-type: none"> <li>▶ Turbidity levels are established by the State based on filter demonstration data submitted by the system. <ul style="list-style-type: none"> <li>• State-set limits must not exceed 1 NTU (in at least 95% of measurements) or 5 NTU (maximum).</li> </ul> </li> </ul>



### For additional information on the LT1ESWTR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html); or contact your State drinking water representative.

<sup>1</sup> This frequency may be reduced by the State to once per day for systems using slow sand/alternative filtration or for systems serving 500 persons or fewer regardless of the type of filtration used.

## Turbidity Monitoring Requirements

Combined Filter Effluent	<ul style="list-style-type: none"> <li>▶ Performed at least every 4 hours to ensure compliance with CFE turbidity performance standards.<sup>1</sup></li> </ul>
Individual Filter Effluent (IFE) (for systems using conventional and direct filtration only)	<p><b>Since the CFE may meet regulatory requirements even though one filter is producing high turbidity water, the IFE is measured to assist conventional and direct filtration treatment plant operators in understanding and assessing individual filter performance.</b></p> <ul style="list-style-type: none"> <li>▶ Performed continuously (recorded at least every 15 minutes).</li> <li>▶ Systems with two or fewer filters may conduct continuous monitoring of CFE turbidity in place of individual filter effluent turbidity monitoring.</li> <li>▶ Certain follow-up actions are required if the IFE turbidity (or CFE for systems with two filters) exceeds 1.0 NTU in 2 consecutive readings or more (i.e., additional reporting, filter self-assessments, and/or comprehensive performance evaluations (CPEs)).</li> </ul>

## Disinfection Profiling and Benchmarking Requirements

Community and non-transient non-community public water systems must evaluate impacts on microbial risk before changing disinfection practices to ensure adequate microbial protection is maintained. This is accomplished through a process called disinfection profiling and benchmarking.

What are the disinfection profiling and benchmarking requirements?

- ▶ Systems must develop a disinfection profile, which is a graphical compilation of weekly inactivation of *Giardia lamblia*, taken on the same calendar day each week over 12 consecutive months. (Systems using chloramines, ozone, or chlorine dioxide for primary disinfection must also calculate inactivation of viruses). Results must be available for review by the State during sanitary surveys.
- ▶ A State may deem a profile unnecessary if the system has sample data collected after January 1, 1998—during the month of warmest water temperature and at maximum residence time in the distribution system—indicating TTHM levels are below 0.064 mg/L and HAA5 levels are below 0.048 mg/L.
- ▶ Prior to making a significant change to disinfection practices, systems required to develop a profile must calculate a disinfection benchmark and consult with the State. The benchmark is the calculation of the lowest monthly average of inactivation based on the disinfection profile.

## Additional Requirements

- ▶ Construction of new uncovered finished water reservoirs is prohibited.

## Critical Deadlines and Requirements

### For Drinking Water Systems

March 15, 2002	Construction of uncovered finished reservoirs is prohibited.
July 1, 2003	No later than this date, systems serving between 500-9,999 persons must report to the State: <ul style="list-style-type: none"> <li>▶ Results of optional monitoring which show levels of TTHM &lt; 0.064 mg/L and HAA5 &lt; 0.048 mg/L, OR</li> <li>▶ System has started profiling.</li> </ul>
January 1, 2004	No later than this date, systems serving fewer than 500 persons must report to the State: <ul style="list-style-type: none"> <li>▶ Results of optional monitoring which show levels of TTHM &lt; 0.064 mg/L and HAA5 &lt; 0.048 mg/L, OR</li> <li>▶ System has started profiling.</li> </ul>
June 30, 2004	Systems serving between 500 and 9,999 persons must complete their disinfection profile unless the State has determined it is unnecessary.
December 31, 2004	Systems serving fewer than 500 persons must complete their disinfection profile unless the State has determined it is unnecessary.
January 14, 2005	Surface water systems or GWUDI systems serving fewer than 10,000 people must comply with the applicable LT1ESWTR provisions (e.g., turbidity standards, individual filter monitoring, <i>Cryptosporidium</i> removal requirements, updated watershed control requirements for unfiltered systems).

### For States

January 2002	As per the IESWTR, States begin first round of sanitary surveys (at least every 3 years for community water systems and every 5 years for non-community water systems).
October 14, 2003	States are encouraged to submit final primacy applications to EPA.
January 14, 2004	Final primacy applications must be submitted to EPA unless granted an extension.
December 2004	States must complete first round of sanitary surveys for community water systems (as per the IESWTR).
January 14, 2006	Final primacy revision applications from States with approved 2-year extension agreements must be submitted to EPA.
December 2006	States must complete first round of sanitary surveys for non-community water systems (as per the IESWTR).

## Public Health Benefits

Implementation of the LT1ESWTR will result in . . .	<ul style="list-style-type: none"> <li>▶ Increased protection against gastrointestinal illnesses from <i>Cryptosporidium</i> and other pathogens through improvements in filtration.</li> <li>▶ Reduced likelihood of endemic illness from <i>Cryptosporidium</i> by an estimated 12,000 to 41,000 cases annually.</li> <li>▶ Reduced likelihood of outbreaks of cryptosporidiosis.</li> </ul>
Estimated impacts of the LT1ESWTR include . . .	<ul style="list-style-type: none"> <li>▶ National total annualized cost: \$39.5 million.</li> <li>▶ 90% of affected households will incur an increase of less than \$1.25 per month.</li> <li>▶ One percent of affected households are likely to incur an increase of more than \$10 per month.</li> </ul>

## WHAT SHOULD A CPE REPORT INCLUDE?

**Assessment of the performance of the plant** including evaluations of sedimentation basin performance, filter media, and filter performance during routine operation and critical "worst-case" time periods (e.g., peak flow conditions and directly after backwash). The report should include a graphical representation of the plant's performance over a 1-year period that shows raw, clarified, and finished water turbidity against time.

**Evaluation of all major unit processes** existing at the plant, for their potential to achieve **optimized** performance (including flocculation, sedimentation, filtration and disinfection processes). The report should emphasize maximizing the use of existing facilities rather than constructing new infrastructure.

**Performance Limiting Factors** that were identified as impacting plant performance should be listed in their order of priority. Issues such as the aesthetics of the plant should not be included in the report unless linked to the performance problems. The report **should not include specific recommendations for improvements**. Recommendations are best addressed in follow-up technical assistance, ideally through solutions developed and implemented by plant staff with outside facilitation.

The report should be free of design or operational bias. Engineering professionals may be inclined to emphasize design factors. CPE teams may also be reluctant to identify operational and administrative issues that may offend or impact the plant's staff. Preferably, the report should emphasize operational solutions rather than major design changes.

**Assessment of potential follow-up activities** appropriate for the plant. Follow-up could include state-directed Comprehensive Technical Assistance (CTA) or third-party activities.

## REVIEW OF A CPE REPORT

The CPE report will be reviewed by the state to ensure that the CPE team has followed the proper protocol and has considered all of the key CPE areas. The review ensures that the evaluation and report maintains a focus on public health, optimizing performance, and the multiple barrier strategy of surface water treatment.

## WHERE CAN I GET MORE INFORMATION?

### Introduction to Comprehensive Performance Evaluations

(EPA/625/C-01-011) CPE Training CD

### Optimizing Water Treatment Plant Performance Using the Composite Correction Program

(EPA 625/6-91/027/August 1998)

*For ordering either of these documents or for general drinking water information, contact EPA's Safe Drinking Water Hotline [800-426-4791] or see the EPA website <http://www.epa.gov/safewater.html>.*

Office of Water (4606M)  
EPA 816-F-02-20  
[www.epa.gov/safewater](http://www.epa.gov/safewater)  
November 2002



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# Comprehensive Performance Evaluation (CPE):

## The Basics

## PURPOSE

This brochure is intended for use by surface water treatment systems, state personnel, and third-parties that have become involved with a Comprehensive Performance Evaluation (CPE) of a surface water treatment plant. The CPE was originally developed as a voluntary activity to assist filtration plants in achieving "optimized" performance and thereby achieving an increased level of public health protection. With EPA's promulgation of the Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), some systems may now be required to have a CPE conducted at their facility. The fundamental procedures for a CPE, whether initiated due to an individual filter effluent trigger or simply to achieve plant optimization, are the same. The process will involve the water system staff, state regulators, and, depending on the policies of the state, possibly a third-party.

**PLEASE NOTE:** The information presented here is not intended to instruct the reader in how to conduct a CPE, but rather to help systems, states, and third-parties understand their roles and responsibilities in the CPE process. Specific information on how to conduct a CPE is presented in the references cited at the end of this brochure.

## WHAT IS A CPE?

A CPE is a thorough review and analysis of a filtration plant's performance and an assessment of the impact of administrative, design, operation, and maintenance practices on the plant's turbidity levels. The CPE focuses on factors that adversely impact a plant's ability to achieve optimized performance and consists of the following components:

- ✓ assessment of plant performance;
- ✓ evaluation of major unit processes;
- ✓ identification and prioritization of performance limiting factors;
- ✓ assessment of the applicability of follow-up activities necessary; and
- ✓ preparation of a CPE report.



## WHAT IS THE FOCUS OF A CPE?

The focus of the CPE process is to assess the water treatment plant facilities, operations and administration to determine the ability of each one to optimize treatment performance. The CPE focuses on identifying and prioritizing factors that limit optimized performance. CPEs should provide water systems a road map of key issues they will need to address to achieve long-term optimized turbidity performance and compliance. **Specific recommendations are not provided.**

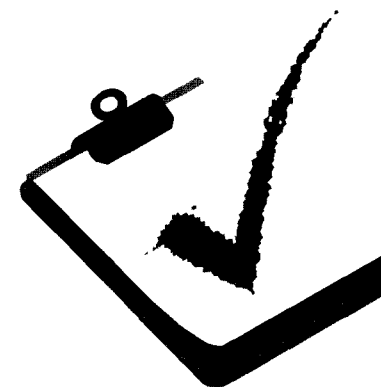
During the CPE, a team of outside individuals will collect data, perform special studies, and conduct interviews with system personnel. The team will gather information on:

- ▶ **Performance Assessment** including plant turbidity levels over a 12-month period and continuous individual filter performance.
- ▶ **Administration** including policies, budgeting, and staffing.
- ▶ **Design** including basic information regarding the size and capacities of the plant's major unit processes (flocculation, sedimentation, filtration, and disinfection) to assess their potential to meet optimized performance at peak instantaneous flow.
- ▶ **Operational issues** regarding process control programs (chemical dosage, backwash, etc.).
- ▶ **Maintenance procedures** to assess whether any aspect of the maintenance program limits the plant's capability to optimize performance.

## WHAT SHOULD A CPE TEAM LOOK LIKE?

The following should be considered in the makeup of a CPE team:

- ✓ The CPE team should have experience and expertise in all key areas of a CPE, including field training and experience using EPA's protocol (outlined in the references cited at the end of this brochure). The team must have solid knowledge of SDWA regulations, water treatment concepts, treatment plant operations, and public health priorities.
- ✓ Team members should have broad experience in operating, designing, and troubleshooting surface water treatment facilities, including evaluating facilities with diverse raw water quality and operational or design constraints.
- ✓ The team should consist of at least two professionals, qualified to assess treatment plant design, process control, operation, maintenance, and administrative practices.
- ✓ The team must be able to identify potentially controversial factors and effectively communicate them. The CPE team must be without bias toward design or capital improvements.





**LT1ESWTR DISINFECTION PROFILING EXEMPTION FORM  
TTHM/HAA5 SAMPLING**

40 C.F.R. Section 141.531 of Subpart T (the Long Term 1 Enhanced Surface Water Treatment Rule for systems serving <10,000 people) allows the regulatory agency to determine that a public water system does not need to conduct a Disinfection Profile if the system's TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively. To determine these levels, the TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature, and at the point of maximum residence time in your distribution system. **Note: THESE REQUIREMENTS ONLY APPLY TO COMMUNITY OR NON-TRANSIENT, NON-COMMUNITY SYSTEMS-IF YOUR PWS IS TRANSIENT, YOU CAN DISREGARD THIS NOTICE.**

If you wish to qualify for this exemption, please complete this form and attach copies of the laboratory test results for TTHM and HAA5. We encourage you to conduct this sampling this summer, and submit results to EPA by December 31, 2002 to allow us to determine your exemption status for conducting Disinfection Profiling. Notes:

- Please consult the enclosed list of labs in [Insert State], which have been certified for analyzing these disinfection byproducts; a certified lab should be used.
- Justification for your choice of the month of warmest water temperature should be included; such as a summary of historical measurements of water temperature, etc.
- Please explain and justify your choice of sampling location for the maximum residence time in the distribution system. This can be based upon lengths of piping, measurements of chlorine residuals showing the location with the lowest residual (maximum residence time), etc.

\*\*\*\*\*

PWS Name \_\_\_\_\_ PWS ID # \_\_\_\_\_

Date of Sampling: \_\_\_\_\_ TTHM value  
(mg/L) \_\_\_\_\_

Date of Sampling: \_\_\_\_\_ HAA5 value (mg/L) \_\_\_\_\_

Sampling Location (indicate why this is the location of maximum residence time):

Sampling Month (indicate why this month has the warmest water temperature):

Submitted by: \_\_\_\_\_  
(Operator Name)

Please return this form with supporting data (lab reports, etc.) to:

Who Ever  
XX Department of Health  
XXX State Street  
Anytown, XX XXXXX \_\_\_\_\_

## Example System Notification Letter

State Letterhead

John Smith, Supt.  
Town Water System, PWSID XXXXXXXX  
Town, ST 12345

RE: Long Term 1 Enhanced Surface Water Treatment Rule

Dear Mr. Smith:

On January 14, 2002, the Long Term 1 Enhanced Surface Water Treatment Rule was published in the Federal Register. This letter is being provided to notify you that your public water system may be affected by this rule.

The Long Term 1 Enhanced Surface Water Treatment Rule (abbreviated LT1ESWTR) applies to public water systems that meet both of the following criteria:

- ☞ Use surface water or ground water under the direct influence of surface water, and
- ☞ Serve fewer than 10,000 people

You are receiving this letter as our data shows your system uses surface water or ground water under the direct influence of surface water.

If you are an unfiltered system, you must take additional steps necessary to minimize potential for contamination by *Cryptosporidium*. If you are a filtered system using conventional, direct, or an alternative filtration technology, the rule will impact the performance and monitoring of your filtration plant beginning January 1, 2005\*, by revising turbidity limits for combined filter effluent. In addition, for systems using conventional or direct filtration, individual filter effluent monitoring will now be required. Systems using alternative filtration technologies are required to demonstrate removal and inactivation capabilities prior to January 1, 2005\* in order for this agency to establish turbidity limits. Whether filtered or not, the rule requires monitoring and reporting related to microbial inactivation (referred to as a disinfection profile), for which you may need to take specific action by July 1, 2003 [or January 1, 2004] unless optional TTHM and HAA5 monitoring is conducted and this agency has determined a profile is unnecessary.

A Quick Reference Guide and Fact Sheets for the LT1ESWTR are enclosed. The guide provides more information on this regulation and the Fact Sheet explains the requirements for disinfection byproduct profiling and benchmarking in more detail.

Please contact this office at XXX-XXXX if you have any questions about this letter or the LT1ESWTR and its affect on your system. We appreciate your attention to this request.

Sincerely,

Enclosures: LT1ESWTR Quick Reference Guide, LT1ESWTR General Fact Sheet  
LT1ESWTR Fact Sheet: Turbidity Provisions for Conventional and Direct Filtration Systems  
LT1ESWTR Fact Sheet: Turbidity Provisions for Slow Sand, Diatom. Earth and Alt. Filtration  
LT1ESWTR Fact Sheet: Disinfection Profiling and Benchmarking for LT1ESWTR  
LT1ESWTR Fact Sheet: Disinfection Profiling for the LT1ESWTR

\*The compliance date was changed from January 14, 2005 to January 1, 2005 by technical correction [69 FR 38850].

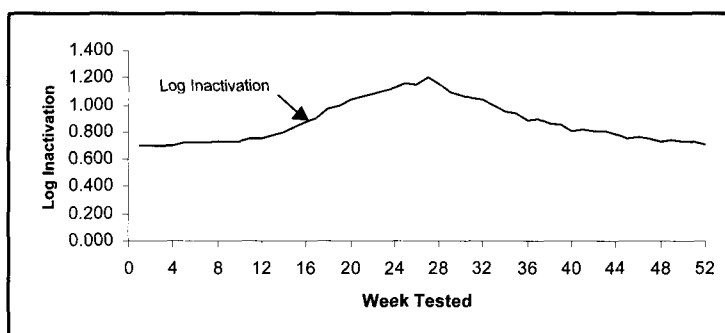


# Fact Sheet: Disinfection Profiling and Benchmarking for LT1ESWTR

**The Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) was finalized January 14, 2002. LT1ESWTR requires public water systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 people to evaluate their disinfection practices through disinfection profiling and benchmarking.**

## WHAT IS A DISINFECTION PROFILE?

A disinfection profile summarizes the effectiveness of your system's disinfection practices. It is a graphical representation of your system's level of inactivation (i.e., pathogens killed by disinfection) of *Giardia lamblia* (and viruses if your system uses chloramines, ozone or chlorine dioxide for primary disinfection) each week for a period of one year. The disinfection profile does not need to be submitted to the State. However, it must be available for review during a sanitary survey.

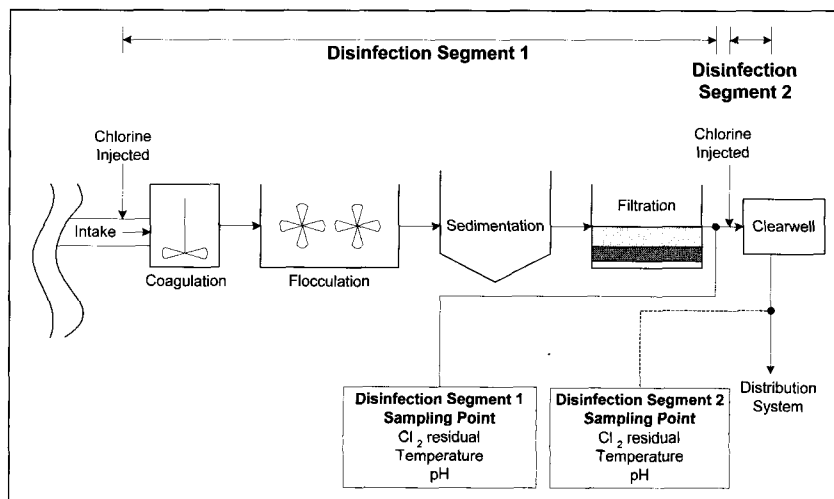


**Example Disinfection Profile**

Systems serving 500 to 9,999 people have to begin their disinfection profile by July 1, 2003. Systems serving fewer than 500 people must start their profile by January 1, 2004. **Systems are reminded that the State may waive the profile requirement if a system can satisfy certain TTHM and HAA5 criteria.**

## HOW IS A DISINFECTION PROFILE DEVELOPED?

To develop a disinfection profile, a system must start by identifying disinfection segments. A disinfection segment is a section of a treatment system beginning at one disinfectant injection or monitoring point and ending at the next disinfectant injection or monitoring point. The final disinfectant monitoring point must be located before or at the first customer.



**Example Showing a System with Two Disinfection Segments**

After a system has identified the disinfection segments, the system must collect the following data for each disinfection segment, on the same day each week, over the course of one year, during peak hourly flow, to determine log inactivation for the treatment plant:

- The residual disinfectant concentration ("C", in mg/L);
- Contact time "T" in minutes (the time the water is in contact with the disinfectant); **AND**
- At each residual disinfectant concentration sampling point:
  - Water temperature (in degrees Celsius) and
  - pH (only for systems using chlorine).

The contact time T (sometimes referred to as T10) is an estimate of the detention time within a basin, pipe or other sub-unit (such as a clearwell).

**HINT:** Before measuring or calculating T, the system should review its own permits and/or other documents, or contact the State to see if T has already been determined (e.g., historical records or a tracer study). If T is already known, Steps 3 through 7 in the table below (used to calculate T) can be skipped.

Use the following 12-step approach to calculate log inactivation for the treatment plant.

### 12 Suggested Steps to Calculating Weekly *Giardia*\* Log Inactivation

Step	Action/Activity/Task	Step	Action/Activity/Task
1	Determine the peak hourly flow in gallons/minute.	7	Calculate the contact time of the disinfectant in the sub-unit (Contact Time "T" = TDT x BF).
2	Measure the residual disinfectant concentration ("C", in mg/L), temperature (in °C), and pH (if chlorine is used) during peak hourly flow at the same sampling point and time.	8	Determine $CT_{calc}$ . Where $CT_{calc} = C \times T$ [C is residual disinfectant concentration, measured in Step 2 (in mg/L), and T is contact time, calculated in Step 7 (in minutes)].
3	Measure the physical dimensions of the sub-unit (e.g., clearwell or pipe) <ul style="list-style-type: none"> <li>• Measure the inner diameter, which will be used to determine the volume of water in the sub-unit.</li> <li>• Measure the minimum operating depth in the sub-unit to obtain a conservative estimate of water depth in the sub-unit.</li> </ul>	9	Locate CT table for 3-log <i>Giardia</i> inactivation based on water temperature, pH, and residual disinfectant concentration. See Appendix B in the LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual for the CT tables.
4	Calculate the volume of the water (in ft <sup>3</sup> ) in the sub-unit based on measurements in Step 3. <ul style="list-style-type: none"> <li>• See Appendix F in the LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual for volume equations.</li> </ul>	10	Obtain $CT_{99.9}$ value(s) from the table in Step 9.
5	Calculate the Theoretical Detention Time (TDT) <ul style="list-style-type: none"> <li>• <math>TDT = V / Q</math>. Where V = volume and Q = peak hourly flow. Remember to work in common units (7.48 gallons = 1 cubic foot).</li> </ul>	11	Where applicable, repeat steps 1 through 11 for each disinfection segment.
6	Determine the baffling factor (BF) for the sub-unit [see the LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual (Chapter 3 and Table 3-2) for information on baffling factors or check with your State].	12	For systems with one disinfection segment calculate log inactivation = $3 \times CT_{calc} / CT_{99.9}$ . For systems with two or more disinfection segments, calculate log inactivation = $3 \times \Sigma CT_{calc} / CT_{99.9}$ where $\Sigma CT_{calc} / CT_{99.9}$ = the sum of the inactivation ratios for all disinfection segments.

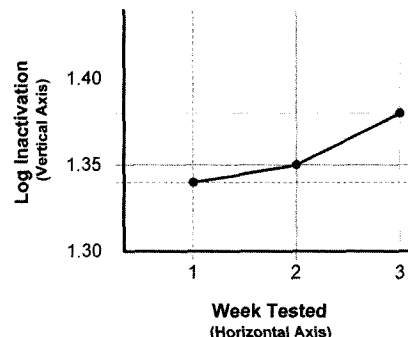
\*Systems using chloramines, ozone, or chlorine dioxide, as the primary disinfectant must also calculate virus log inactivation. For more information on calculating virus log inactivation see the LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual.

Operational data are collected during peak hourly flow from all disinfection segments using analytical methods specified in 40 CFR Part § 141.74(a).

An electronic spreadsheet to assist systems in calculating log inactivation values and the disinfection profile and benchmark is posted on the EPA website at <http://www.epa.gov/safewater/mdbp/lt1eswtr.html>.

### WHAT IS THE NEXT STEP?

To complete the disinfection profile, plot the weekly log inactivation values calculated over the course of one year. The log inactivations are plotted along the vertical axis with the corresponding weeks of the year plotted along the horizontal axis as shown at right. After the points are plotted, lines are drawn to connect the points in order by the week tested.



### WHAT IS A DISINFECTION BENCHMARK?

A disinfection benchmark must be determined by your system if:

- You had to develop a disinfection profile **AND**
- You are considering making a significant change to your disinfection practices.

Your system must complete the disinfection profile and benchmark and consult with the State before making a significant change to your disinfection practices.

The disinfection benchmark is a water system's lowest monthly average log inactivation, and is determined using the data collected weekly for the disinfection profile. To determine the benchmark, the system must first calculate the average log inactivation for each calendar month of the disinfection profile. The monthly average log inactivation is calculated by adding the weekly log inactivation values for a particular month and dividing that value by the number of weekly values for that particular month. The month with the lowest monthly average log inactivation is the benchmark.

### WHAT MUST A SYSTEM DO IF CONSIDERING A SIGNIFICANT CHANGE TO DISINFECTION PRACTICES?

A significant change is defined as: (a) Changes to the point of disinfection; (b) Changes to the disinfectant(s) used in the treatment plant; (c) Changes to the disinfection process; or (d) Any other modification identified by the State.

If you are considering a significant change to disinfection practices your system must consult with the State for approval and submit the following information to the State:

- A description of the proposed change;
- The disinfection profile and benchmark;
- An analysis of how the proposed change will affect the current levels of disinfection; and
- Any additional information requested by the State.

### WHERE CAN I GET MORE INFORMATION ON DISINFECTION PROFILING AND BENCHMARKING?

- **LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual** [EPA 816-R-03-004]— This manual will provide information on the disinfection profiling and benchmarking process. Detailed explanations and examples will be presented to assist system operators with performing the disinfection profiling and benchmarking analyses.

For general information or to obtain the document listed above, contact the Safe Drinking Water Hotline at 1-800-426-4791 or visit <http://www.epa.gov/safewater/mdbp/lt1eswtr.html>

# PLEASE LOOK INSIDE

**Your water system is affected by the requirements of the new Long Term 1 Enhanced Surface Water Treatment Rule.**

## **Appendix D**

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### **Flowcharts of Rule Requirements**

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## Implementation Flowchart Index

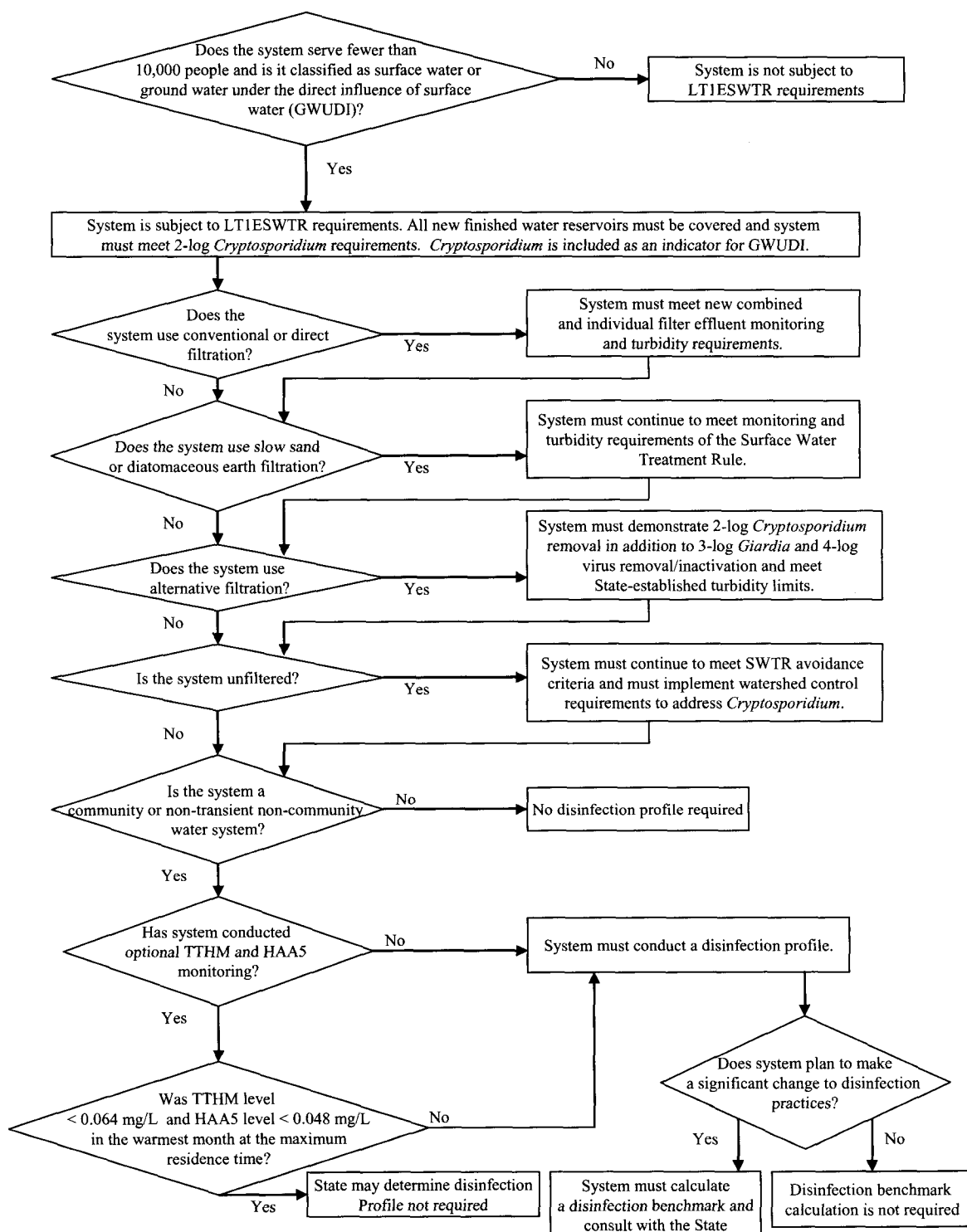
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### LT1ESWTR

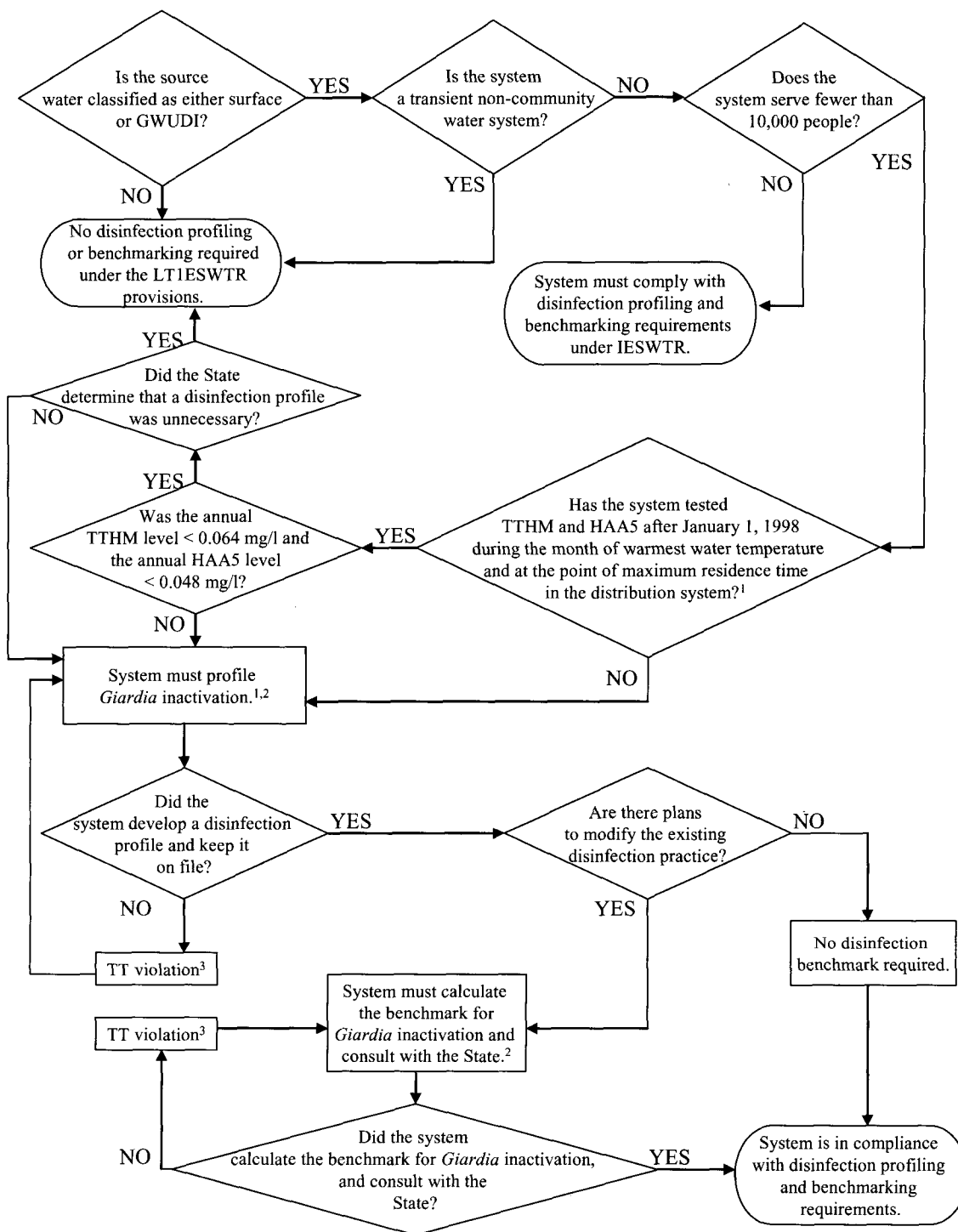
The following flowcharts are provided as a guide to the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) based on the Federal requirements. They do not include all the exceptions to the LT1ESWTR that may apply. In addition, since State requirements may be more stringent than the Federal requirements, systems should consult with their States regarding State-specific requirements.

- General Requirements of the LT1ESWTR
- LT1ESWTR Disinfection Profile and Benchmark Decision Tree
- Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Conventional or Direct Filtration
- Individual Filter Effluent (IFE) Turbidity Provisions of the LT1ESWTR For Systems Using Conventional or Direct Filtration
- *Part 1: IFE Monitoring Provisions*
- *Part 2: IFE Turbidity Exceedance Follow-Up Actions*
  - Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Slow Sand or Diatomaceous Earth Filtration
  - Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Alternative Filtration Technologies

## General Requirements of the LT1ESWTR

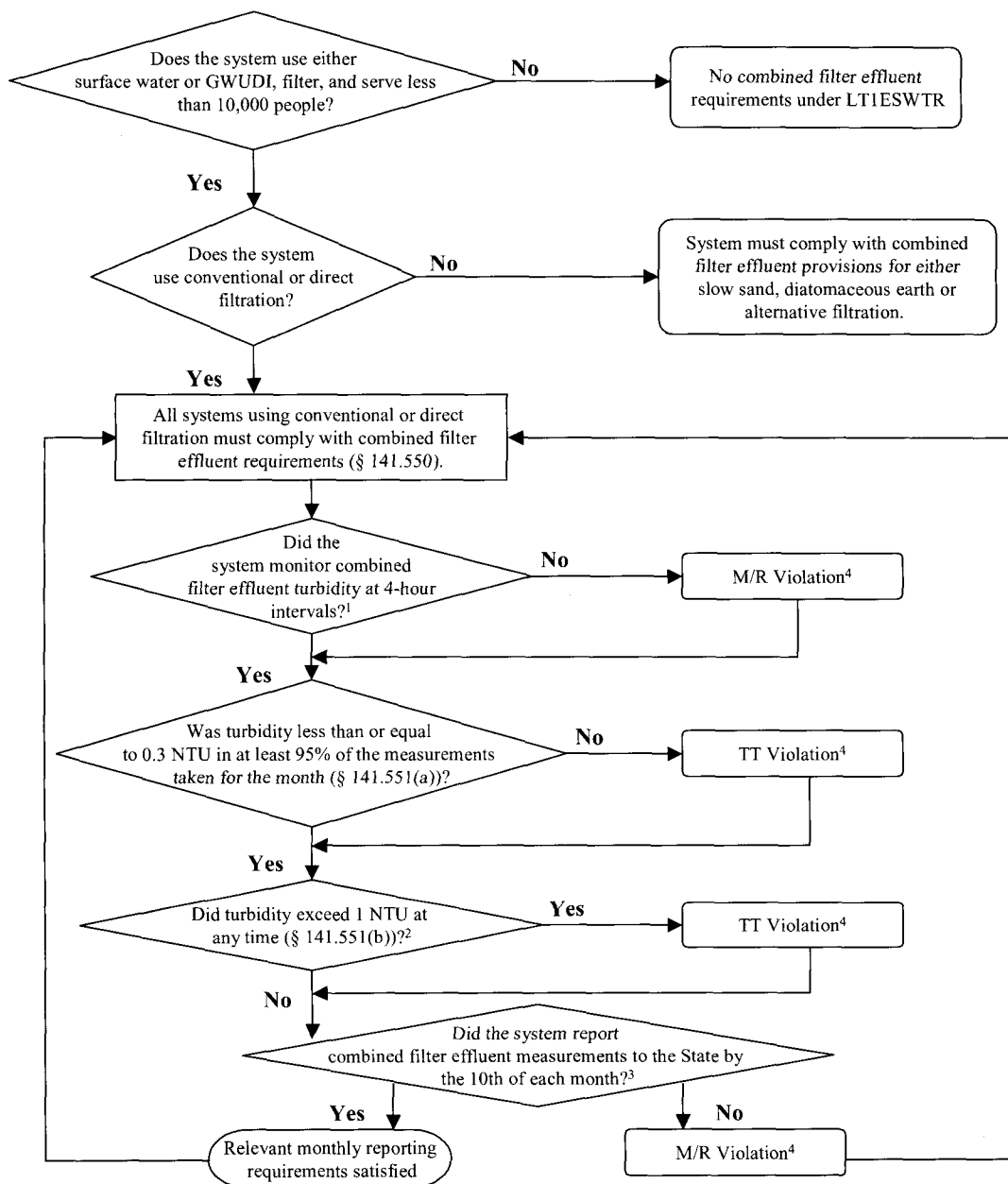


## LT1ESWTR Disinfection Profile and Benchmark Decision Tree



1. If using chlorine dioxide, ozone, or chloramines as a primary disinfectant, the system must also profile and/or benchmark viral inactivation.
2. Disinfection profile must be kept on file for State to review during sanitary survey.
3. Tier 2 violation. Public notification is required within 30 days.

## Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Conventional or Direct Filtration



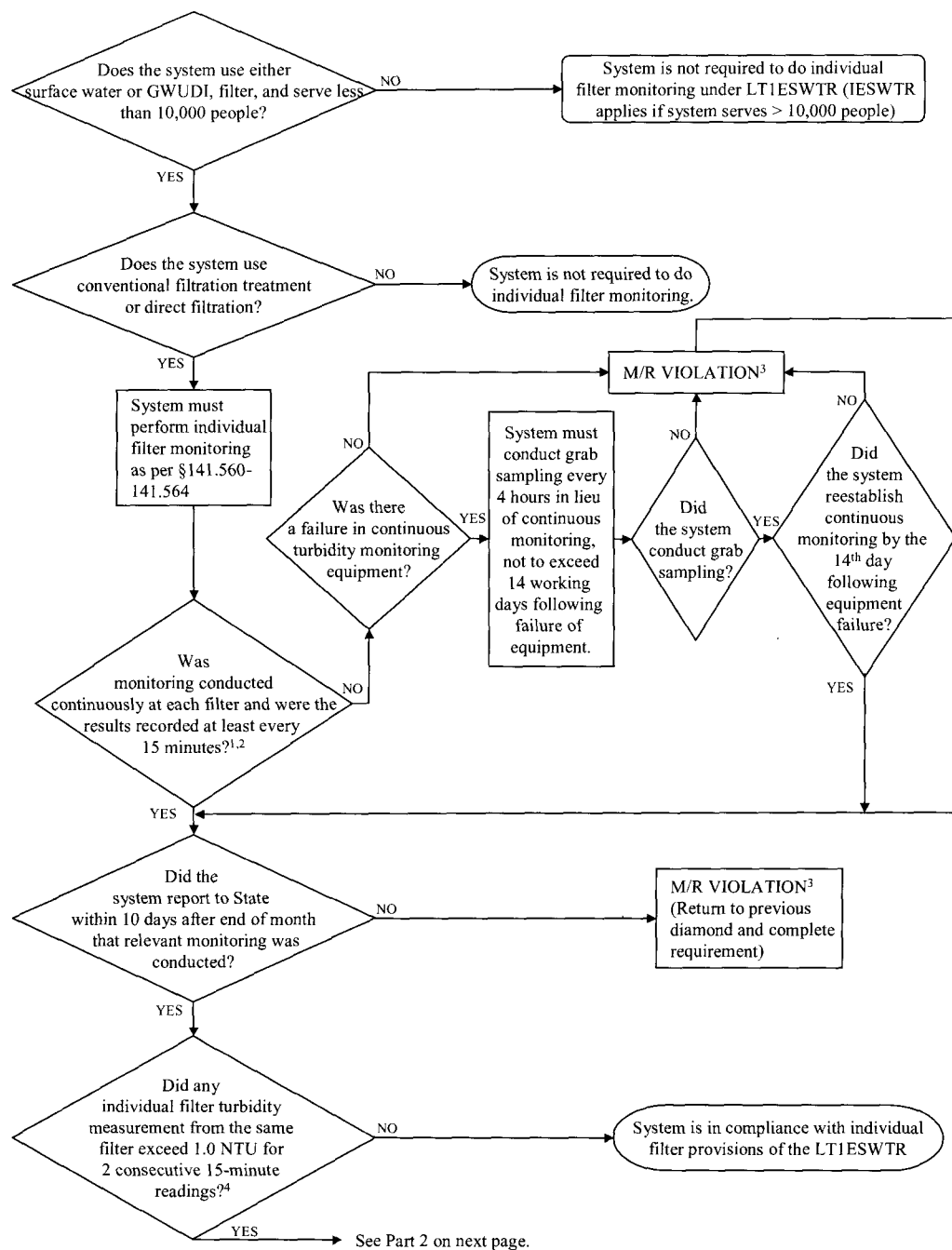
1. As per the SWTR, 40 CFR Section 141.74 (c)(1), the State may reduce this monitoring frequency for systems serving 500 or fewer people to one sample per day if the State determines that less frequent monitoring is sufficient to indicate effective filtration performance.

2. System must consult with the Primacy Agency no later than 24 hours after learning of the violation in accordance with the Public Notification Rule (40 CFR Section 141.203(b)(3)).

3. Systems must report to the State the total number of combined filter effluent turbidity measurements taken during the previous month, the number and percentage of turbidity measurements that were less than or equal to 0.3 NTU, and date and value of any turbidity measurements exceeding 1 NTU (40 CFR Section 141.570(a)).

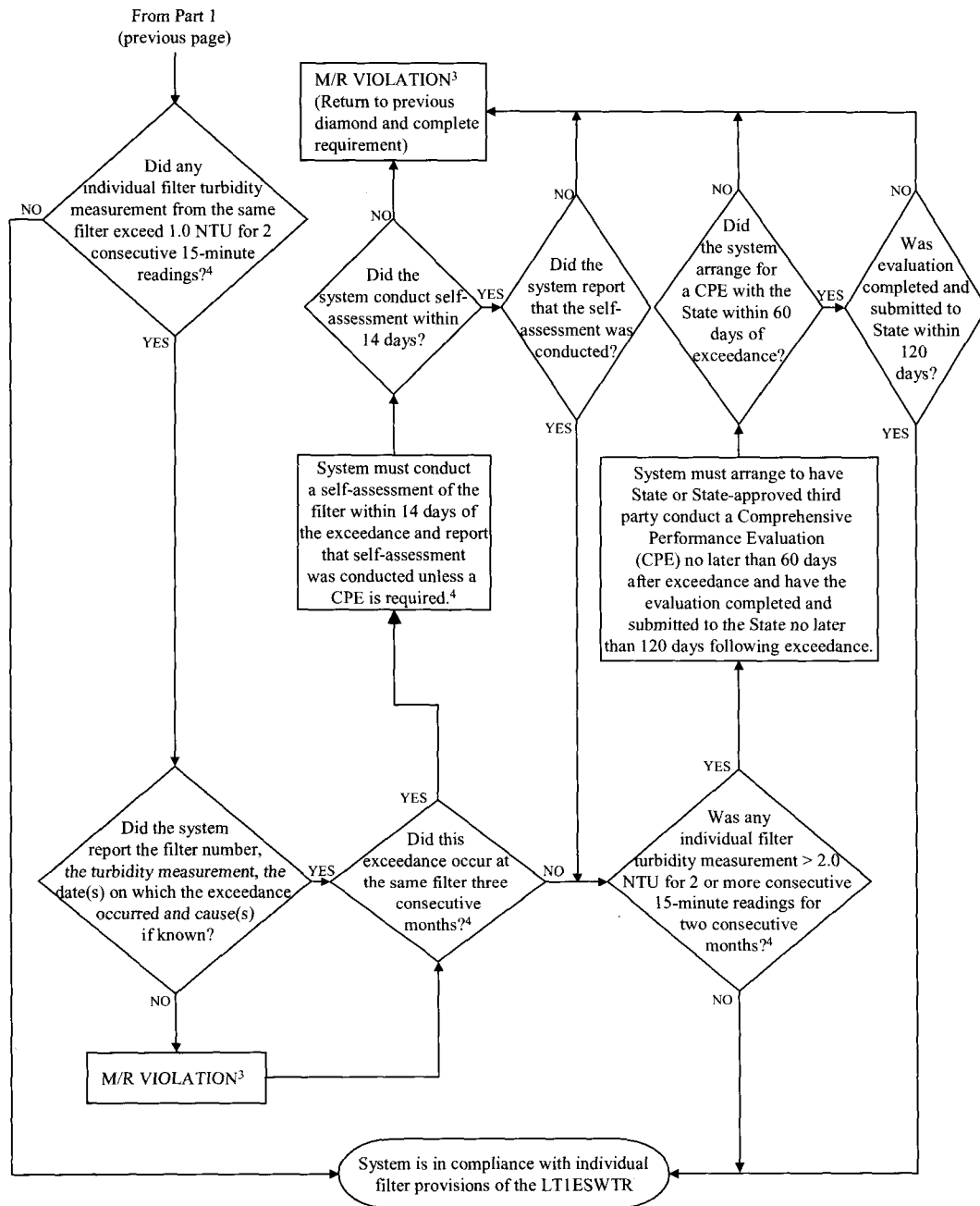
4. Public notification is required per Appendix A to Subpart Q of 40 CFR Section 141.

# Individual Filter Effluent (IFE) Turbidity Provisions of the LT1ESWTR For Systems Using Conventional or Direct Filtration Part 1: IFE Monitoring Provisions



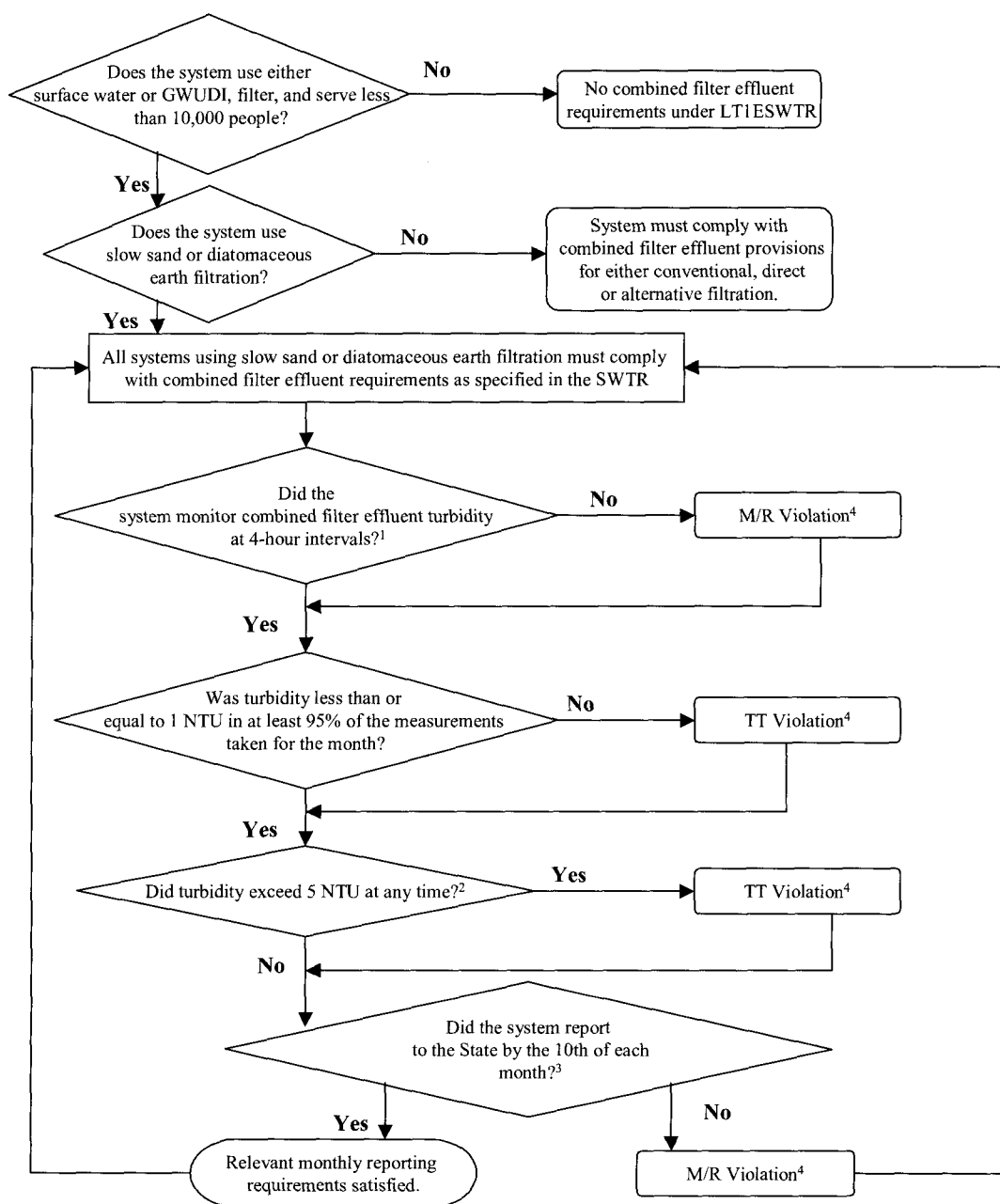
1. Systems with two or fewer filters may conduct continuous monitoring of combined filter effluent in lieu of individual filter effluent turbidity monitoring.
2. Monitoring must be conducted using an approved method in 40 CFR Section 141.74(a). Calibration of turbidimeters must be conducted using procedures specified by the manufacturer.
3. System has an M/R violation until the relevant requirement is completed (such as conducting a filter self-assessment). Public notification is required per Appendix A to Subpart Q of 40 CFR Section 141.
4. For systems with two or fewer filters, combined filter effluent can be substituted for individual filter effluent (see footnote 1). If a filter self-assessment is triggered, the self-assessment must be conducted on both filters.

# Individual Filter Effluent (IFE) Turbidity Provisions of the LT1ESWTR For Systems Using Conventional or Direct Filtration Part 2: IFE Turbidity Exceedance Follow-Up Actions



1. Systems with two or fewer filters may conduct continuous monitoring of combined filter effluent in lieu of individual filter effluent turbidity monitoring.
2. Monitoring must be conducted using an approved method in 40 CFR Section 141.74(a). Calibration of turbidimeters must be conducted using procedures specified by the manufacturer.
3. System has an M/R violation until the relevant requirement is completed (such as conducting a filter self-assessment). Public notification is required per Appendix A to Subpart Q of 40 CFR Section 141.
4. For systems with two or fewer filters, combined filter effluent can be substituted for individual filter effluent (see footnote 1). If a filter self-assessment is triggered, the self-assessment must be conducted on both filters.

## Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Slow Sand or Diatomaceous Earth Filtration



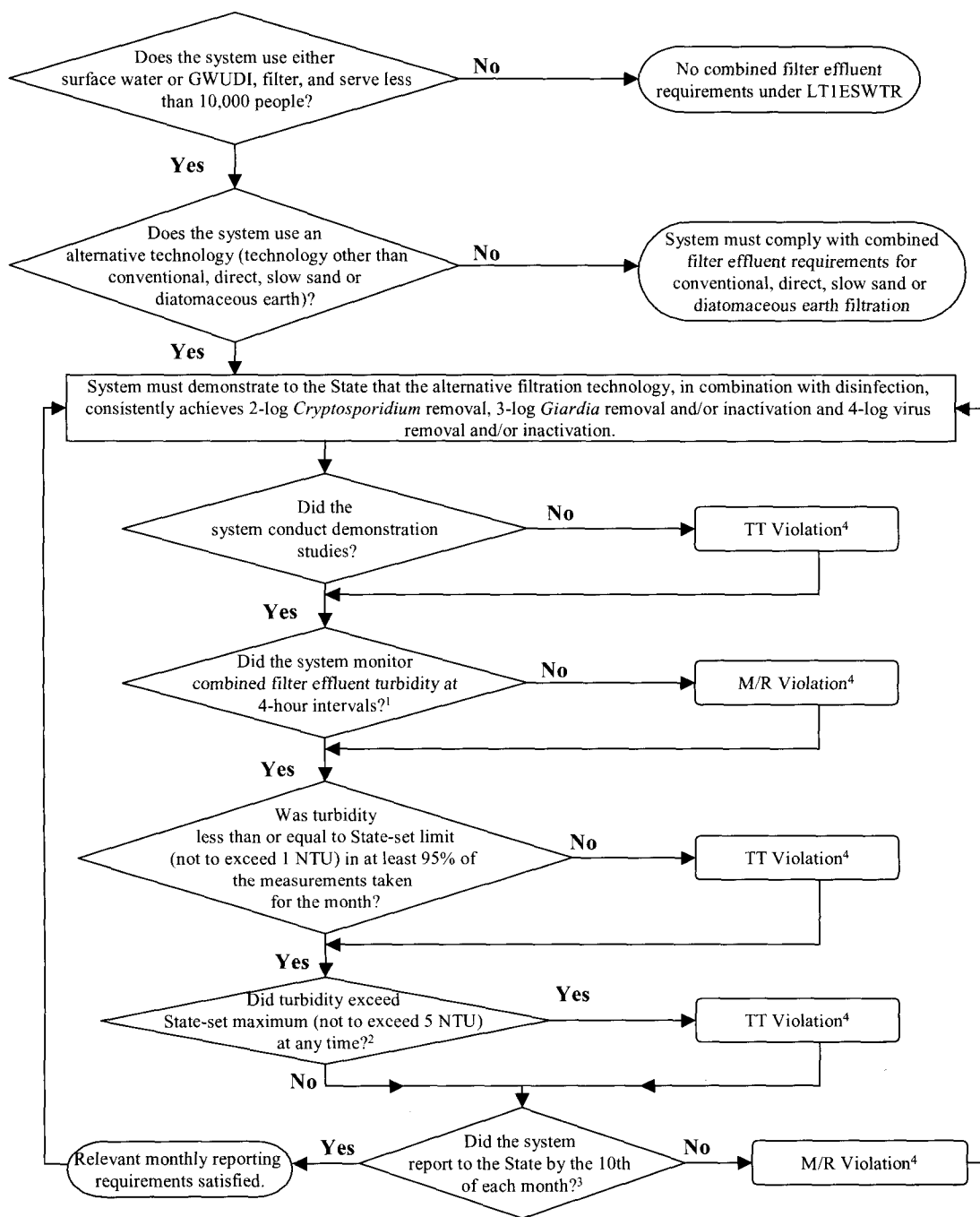
1. As per the SWTR, 40 CFR Section 141.74 (c)(1), the State may reduce this monitoring frequency to one sample per day for any systems using slow sand filtration or for systems using diatomaceous earth filtration serving 500 or fewer people if the State determines that less frequent monitoring is sufficient to indicate effective filtration performance.

2. System must consult with the Primacy Agency no later than 24 hours after learning of the violation in accordance with the Public Notification Rule (40 CFR Section 141.203(b)(3)).

3. The total number of turbidity measurements taken during the previous month, the number and percentage of turbidity measurements that were less than or equal to 1 NTU, and date and value of any turbidity measurements exceeding 5 NTU.

4. Public notification is required per Appendix A to Subpart Q of 40 CFR Section 141.

## Combined Filter Effluent (CFE) Turbidity Provisions of the LT1ESWTR For Systems Using Alternative Filtration Technologies



1. As per the SWTR, 40 CFR Section 141.74 (c)(1), the State may reduce this frequency to one sample per day if the State determines that less frequent monitoring is sufficient to indicate effective filtration performance.

2. System must consult the Primacy Agency no later than 24 hours after learning of the violation in accordance with the Public Notification Rule (40 CFR Section 141.203(b)(3)).

3. The total number of turbidity measurements taken during the previous month, the number and percentage of combined filter effluent turbidity measurements that were less than or equal to the State-set limit (not to exceed 1 NTU), and date and value of any combined filter effluent turbidity measurements exceeding the State-set maximum value (not to exceed 5 NTU).

4. Public notification is required per Appendix A to Subpart Q of 40 CFR Section 141.



## **Appendix E**

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# **LT1ESWTR Data Entry Instructions with Examples**

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## Acronyms, Abbreviations and Definitions

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"C"	Residual Disinfectant Concentration
CFE	Combined Filter Effluent
CFR	Code of Federal Regulations
CPE	Comprehensive Performance Evaluation
CT	Residual Disinfectant Concentration in mg/L "C" x Disinfectant Contact Time in min "T"
CWS	Community Water System
DBP	Disinfection Byproducts
DBPP	Disinfection Byproduct Precursors
DBPR	Disinfectants/Disinfection Byproducts Rule
DTF	Data Transfer File
EPA	Environmental Protection Agency
GWUDI	Ground Water Under the Direct Influence of Surface Water
HAA5	Haloacetic acids (Monochloroacetic, Dichloroacetic, Trichloroacetic, Monobromoacetic and Dibromoacetic Acids)
LT1ESWTR	Long Term 1 Enhanced Surface Water Treatment Rule
IFE	Individual Filter Effluent
MCL	Maximum Contaminant Level
M-DBP	Microbial and Disinfectants/Disinfection Byproducts
M&R	Monitoring and Reporting
MRT	Maximum Residence Time
NTU	Nephelometric Turbidity Unit
PWS	Public Water System
RTC	Return to Compliance
SCADA	Supervisory Control And Data Acquisition (System)
SDWA	Safe Drinking Water Act, or "The Act," as amended 1996
SDWIS/FED	Safe Drinking Water Information System/Federal Government
Stage 1 DBPR	Stage 1 Disinfectants and Disinfection Byproducts Rule
Subpart H	PWS using surface water or ground water under the direct influence of surface water
SWTR	Surface Water Treatment Rule
"T"	Disinfectant Contact Time
TT	Treatment Technique
TTHM	Total Trihalomethanes
USEPA	United States Environmental Protection Agency
WSF	Water System Facilities

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# **Section 1**

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## **Introduction**

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# Introduction

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## 1.1 What is the purpose of this Guidance Document?

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On January 14, 2002, the USEPA published in the *Federal Register* the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). This document is intended to provide guidance to Primacy Agencies regarding the monitoring and reporting requirements of the LT1ESWTR. It discusses, through the use of typical water system examples, system inventory and reporting required under the rule and the Primacy Agency's reporting responsibilities to EPA's database, the Safe Drinking Water Information System/Federal Government (SDWIS/FED). Using this reference, Primacy Agencies will be able to identify the situations that define noncompliance under the LT1ESWTR, and they will be better prepared to identify violations and report appropriate noncompliance information to EPA. Throughout this document, the term Primacy Agency will be used to refer to a State, Tribal Government, or EPA Region with primary enforcement authority for the SDWA.

## 1.2 How is this Document Organized?

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The document includes an introduction in Section 1 and three additional sections as follows: Section 2 discusses inventory reporting requirements for the rule, as well as violation determination and when, where and what to report; Section 3 provides basic SDWIS reporting information regarding the LT1ESWTR; Section 4 describes additional resources for information on the LT1ESWTR. Section 2 is divided into four subsections that discuss system inventory reporting, treatment technique (TT) violations, monitoring and reporting (M&R) violations and recordkeeping violations. Each violation type subsection uses example facility descriptions and the appropriate SDWIS/FED violation type codes to illustrate the typical violations that may be encountered during routine operations of water systems. Example DTF (data transfer file) transactions that Primacy Agencies would report to EPA, representing the information or violations are also included.

## 1.3 What is the benefit of the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR)?

---

The LT1ESWTR is part of a series of rules, the "Microbial and Disinfection Byproducts Cluster" (M-DBP Cluster) that are intended to control microbial pathogens while minimizing the public health risks of disinfectants and disinfection byproducts (DBPs). The LT1ESWTR is designed to address the health risks from microbial contaminants without significantly increasing the potential risks from chemical contaminants.

The LT1ESWTR will increase the level of protection from exposure to *Cryptosporidium* and other pathogens for drinking water systems serving fewer than 10,000 persons.

## 1.4 What is the General Applicability of the LT1ESWTR?

---

The LT1ESWTR applies to public water systems (PWSs) that use surface water or ground water under the direct influence of surface water (GWUDI), in whole or in part, and serve fewer than 10,000 people. (The term subpart H systems is used to refer to PWSs that use surface water or ground water under the direct influence of surface water.)

As mentioned previously, any system that serves fewer than 10,000 people and uses a surface water or GWUDI source must comply with the requirements of the LT1ESWTR. Systems that use these sources

seasonally or for emergency purposes are required to comply with the LT1ESWTR during any time that the surface water or GWUDI source is used.

A system that purchases water from a subpart H system that must comply with the provisions of the LT1ESWTR will be provided with public notice of any violations of the LT1ESWTR by the seller, and must then provide that notice to its consumers according to the provisions of 40 CFR141.201. Since the provisions of the LT1ESWTR generally apply to subpart H system treatment plants, systems that purchase water generally do not have direct responsibilities under the LT1ESWTR unless the purchased water is untreated.

Systems are required to comply with the turbidity and monitoring requirements no later than January 1, 2005. In addition, PWS are required to develop an evaluation of their existing disinfection practice (a *disinfection profile*) beginning no later than July 1, 2003 for systems serving 500 to 9,999 people and by January 1, 2004 for systems serving fewer than 500 people. Systems must cover any finished water reservoirs on which construction is begun on or after March 15, 2002. For more information on the LT1ESWTR, please contact the Safe Drinking Water Hotline at 1-800-426-4791 or visit EPA's website at [www.epa.gov/safewater/mdbp/lt1eswtr.html](http://www.epa.gov/safewater/mdbp/lt1eswtr.html).

## **1.5 What is SDWIS and How Does it Work?**

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SDWIS/FED (Safe Drinking Water Information System/Federal version) is an EPA national database storing routine information about the Nation's drinking water.

Primacy Agencies supervise the drinking water systems within their jurisdictions to implement and enforce the Safe Drinking Water Act (SDWA). The SDWA requires reporting drinking water information periodically to EPA; this information is maintained in SDWIS/FED.

Primacy Agencies report the following information to EPA:

1. Basic information on each water system, including: name, PWS-ID number, number of people served, type of system (year-round or seasonal), and source of water (ground water or surface water).
2. Violation information for each water system: whether it has failed to follow established monitoring and reporting schedules, failed to comply with mandated treatment techniques, or violated any Maximum Contaminant Levels (MCLs).
3. Enforcement information: what actions Primacy Agencies have taken to ensure that drinking water systems return to compliance if they are in violation of a drinking water regulation.
4. Monitoring results for unregulated contaminants and for regulated contaminants in certain instances when the monitoring results exceed the MCL.

EPA uses this information to determine if and when it needs to take action against non-compliant systems, oversee Primacy Agency drinking water programs, track contaminant levels, respond to public inquiries, and prepare national reports. EPA also uses this information to evaluate the effectiveness of its programs and regulations, and to determine whether new regulations are needed to further protect public health. A subset of the data is posted to EPA's Envirofacts web page for public access.

## **1.6 How is this Document Used?**

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Primacy Agency personnel should evaluate each system for its need to comply with the provisions of the LT1ESWTR. For those systems required to comply with the LT1ESWTR, this document provides information to assist Primacy Agency evaluation of compliance for each rule requirement (i.e. required

system monitoring, system reporting to the Primacy Agency, system public notice, and reporting by the Primacy Agency to SDWIS/FED). The descriptions of the example systems in this document include example monitoring data and the calculations and data comparisons necessary to determine compliance with the requirements of the LT1ESWTR. Example SDWIS/FED data transfer file (DTF) tables show how the data describing violations of the LT1ESWTR are to be encoded for entry into the SDWIS/FED system. In addition, the examples provide guidance regarding public notification requirements consistent with EPA's Public Notification Rule. This guidance document does not offer any examples of public notification associated with water system violations of these requirements. Users should refer to the documents, *Final State Implementation Guidance for the Public Notification Rule* (EPA 816-R-01-010) or the *Implementation Guidance for the Long Term 1 Enhanced Surface Water Treatment Rule*, for additional information on these requirements.

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## **Section 2**

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# **Inventory and Violations Reporting**

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# Inventory and Violations Reporting

## 2.1 Inventory Reporting Requirements

Primacy Agencies are required to identify and report all sources of drinking water to EPA using SDWIS/FED. Table 2-1 below identifies the types of sources and the code values for reporting sources of water. Further, for each source of water, an identification of the type of water the source provides is also required.

Table 2-1. SDWIS/FED Water Sources and Codes		
Type Code (C0405)	Description	Permissible Water Type Codes (C0407)
IN	Intake	Surface Water (SW)
WL	Well	Ground Water (GW), GWUDI (GU)
RC	Roof Catchment	Ground Water (GW)
SP	Spring	Surface (SW), ground (GW) or GWUDI (GU)
IG	Infiltration Gallery	GWUDI (GU) or Surface (SW)
RS	Reservoir	Surface (SW)
NP	Non-piped	Surface (SW), ground (GW) or GWUDI (GU)
CC	Consecutive Connection	Surface (SW), ground (GW) or GWUDI (GU)

All treatment that is applied to sources of drinking water must also be reported by Primacy Agencies. If a source of water is not treated, Primacy Agencies must affirm that as well. Treatment is reported via a Treatment Plant facility record. Finally, the Primacy Agency must report a linkage between the source of a water facility and treatment plant facility.

The following rules apply to source, treatment plant and treatment reporting:

1. All treatment records will be posted to the SDWIS/FED database connected to treatment plant records, regardless of whether the treatment is occurring at a large treatment plant or a small building in which a disinfectant is added.
2. EPA is eliminating reporting flexibility in reporting treatment data by eliminating the “generated treatment plants.” Primacy Agencies may only report the treatment for treatment plant records.
3. Primacy Agencies must provide information to allow SDWIS/FED to link the source records to the treatment plant records.
4. For consecutive connections, EPA is aware of the complex relationships that may exist between water systems and their treatment. For the purchasing water system, EPA will only require reporting whether the seller is treating the source other than by filtration, filtering the source, or not providing any treatment. Any buyer treatment must be reported as discussed above. Sellers must report all treatment performed on their sources of water.
5. Explicit reporting of “no treatment” for a source is required.

The following discussion identifies the method to be used to meet the SDWIS/FED reporting requirement for the linkage between sources of water and treatment plants:

- Add a Source/Entity (SE) Flow Form (B3).
- Require the PWS ID for Qualifier #1.
- Require stable and unchanging Source/Entity ID (i.e., WSF State Assigned ID) of the source of water for Qualifier #2, as well as for the treatment plant to which the source is flowing.
- Use the data element (A5000) for use in conjunction with Form B3.
- Link one source to one or more treatment plants.
- Prohibit linkage between a source and itself, or a treatment plant and itself.
- Prohibit linkage between two sources.
- Prohibit linkage between two treatment plants.
- Prohibit duplicate links between a specific source - treatment plant combination.
- Restrict links to sources of water and treatment plants of the same PWS (i.e., inter-PWS linkages will not be allowed).

In summary, the Primacy Agency must report all sources of water, all treatment, assign the treatment to a treatment plant record and link the source records to the treatment plant records. With regard to SWTR reporting, they must also inform EPA of decisions made on unfiltered sources of water.

The example system below consists of four sources and two treatment plants. What follows is an example of the system information provided, data elements needed and the DTF transactions that need to be created and reported to represent sources, treatment plants, treatment and linkages in the example water system. The water system is responsible for reporting the data to the Primacy Agency, which in turn reports to SDWIS/ FED.

SDWIS/FED uses Form ID's B1, B2 and B3 for inventory reporting . Please see Section 3 for a description of Form ID's used in SDWIS/FED reporting under the LT1ESWTR.

Example #1: Reporting Water System Inventory

PWS ID: AZ1234567

The Well #1, SE ID: 00001, and Well #2, SE ID: 00002, are permanent ground water and ground water under the direct influence of surface water sources, respectively, that are treated at Treatment Plant #1, SE ID: 00005. The C River source, SE ID: 00004, is a permanent surface water source treated at Treatment Plant #2, SE ID: 00006. In addition, the example water system purchases water from the Apple Water System, SE ID: 00003. The Apple Water System is a permanent surface water source and is filtered by the seller prior to delivery to the example water system. Water purchased from the Apple Water System is sent directly to the example system's distribution system with no further treatment. The only treatment provided at Treatment Plant #1 is chlorination. The treatment processes at Treatment Plant #2 include oxidation, coagulation, rapid mix, flocculation, sedimentation, rapid sand filtration, and chlorination. Exhibits 2.1 - 2.7 illustrate the data elements needed and the DTF transactions that need to be entered into SDWIS/FED.

## Exhibit 2.1 System Information, Data Elements and DTFs for Source 00001

### System Information:

SE ID:	00001 ( <i>Qualifier 2</i> )
SE Name:	Well #1
SE Record Type:	Well
SE Code:	Groundwater

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	AZ1234567 ( <i>Qualifier 1</i> )
C0403	Name	Well #1
C0405	Type Code	WL ( <i>Well Source</i> )
C0407	Water Type	GW ( <i>Ground Water</i> )
C0409	Availability	P <i>Permanent</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00001		I	C0403	WELL #1		
B1	AZ1234567	00001		I	C0405	WL		
B1	AZ1234567	00001		I	C0407	GW		
B1	AZ1234567	00001		I	C0409	P		

## Exhibit 2.2 System Information, Data Elements and DTFs for Source 00002

### System Information:

SE ID:	00002 ( <i>Qualifier 2</i> )
SE Name:	Well #2
SE Record Type:	Well
SE Code:	Groundwater UDI
SE Availability:	Permanent

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	AZ1234567 ( <i>Qualifier 1</i> )
C0403	Name	Well #2
C0405	Type Code	WL ( <i>Well Source</i> )
C0407	Water Type	GU ( <i>Ground Water UDI</i> )
C0409	Availability	P <i>Permanent</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00002		I	C0403	WELL #2		
B1	AZ1234567	00002		I	C0405	WL		
B1	AZ1234567	00002		I	C0407	GW		
B1	AZ1234567	00002		I	C0409	P		

## Exhibit 2.3 System Information, Data Elements and DTFs for Source 00003

### System Information:

SE ID:	00003 ( <i>Qualifier 2</i> )
SE Name:	Apple Water System (AZ7654321)
SE Record Type:	Consecutive Connection
SE Code:	Surface
SE Availability:	Permanent
Buyer Treatment:	Not Treated
Seller Treatment:	Filtered

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	AZ1234567 ( <i>Qualifier 1</i> )
C0403	Name	Apple Water
C0405	Type Code	CC ( <i>Consecutive Connection</i> )
C0407	Water Type	SW ( <i>Surface Water</i> )
C0409	Availability	P ( <i>Permanent</i> )
C0411	Seller ID	AZ7654321
C0433	Buyer Treatment	N ( <i>Not Treated</i> )
C0435	Seller Treatment	F ( <i>Filtered</i> )

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00003		I	C0403	APPLE WATER		
B1	AZ1234567	00003		I	C0405	CC		
B1	AZ1234567	00003		I	C0407	SW		
B1	AZ1234567	00003		I	C0409	P		
B1	AZ1234567	00003		I	C0411	AZ7654321		
B1	AZ1234567	00003		I	C0433	N		
B1	AZ1234567	00003		I	0435	F		

## Exhibit 2.4 System Information, Data Elements and DTFs for Source 00004

### System Information:

SE ID: 00004 (*Qualifier 2*)  
 SE Name: C River  
 SE Record Type: Intake  
 SE Code: Surface  
 SE Availability: Permanent

### Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	AZ1234567 ( <i>Qualifier 1</i> )
C0403	Name	C River
C0405	Type Code	IN ( <i>Surface Water Intake</i> )
C0407	Water Type	SW ( <i>Surface Water</i> )
C0409	Availability	P <i>Permanent</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00004		I	C0403	C RIVER		
B1	AZ1234567	00004		I	C0405	IN		
B1	AZ1234567	00004		I	C0407	SW		
B1	AZ1234567	00004		I	C0409	P		

## Exhibit 2.5 System Information, Data Elements and DTFs for Treatment Plant #1

### System Information:

SE ID: 00005 (*Qualifier 2*)  
 SE Name: Treatment Plant #1  
 SE Record Type: Treatment Plant  
 Treatment ID: 00001 (*Qualifier 3*)  
 Treatment Process: Chlorination

### Data Elements:

Number	Name	Value or Comment
C0403	Name	Treatment Plant #1
C0405	Type Code	TP ( <i>Treatment Plant</i> )
C0483	Treatment Objective	D ( <i>Disinfection</i> )
C0485	Treatment Process	401 ( <i>Chlorination</i> )

Treatment ID 00001 is entered in Qualifier #3

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00005		I	C0403	TREATMENT PLANT #1		
B1	AZ1234567	00005		I	C0405	TP		
B2	AZ1234567	00005	00001	I	C0483	D		
B2	AZ1234567	00005	00001	I	C0485	401		

## Exhibit 2.6a System Information, Data Elements for Treatment Plant #2

### System Information:

SE ID:	00006 ( <i>Qualifier 2</i> )
SE Name	Treatment Plant #2
SE Record Type:	Treatment Plant
Treatment ID:	00001 ( <i>Qualifier 3</i> )
Treatment Process:	Oxidation
Treatment ID:	00002 ( <i>Qualifier 3</i> )
Treatment Process:	Coagulation
Treatment ID:	00003 ( <i>Qualifier 3</i> )
Treatment Process:	Rapid Mix
Treatment ID:	00004 ( <i>Qualifier 3</i> )
Treatment Process:	Flocculation
Treatment ID:	00005 ( <i>Qualifier 3</i> )
Treatment Process:	Sedimentation
Treatment ID:	00006 ( <i>Qualifier 3</i> )
Treatment Process:	Filtration, Rapid Sand
Treatment ID:	00007 ( <i>Qualifier 3</i> )
Treatment Process:	Chlorine

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0403	Name	Treatment Plant #2
C0405	Type Code	TP ( <i>Treatment Plant</i> )
C0483	Treatment Objective	O ( <i>Organics Removal</i> )
C0485	Treatment Process	543 ( <i>Ozonation, Pre</i> )
C0483	Treatment Objective	P ( <i>Particulate Removal</i> )
C0485	Treatment Process	240 ( <i>Coagulation</i> )
C0483	Treatment Objective	P ( <i>Particulate Removal</i> )
C0485	Treatment Process	600 ( <i>Rapid Mix</i> )
C0483	Treatment Objective	P ( <i>Particulate Removal</i> )
C0485	Treatment Process	360 ( <i>Flocculation</i> )
C0483	Treatment Objective	P ( <i>Particulate Removal</i> )
C0485	Treatment Process	660 ( <i>Sedimentation</i> )
C0483	Treatment Objective	P ( <i>Particulate Removal</i> )
C0485	Treatment Process	345 ( <i>Filtration, Rapid Sand</i> )
C0483	Treatment Objective	D ( <i>Disinfection</i> )
C0485	Treatment Process	401 ( <i>Gaseous Chlorine, Post</i> )



## Exhibit 2.6b DTFs for Treatment Plant #2

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	AZ1234567	00006		I		TREATMENT PLANT #2		
B1	AZ1234567	00006		I		TP		
B2	AZ1234567	00006	00001	I	C0483	O		
B2	AZ1234567	00006	00001	I	C0485	543		
B2	AZ1234567	00006	00002	I	C0483	P		
B2	AZ1234567	00006	00002	I	C0485	240		
B2	AZ1234567	00006	00003	I	C0483	P		
B2	AZ1234567	00006	00003	I	C0485	600		
B2	AZ1234567	00006	00004	I	C0483	P		
B2	AZ1234567	00006	00004	I	C0485	360		
B2	AZ1234567	00006	00005	I	C0483	P		
B2	AZ1234567	00006	00005	I	C0485	660		
B2	AZ1234567	00006	00006	I	C0483	P		
B2	AZ1234567	00006	00006	I	C0485	345		
B2	AZ1234567	00006	00007	I	C0483	D		
B2	AZ1234567	00006	00007	I	C0485	401		

## Exhibit 2.7 Data Elements and DTFs for Linkage Between Source Entity ID and Treatment ID

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
A5000	Facility Flow	Linkage between source entity ID and Treatment ID
C0101	PWS-ID	AZ1234567 ( <i>Qualifier 1</i> )

SE ID in Qualifier #2 (12-18) (WSF State assigned ID of the source of water)  
 Treatment ID in Data Value 32-71

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B3	AZ1234567	00001		I	A5000	00005		
B3	AZ1234567	00002		I	A5000	00005		
B3	AZ1234567	00004		I	A5000	00006		

Under the existing Surface Water Treatment Rule, Primacy Agencies must report certain treatment decisions for water systems subject to the rule. Specifically, where the Primacy Agency decides that an unfiltered source successfully meets filtration avoidance criteria, then that “successfully avoiding filtration” (SAF) status must be reported to EPA. If an unfiltered source fails to meet the filtration avoidance criteria, then the “must install filtration” (MIF) decision must be reported to EPA. These requirements continue to be in effect in the LT1ESWTR.

When either of these conditions exist, the Primacy Agency must report “SAF” or “MIF” in data element C0408 (In the past, these were reported as treatment codes - that capability is being replaced by this more direct reporting method). Example #2 and Example #3 show the DTF transactions for reporting “SAF” and “MIF” status for drinking water systems. For existing sources of water (i.e., already exist in SDWIS/FED, for States performing traditional processing), the Primacy Agency must submit a “modify” transaction to change the value of this field. For sources to be newly inserted into SDWIS/FED, or for a Primacy Agency performing total replace processing, the field should be inserted along with the remainder of the source data.

#### Example #2: Successfully Avoiding Filtration

System AA, which serves 400 people, has one treatment plant. Treatment Plant A1, SE ID: 00002 draws water from a high quality surface water source, D Lake, SE ID: 00001. The only treatment provided at Treatment Plant A1 is chlorination. Water quality records show that the total coliform concentration has been less than 100 per 100 mL in at least 90 percent of the measurements taken over six months immediately prior to the point of disinfectant application since Treatment Plant A1 went on-line in 1985. The fecal coliform concentration is not measured. The source water turbidity, which is measured immediately prior to the point of disinfectant application, has not exceeded 5 NTU since Treatment Plant A1 went on-line. Based on these measurements, System AA continues to meet the filtration avoidance criteria and is not required to install filtration. The data elements and DTF transactions that would be needed for the initial reporting of this source to SDWIS are shown in Exhibit 2.8.

## Exhibit 2.8 System Information, Data Elements and DTF's for a System that is Successfully Avoiding Filtration

### System Information:

SE ID: 00001 (*Qualifier 2*)  
 SE ID Name: D Lake  
 SE Record Type: IN  
 SE Code: SW  
 SE Availability: Permanent

### Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	GA1234568 ( <i>Qualifier 1</i> )
C0403	Name	D Lake
C0405	Type Code	IN ( <i>Surface Water Intake</i> )
C0407	Water Type	SW ( <i>Surface Water</i> )
C0408		SAF ( <i>Successfully Avoiding Filtration</i> )

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B1	GA1234568	00001		I	C0405	IN		
B1	GA1234568	00001		I	C0407	SW		
B3	GA1234568	00001		I	C0408	SAF		

### Example #3: Must Install Filtration

System AB, which serves 1,000 people, has one treatment plant. Treatment Plant AB1, SE ID: 00003 draws water from Well E, SE ID: 00001. Well E is classified as a ground water source under the direct influence of surface water. The only treatment provided at Treatment Plant AB1 is chlorination. Water quality records show that in the first eight years of operation, the total coliform concentration met the requirement of less than 100 cfu per 100 mL in at least 90 percent of the measurements taken over six months immediately prior to the point of disinfectant application. The fecal coliform concentration is not measured. The source water turbidity, which is measured immediately prior to the point of disinfectant application, did not exceed 5 NTU in the first eight years that Treatment Plant AB1 was in operation. However, the treatment plant operators have noticed that in the last 12 months the water quality of both well sources has begun to deteriorate. From January 1, 2002 through June 30, 2002 the total coliform concentration exceeded 100 cfu per 100 mL in 15 percent of the measurements taken in those six months. Therefore, System AB no longer qualifies for filtration avoidance and is now required to install filtration by December 29, 2003. The data elements and DTF transactions that would be reported to SDWIS for failure to meet the filtration avoidance criteria are shown in Exhibit 2.9 below. Since the source of water had already been reported to SDWIS/FED, the primacy agency need only change the value of the field C0408 to MIF.

## Exhibit 2.9 System Information, Data Elements and DTF's for a System that Must Install Filtration

### System Information:

System ID: 00001 (*Qualifier 2*)  
 SE Name: Well E  
 SE Record Type: Well  
 SE Code: Groundwater UDI  
 SE Availability: Permanent

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	GA1234569 ( <i>Qualifier 1</i> )
C0408		MIF ( <i>Must Install Filtration</i> )

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
B3	GA1234569	00001		M	C0408	MIF		

## 2.2 Violations Reporting

Violations of the Long Term 1 Enhanced Surface Water Treatment Rule include treatment technique (TT), Monitoring and Reporting (M&R) and record keeping. They are summarized in Tables 2-2a and 2-2b below.

Table 2-2a Violations of the LT1ESWTR				
VIOLATION DEFINITION	DESCRIPTION	MAJOR MINOR	VIOLATION TYPE	DETAILS
Type 09/0300 Failure to maintain the results of individual filter monitoring for at least 3 years.	Begins: When State becomes aware of violation (e.g. during a site visit or sanitary survey).  Ends: When system has 3 years of data.	N/A	Record Keeping	This is considered a record keeping violation
Type 29/0300 – Failure to report to State by 10 <sup>th</sup> of the next month the filter number, date(s), turbidity value(s) and cause of IFE >1.0 NTU in two consecutive 15-minute readings. – Failure to conduct within 14 days of exceedance (>1.0 NTU in 2 consecutive measurements taken 15 minutes apart in each of 3 consecutive months) and/or report to State a self-assessment of an individual filter.	Violations reported monthly at the system level.	Major	M&R	
Type 29/0300 Failure to have a CPE arranged by State or third party no later than 60 days after exceedance (>2.0 NTU in 2 consecutive measurements taken 15 minutes apart in 2 consecutive months) and have the CPE completed and submitted to the State no later than 120 days following the exceedance.	Begins: When system fails to take action indicated.  Ends: When system has reported to State's satisfaction that follow-up action complete.	Major	M&R	Have a future end date = 12/31/2015) with the end date modified as a result of a link to an RTC, to be reported

<b>VIOLATION DEFINITION</b>	<b>DESCRIPTION</b>	<b>MAJOR MINOR</b>	<b>VIOLATION TYPE</b>	<b>DETAILS</b>
Type 37/0300 Failure to consult with State before making a significant change to a disinfection practice if required to develop a disinfection profile.	Begins: Either date of change or when State becomes aware of the change.  Ends: When State notifies the facility that it approves of the change.	N/A	TT	Have a future end date = 12/31/2015) with the end date modified as a result of a link to an RTC, to be reported
Type 38/0300 – MAJOR: Failure to collect and report at least 90% of required samples. – Failure to report that the system has conducted all individual filter monitoring to State within 10 days after the end of each month. – Failure to report that the system has exceeded 1 NTU (or maximum set by State) in representative samples by end of next business day. – MINOR: Any other failure to monitor or report.	Violations reported monthly at the system level. No severity indicator.	Either	M&R	The fact that user's will not be able to distinguish between the different major violations is acceptable to EPA. If it is needed, EPA will get that information from the states on an as-needed basis
Type 43/0300 Failure to achieve CFE turbidity level $\leq 1$ NTU if PWS uses conventional or direct filtration OR exceedance of the State-set maximum turbidity performance requirements for PWSs using alternative filtration technologies.	Report violations on a monthly basis, with severity indicated by the number of exceedances $>1$ NTU (max. is $31 \times 6 = 186$ ), using data element C1112	N/A	TT	For Water Systems with multiple sets of filters, or multiple treatment plants with filtration, add the total number of exceedances at all locations for the month to compute the value for C1112
Type 44/0300 Failure to achieve CFE turbidity level of 0.3 NTU in 95% of monthly measurements if PWS uses conventional or direct filtration OR failure to meet the State-set turbidity performance requirements in 95% of monthly measurements of PWSs using alternative filtration technologies.	Violations reported monthly at the system level. No severity indicator.	N/A	TT	



VIOLATION DEFINITION	DESCRIPTION	MAJOR MINOR	VIOLATION TYPE	DETAILS
Type 47/0300 Beginning construction of an uncovered finished water storage facility on or after March 15, 2002.	Begins: At beginning of construction.  Ends: Either when the storage facility is covered or when the storage facility is no longer used to store <i>finished</i> water.	N/A	TT	

Only the violation reporting fields identified below in Table 2-2b are to be reported to represent LT1ESWTR rule violations. All other violation fields should NOT be included in submissions to EPA. Those fields will be rejected.

<b>Table 2-2b. Violation Reporting Fields for the LT1ESWTR</b>							
<b>Violation</b>	<b>Type</b>	<b>Contaminant Code (C1103)</b>	<b>Type Code (C1105)</b>	<b>Compliance Period Begin Date (C1107)</b>	<b>Compliance Period End Date (C1109)</b>	<b>Severity Indicator count (C1112)</b>	<b>Major Violation Indicator (C1131)</b>
Failure to maintain the results of individual filter monitoring for at least 3 years.	Record keeping	0300	09	When State becomes aware of violation (e.g. during a site visit or sanitary survey).	Insert a default future end date of 12/31/2015. Modify the date as a result of a link to an RTC (SOX/EOX), or intentional no action code (SO6/EO6) or no longer subject to the rule code (SO0/EO0) to be reported.	Do not report	Do not report
<ul style="list-style-type: none"> <li>– Failure to report to State by 10<sup>th</sup> of the next month the filter number, date(s), turbidity value(s) and cause of IFE &gt;1.0 NTU in two consecutive 15-minute readings.</li> <li>– Failure to conduct within 14 days of exceedance (&gt;1.0 NTU in 2 consecutive measurements taken 15 minutes apart in each of 3 consecutive months) and/or report to State a self-assessment of an individual filter.</li> </ul>	M&R	0300	29	first day of month	last day of month	do not report	always major

Violation	Type	Contaminant Code (C1103)	Type Code (C1105)	Compliance Period Begin Date (C1107)	Compliance Period End Date (C1109)	Severity Indicator count (C1112)	Major Violation Indicator (C1131)
Failure to have a CPE arranged by State or third party no later than 60 days after exceedance (>2.0 NTU in 2 consecutive measurements taken 15 minutes apart in 2 consecutive months) and have the CPE completed and submitted to the State no later than 120 days following the exceedance.	M&R	0300	29	When system fails to take action indicated	Have a future end date = 12/31/2015) with the end date modified as a result of a link to an RTC (SOX/EOX), or intentional no action code (SO6/EO6) or no longer subject to the rule code (SO0/EO0) to be reported	do not report	always Major
Failure to consult with State before making a significant change to a disinfection practice if required to develop a disinfection profile.	TT	0300	37	Either date of change or when State becomes aware of the change	Have a future end date = 12/31/2015) with the end date modified as a result of a link to an RTC (SOX/EOX), or intentional no action code (SO6/EO6) or no longer subject to the rule code (SO0/EO0) to be reported	do not report	do not report

Violation	Type	Contaminant Code (C1103)	Type Code (C1105)	Compliance Period Begin Date (C1107)	Compliance Period End Date (C1109)	Severity Indicator count (C1112)	Major Violation Indicator (C1131)
<ul style="list-style-type: none"> <li>- Failure to collect and report at least 90% of required samples, or failure to report that the system has conducted all individual filter monitoring to State within 10 days after the end of each month, or</li> <li>- failure to report that the system has exceeded 1 NTU (or maximum set by State) in representative samples by end of next business day or</li> <li>- any other failure to monitor or report.</li> </ul>	M&R	0300	38	first day of month	last day of month	do not report	<u>yes</u> = failure to collect at least 90% of samples, or failure to report that the system has conducted all individual filter monitoring to State within 10 days after the end of each month. or failure to report that the system has exceeded 1 NTU (or maximum set by State) in representative samples by end of next business day. <u>no</u> =any other failure to report
Failure to achieve CFE turbidity level $\leq 1$ NTU if PWS uses conventional or direct filtration OR exceedance of the State-set maximum turbidity performance requirements for PWSs using alternative filtration technologies.	TT	0300	43	first day of month	last day of month	the number of exceedances $> 1$ NTU (max. is $31 \times 6 = 186$ )	do not report

<b>Violation</b>	<b>Type</b>	<b>Contaminant Code (C1103)</b>	<b>Type Code (C1105)</b>	<b>Compliance Period Begin Date (C1107)</b>	<b>Compliance Period End Date (C1109)</b>	<b>Severity Indicator count (C1112)</b>	<b>Major Violation Indicator (C1131)</b>
Failure to achieve CFE turbidity level of 0.3 NTU in 95% of monthly measurements if PWS uses conventional or direct filtration OR failure to meet the State-set turbidity performance requirements in 95% of monthly measurements of PWSs using alternative filtration technologies.	TT	0300	44	first day of month	last day of month	do not report	do not report
Systems are not allowed to begin construction of any uncovered finished water storage facility	TT	0300	47	At beginning of construction	Insert a default future end date of 12/31/2015. Modify the date as a result of a link to an RTC (SOX/EOX), or intentional no action code (SO6/EO6) or no longer subject to the rule code (SO0/EO0) to be reported.	do not report	do not report

## 2.2 Treatment Technique (TT) Violations Reporting

### General Discussion of Treatment Technique Violations

Treatment technique violations are reported for any one of a number of required actions which a water system fails to take, when it fails to meet prescribed performance standards, or when it performs incorrectly or incompletely. These include violations for failure to notify the Primacy Agency of certain actions. All LT1ESWTR violations are reported as violations of the rule, rather than of a specific contaminant. The contaminant code 0300 is utilized for the LT1ESWTR violations reported to SDWIS/FED.

<b>Table 2-2. SDWIS/FED Codes for Treatment Technique Violations Reporting</b>			
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique Violations</b>	<b>Section Where Discussed in This Document</b>
37	0300	Failure to develop a disinfection profile or consult with the Primacy Agency before making changes to disinfection practice	Section 2.2.1
43	0300	Combined filter effluent exceeds 1 NTU/Primacy Agency-set performance standards	Section 2.2.2
44	0300	More than 5% of monthly combined filter effluent samples exceed 0.3 NTU/Primacy Agency-set performance standards	Section 2.2.3
47	0300	Construction of an uncovered finished water storage facility	Section 2.2.4

#### 2.2.1 Type 37/0300: Failure to Profile or Consult with Primacy Agency (Disinfection Changes)

Violation type 37/0300 is the failure to produce a disinfection profile or to consult with the Primacy Agency before making a significant change to disinfection practice if required to profile.

##### *Cross-reference to LT1ESWTR Implementation Guidance:*

Section I, pages 10 - 13

Section II, pages 3 - 5

Section V, pages 2 & 4

<b>Table 2-3. Violation Type: 37/0300</b>			
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique Violations</b>	<b>Rule Citation</b>
37	0300	Failure to develop a disinfection profile or consult with the Primacy Agency before making a significant change to a disinfection practice if required to develop a disinfection profile.	40 CFR141.530 40 CFR 141.536 40 CFR 141.540 40 CFR 141.542

#### Example System Description - System A:

System A is a subpart H system that has a conventional treatment plant treating a single surface water source. System A's plant has three individual filters and serves 9,100 persons. The system adds chlorine ahead of the flocculators and again to the combined filter effluent (CFE). Monitoring conducted under 40 CFR141.531 showed that System A had disinfection byproduct levels that required preparation of a disinfection profile. Therefore, System A calculated the log inactivation for *Giardia lamblia* on a weekly basis at peak hourly flow for one full year as described in 40 CFR141.532 and 40 CFR141.533. System A retained the disinfection profile data in a spreadsheet format that was approved by the Primacy Agency.

#### Example #4: TT 37/0300

System A's operator collects the required samples for TTHMs and HAA5 under the Stage 1 Disinfectants and Disinfection Byproducts Rule for the first two quarters of calendar year 2004. The operator believes these data show the system will likely incur MCL violations for TTHMs and/or HAA5 at the end of the first full year of monitoring. Therefore, after checking to see that he can meet the CT requirements of the SWTR with chlorination of the combined filter effluent alone, he discontinues the addition of chlorine ahead of the flocculators and begins operation with chlorine only added to the CFE. The Primacy Agency becomes aware of this change to disinfection practice when conducting a sanitary survey on March 1, 2006. During the sanitary survey, the Primacy Agency notes that the operator made changes to the disinfection practice on about August 1, 2004. The Primacy Agency ultimately approves the changes made by the PWS on July 15, 2006.

#### Example #4 Decision:

This TT violation is SDWIS coded as 37/0300. System A has incurred a treatment technique violation because it did not submit to the Primacy Agency a description of the proposed change, the disinfection profile and benchmark, an analysis of how the proposed change would affect the levels of disinfection, and did not consult with the Primacy Agency prior to making the significant change to disinfection practices.

In reporting to SDWIS, the violation begin date is either the date on which disinfection process change is initiated, or the date on which the Primacy Agency becomes aware of the change(s). For this type of violation, the end date should not be reported to SDWIS/FED because the Primacy Agency did not have an opportunity to review the information prior to reporting the violation to EPA. With the compliance period end date left blank, the SDWIS/FED database processing will default the end date to 20151231 (December 31, 2015). Since the Primacy Agency approved the disinfection changes on July 15, 2006, it must then submit an enforcement action to SDWIS/FED - indicating a return to compliance (Code SOX) with a transaction to link it to the original violation.

### Public Notice Requirement

According to the requirements of 40 CFR141.201, the system must provide Tier 2 public notice regarding this violation.

### System Reporting

The system must submit to the Primacy Agency a description of the proposed change, the disinfection profile and benchmark, an analysis of how the proposed change would affect the levels of disinfection, and must consult with the Primacy Agency prior to making a significant change to disinfection practices.

### Primacy Agency to SDWIS/FED Reporting

The appropriate SDWIS/FED data elements and the DTF transactions for the specific TT violation described as a Failure to Profile or Consult with the Primacy Agency are listed in Exhibit 2.10.



## Exhibit 2.10 Failure to Profile or Consult with Primacy Agency TT Violation Data Elements and DTF Transactions and Associated “RTC” Transaction

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	37
C1107	Compliance Period Begin Date	<i>Date / Primacy Agency (PA) aware date</i>
C1109	Compliance Period End Date	A date should not be provided with the original violation report to SDWIS/FED. SDWIS/FED processing will generate a default date of 12/31/2015. When the Primacy Agency reaches agreement with the PWS about the disinfection processes to be implemented and has determined that the PWS is compliant with them, then the Primacy Agency needs to submit a “returned to compliance” enforcement action and link it to the original treatment technique violation. The date of the action should represent the date the Primacy Agency made that determination. SDWIS/FED processing will modify the end date of the original violation to be the same date as the “returned to compliance” reported.
C1203	Executive Action Date	
C1205	Enforcement Follow-Up Action	SOX ( <i>Primacy Agency</i> )
Y5000	Associated Violation ID	0400111 ( <i>Refers to this particular violation ID</i> )

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234582	0400111		I	C1103	0300		
D1	GA1234582	0400111		I	C1105	37		
D1	GA1234582	0400111		I	C1107	20040801		
E1	GA1234582	0600001		I	C1203	20060715		
E1	GA1234582	0600001		I	C1205	SOX		
E1	GA1234582	0600001		I	Y5000	0400111		

## 2.2.2 Type 43/0300: CFE Exceeds 1 NTU or Primacy Agency-Set Alternative Technology Maximum Value

### *Cross-reference to LTIESWTR Implementation Guidance:*

Section I, pages 14 - 16

Section II, page 7

Section V, pages 2 & 4

Table 2-4. Violation Type: 43/0300			
Violation Code	Contaminant Code	Treatment Technique Violations	Rule Citation
43	0300	Failure to achieve combined filter effluent turbidity level that at no time exceeds 1 NTU if PWS uses conventional or direct filtration or Failure to achieve combined filter effluent level that at no time exceeds the Primacy Agency-set maximum turbidity performance requirements if PWS uses an alternative filtration technology	40 CFR141.551(b)

### Example System Description - System B:

System B is a subpart H system utilizing a membrane microfiltration treatment plant (i.e. an alternative filtration technology) that treats water from Lake P. System B's water treatment plant includes four individual filter modules and serves 7,500 persons. The system uses chlorine as a primary and secondary disinfectant and adds the chlorine to the CFE ahead of the clearwell where detention time is provided to ensure adequate CT. Pursuant to the requirements of 40 CFR 141.551 and 40 CFR 141.552(a), System B has conducted a pilot study that showed the plant capable of removing 99% of *Cryptosporidium* oocysts, and removing or inactivating 99.9% of *Giardia lamblia* cysts and 99.99% of viruses when the CFE is maintained below 0.5 NTU in 95% of all measurements taken at 4-hour intervals and below 1 NTU at all times. Subsequently, the Primacy Agency established treatment technique turbidity performance standards of 0.5 NTU that System B must meet in 95% of all measurements taken of the CFE at 4-hour intervals, and a level of 1 NTU that the CFE may not exceed at any time.

### Example #5: TT 43/0300

The System B operator measures the CFE turbidity every four hours that the plant is in operation. Those measurements are recorded on a form provided by the Primacy Agency and the completed form is submitted to the Primacy Agency prior to the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of filtered water turbidity measurements taken each month, the number and percentage of CFE measurements taken each month that are less than or equal to 0.5 NTU, and the date and value of any CFE turbidity measurement that exceeds 1 NTU. The following information was included on the system's monthly report submitted on October 7, 2005:

<b>Table 2-5. System B September 2005 CFE Turbidity Monthly Report (Excerpt)</b>				
Total Filter Measurements	# ≤ 0.5 NTU	% ≤ 0.5 NTU	Date > 1 NTU	Value of > 1 NTU
180	179	99%	9-12-05	2 NTU

On the 12<sup>th</sup> of September, 2005, a membrane failure caused one of the four-hour CFE turbidity measurements to be read and recorded at 1.6 NTU. This value is rounded to 2 NTU.

#### Example #5 Decision:

This is a TT violation and is SDWIS coded as 43/0300. The report submitted to the Primacy Agency by System B on October 7, 2005 identifies this measurement as being >1 NTU and indicates that the system has violated a TT requirement.

Since this violation can occur multiple times in a single month, EPA has opted to have Primacy Agencies provide a single violation record for any month in which there is an exceedance with a field that identifies the number of times during the month that the standard was exceeded. A data element, C1112 (severity indicator count) will be used to capture this number.

#### Public Notice Requirement

According to the requirements of 40 CFR141.201, the system must provide Tier 2 public notice, unless in consultation with the Primacy Agency, which must occur within 24 hours, it is determined that Tier 1 public notice should be provided. Failure to consult the Primacy Agency automatically results in a Tier 1 public notice requirement for this type of TT violation.

#### System Reporting Requirement

Public water systems must consult with the Primacy Agency as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice under §141.202(a) is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under §141.202(b) and (c). Within 10 days after the end of the month, the system must provide a report of turbidity measurements to the Primacy Agency which includes the total number of measurements taken during the month, the number and percentage of measurements less than or equal to 0.5 NTU (the Primacy Agency-set value for the 95<sup>th</sup> percentile turbidity value), and the date and value of any measurements taken during the month which exceed 1 NTU.

#### Primacy Agency to SDWIS/FED Reporting

The appropriate SDWIS/FED CFE data elements and DTF transactions for the specific violation described as a Treatment Technique violation Type 43/0300 are listed in Exhibit 2.11.

## Exhibit 2.11 Combined Filter Effluent Exceedance Treatment Technique Violation Data Elements and DTF Transactions for a Single Exceedance

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	43
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	<i>Must be one month later than C1107</i>
C1112	Severity Indicator	<i>The number of times during the month the standard was exceeded</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234584	0500001		I	C1103	0300		
D1	GA1234584	0500001		I	C1105	43		
D1	GA1234584	0500001		I	C1107	20050901		
D1	GA1234584	0500001		I	C1109	20050930		
D1	GA1234584	0500001		I	C1112	1		

### Example System Description - System BB:

System BB has two treatment plants which both use surface water as a source and together serve 8,500 people (see the system schematic in Exhibit 2.12). Treatment Plant #1 is a conventional filtration plant that draws water from a small river. Treatment Plant #2 is a direct filtration plant that draws water from a reservoir. Both treatment plants use chlorine as a predisinfectant and primary disinfectant and add the chlorine directly after the intake and ahead of the clearwell. Detention time is provided in the clearwell in both plants to ensure adequate CT. The treatment technique standard in 40 CFR 141.551(b) for direct and conventional filtration systems require that the CFE must be maintained below 0.3 NTU in 95% of all measurements taken at 4-hour intervals and below 1 NTU at all times during each monthly reporting period.

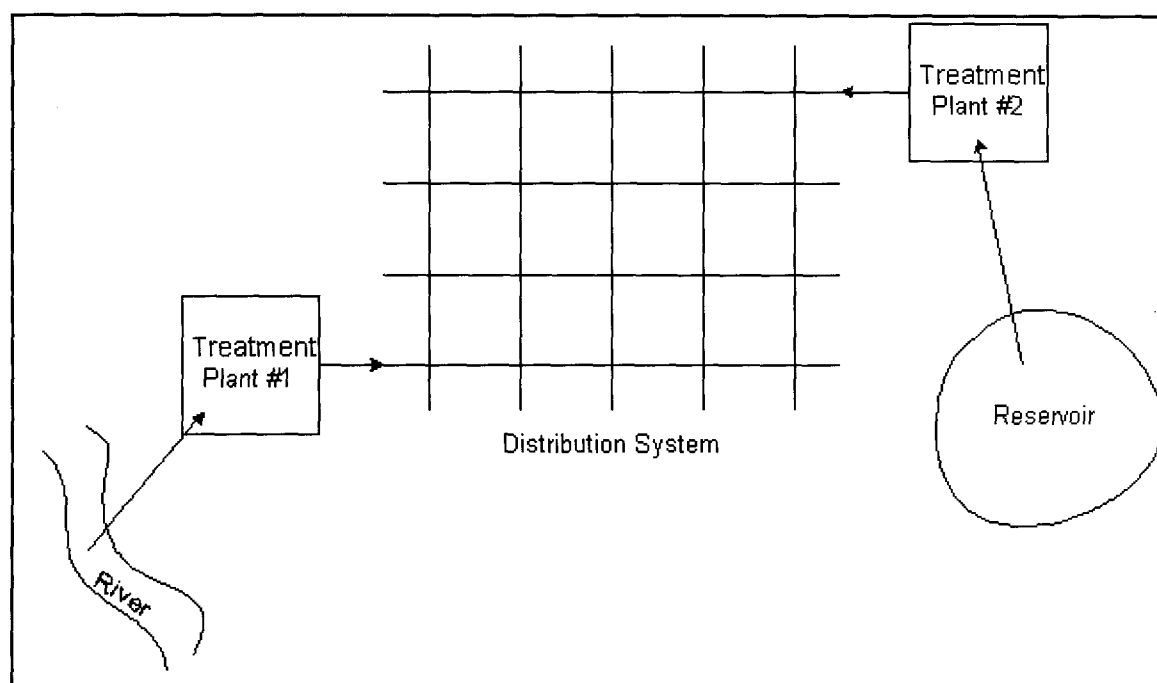
### Example #6: TT 43/0300

The System BB operator measures the CFE turbidity every four hours that the plant is in operation. Those measurements are recorded on a form provided by the Primacy Agency and the completed form is submitted to the Primacy Agency by the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of combined filter effluent turbidity measurements taken each month, the number and percentage of CFE measurements taken each month that are less than or equal to 0.3 NTU, and the date and value of any CFE turbidity measurement that exceeds 1 NTU. The following information was included on the system's monthly report submitted on February 6, 2006:

<b>Table 2-6. System BB, Treatment Plant #1 January 2006 CFE Turbidity Monthly Report (Excerpt)</b>				
Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
180	173	96%	1-5-06	3 NTU

On the 5<sup>th</sup> of January, 2006, one of the four-hour CFE turbidity measurements was read and recorded at 3.2 NTU in treatment plant #1. This value is rounded to 3 NTU.

## Exhibit 2.12 System BB Schematic



**Table 2-7. System BB, Treatment Plant #2 January 2006 CFE Turbidity Monthly Report (Excerpt)**

Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
180	176	98%	1-17-06	2 NTU

On the 17<sup>th</sup> of January, 2006, one of the four-hour turbidity measurements at Treatment Plant #2 was read and recorded at 1.9 NTU. This value is rounded to 2 NTU.

### Example #6 Decision:

The violations at both plants are TT violations and are SDWIS coded as 43/0300. The report submitted to the primacy agency by System BB on February 6, 2006 identifies that the CFE measurement greater than 1 NTU at Treatment Plant #1 is 3 NTU and indicates that the system has violated a TT requirement. Likewise, the CFE measurement greater than 1 NTU at Treatment Plant 2, reported in the February 6, 2006 submission by the system is 2 NTU and indicates that the system has violated a TT requirement.

Since this violation can occur multiple times in a single month, EPA desires to have Primacy Agencies provide a single violation record for any month in which there is an exceedance with a field that identifies the number of times during the month that the standard was exceeded. A data element, C1112 (severity indicator count) will be used to capture this number. Although there are two treatment plants in System BB, the Primacy Agency would only submit one violation record for the month of January, 2006 for System BB. However, the severity indicator count (data element C1112) would indicate that two violations had occurred within System BB in January, 2006.

### Public Notice Requirement

According to the requirements of 40 CFR141.201, the system must provide Tier 2 public notice, unless in consultation with the Primacy Agency, which must occur within 24 hours, it is determined that Tier 1 public notice should be provided. If the Primacy Agency is not contacted within 24 hours, then the violation automatically becomes Tier 1.

### System Reporting Requirement

Public water systems must consult with the Primacy Agency as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice under §141.202(a) is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under §141.202(b) and (c). Within 10 days after the end of the month, the system must provide a report of turbidity measurements for each treatment plant to the Primacy Agency which includes the total number of measurements taken during the month, the number and percentage of measurements less than or equal to 0.3 NTU, and the date and value of any measurements taken during the month which exceed 1 NTU.

### Primacy Agency to SDWIS/FED Reporting

The appropriate SDWIS/FED CFE data elements and DTF transactions for the specific violation described as a Treatment Technique violation Type 43/0300 are listed in Exhibit 2.13 below.

## Exhibit 2.13 Combined Filter Effluent Exceedance Treatment Technique Violation Data Elements and DTF Transactions for Multiple Exceedances

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	43
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	<i>Must be one month later than C1107</i>
C1112	Severity Indicator	<i>The number of times during the month the standard was exceeded</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234681	0600001		I	C1103	0300		
D1	GA1234681	0600001		I	C1105	43		
D1	GA1234681	0600001		I	C1107	20060101		
D1	GA1234681	0600001		I	C1109	20060130		
D1	GA1234681	0600001		I	C1112	2		



### 2.2.3 Type 44/0300: > 5% Monthly CFE Samples Exceed 0.3 NTU or Primacy Agency-Set Alternative Technology Maximum Value

***Cross-reference to LT1ESWTR Implementation Guidance:***

Section I, pages 14 - 16

Section II, page 7

Section V, pages 2 & 5

<b>Table 2-8. Violation Type: 44/0300</b>			
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique Violations</b>	<b>Rule Citation</b>
44	0300	<p>Failure to achieve combined filter effluent turbidity level of 0.3 NTU in 95 percent of monthly measurements if PWS uses conventional or direct filtration</p> <p>or</p> <p>Failure to meet Primacy Agency-set turbidity performance requirements in 95 percent of monthly measurements for systems using alternative filtration technologies</p>	40 CFR141.551(a)

**Example #7: TT 44/0300**

The System B operator measures the CFE turbidity every four hours that the plant is in operation. Those measurements are recorded on a form provided by the Primacy Agency and the completed form is submitted to the Primacy Agency prior to the 10<sup>th</sup> of the following month. The report provides the Primacy Agency with the total number of filtered water turbidity measurements taken each month, the number and percentage of CFE measurements taken each month that are less than or equal to 0.5 NTU (the Primacy Agency set performance standard for this alternative filtration technology), and the date and value of any CFE turbidity measurement that exceeds 1 NTU. The November 2005 report submitted by System B to the Primacy Agency on Dec 10, 2005 showed that only 92% of the CFE turbidity measurements taken every four hours were less than or equal to 0.5 NTU. The following information was included in the system's November 2005 report to the Primacy Agency.

<b>Table 2-9. System B November 2005 CFE Turbidity Monthly Report (Excerpt)</b>				
<b>Total Filter Measurements</b>	<b># ≤ 0.5 NTU</b>	<b>% ≤ 0.5 NTU</b>	<b>Date &gt; 1 NTU</b>	<b>Value of &gt; 1 NTU</b>
180	166	92%	--	—

#### Example #7 Decision:

The TT violation is SDWIS coded as 44/0300. System B has a treatment technique violation for November 2005 as a result of its failure to meet the 95% performance standard set by the Primacy Agency (i.e., more than 5% of the CFE turbidity measurements taken in the month exceeded 0.5 NTU).

#### Public Notice Requirement

According to the requirements of 40 CFR141.201, this system must provide Tier 2 public notice, regarding this violation.

#### System Reporting Requirement

Within 10 days after the end of the month, the system must provide a report of turbidity measurements to the Primacy Agency which includes the total number of measurements taken during the month, the number and percentage of measurements less than or equal to 0.5 NTU (the Primacy Agency-set value for the 95<sup>th</sup> percentile turbidity value), and the date and value of any measurements taken during the month which exceed 1 NTU.

#### Primacy Agency to SDWIS/FED Reporting

These TT violations are reported monthly and there is no severity indicator. The appropriate SDWIS/FED Monthly CFE Treatment Technique violation Type 44/0300 data elements and individual DTF transactions are listed in Exhibit 2.14.

## Exhibit 2.14 Monthly Combined Filter Effluent (CFE) Exceedance Treatment Technique Violation Data Elements and DTF Transactions

### Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	44
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	<i>Must be one month later than C1107</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234585	0600001		I	C1103	0300		
D1	GA1234585	0600001		I	C1105	44		
D1	GA1234585	0600001		I	C1107	20051101		
D1	GA1234585	0600001		I	C1109	20051130		

### Example System Description - System BC:

System BC is a Subpart H system that serves 9,000 people and utilizes two conventional filtration water treatment plants, each with four filter beds.

### Example #8: TT 44/0300

During the month of July 2006, the operator measures CFE turbidity every four hours at each plant while they are in operation and records the results on a form provided by the agency. His report, that he submits to the Primacy Agency on August 9<sup>th</sup>, 2006, includes the following information.

Table 2-10. System BC Plant #1 July 2006 CFE Turbidity Monthly Report (Excerpt)				
Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
186	167	90%	--	--

Table 2-11. System BC Plant #2 July 2006 CFE Turbidity Monthly Report (Excerpt)				
Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
186	169	91%	--	--

The report shows that during the month of July, 2006, Plants #1 and #2 failed to achieve a 0.3 NTU or less CFE turbidity at least 95% of the time operating.

### Example #8 Decision:

These TT violations are SDWIS coded as 44/0300. System BC has incurred two Type 44/0300 violations of the LT1ESWTR, since both of the system's water treatment plants failed to achieve 0.3 NTU or less CFE turbidity 95% of the time operating in July 2006. Although there are two Type 44/0300 violations observed at this facility during the month, only one record of violation is reported to SDWIS/FED.

#### Public Notice Requirement

According to the requirements of 40 CFR141.201, this system must provide Tier 2 public notice.

#### System Reporting Requirement

Within 10 days after the end of the month, the system must provide a report of turbidity measurements to the Primacy Agency which includes the total number of measurements taken during the month, the number and percentage of measurements less than or equal to 0.3 NTU, and the date and value of any measurements taken during the month which exceed 1 NTU.

#### Primacy Agency to SDWIS/FED Reporting

The appropriate SDWIS/FED CFE Treatment Technique violation Type 43/0300 data elements and individual DTF transactions are shown below in Exhibit 2.15.

### **Exhibit 2.15 Data Elements and DTF Transactions Monthly CFE Exceedance TT Violation**

#### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>(Qualifier 1)</i>
C1101	Violation ID	<i>(Qualifier 2)</i>
C1103	Contaminant	0300
C1105	Violation Type	44
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	<i>Must be one month later than C1107</i>

#### DTF Transactions:

<b>1-2</b>	<b>3-11</b>	<b>12-18</b>	<b>19-25</b>	<b>26</b>	<b>27-31</b>	<b>32-71</b>	<b>72-74</b>	<b>75-80</b>
D1	GA1234585	0600002		I	C1103	0300		
D1	GA1234585	0600002		I	C1105	44		
D1	GA1234585	0600002		I	C1107	20060701		
D1	GA1234585	0600002		I	C1109	20060731		

#### **2.2.4 Type 47/0300: Begin Construction of Uncovered Water Storage Facility After March 15, 2002**

*Cross-reference to LT1ESWTR Implementation Guidance:*

<b>Table 2-12. Violation Type: 47/0300</b>			
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique Violations</b>	<b>Rule Citation</b>
47	0300	Construction of an uncovered finished water storage reservoir on or after March 15, 2002.	40 CFR141.510 40 CFR141.511

### Example System Description - System C:

System C is an unfiltered subpart H system that meets the filtration avoidance criteria and uses water from Y2 Lake. System C chlorinates the unfiltered water to provide adequate CT, then pumps it into the distribution system. The system provides water to 1,000 persons.

### Example #9: TT 47/0300

On May 15, 2002 System C had a construction company begin construction of an uncovered finished water storage reservoir. The storage facility was constructed and put on-line on October 31, 2002. During a sanitary survey conducted by the Primacy Agency in March, 2003, the completed reservoir was discovered and a cease and desist order was issued. The reservoir was physically disconnected from the water system on January 15, 2004.

### Example #9 Decision:

This TT violation is SDWIS coded as 47/0300. System C incurred a Type 47/0300 TT violation that began on May 15, 2002, the day the uncovered finished water storage reservoir construction was begun. The violation would end when the reservoir was properly covered or taken off-line (physically disconnected from the system). (Note: Since the primacy agency became aware of the violation in March 2003, the violation is considered to be a fiscal year 2003 violation. Thus the fiscal year portion of the violation ID is 03).

### Public Notice Requirement

According to the provisions of 40 CFR141.201, the system must provide Tier 2 public notice.

### System Reporting Requirements

Since this violation was discovered by the Primacy Agency during a sanitary survey, there are no applicable system reporting requirements.

### Primacy Agency to SDWIS/FED Reporting

The appropriate SDWIS/FED Construction of an Uncovered Storage Facility Treatment Technique violation data elements and the individual DTF transactions are listed below in Exhibit 2.16.

## Exhibit 2.16 Construction of an Uncovered Finished Water Storage Facility Treatment Technique Violation Data Elements and DTF Transactions

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	47
C1107	Compliance Period Begin Date	20020515
C1109	Compliance Period End Date	A date should not be provided with the original violation report to SDWIS/FED. When a date is not provided, SDWIS/FED processing will generate a default date of 12/31/2015. When the Primacy Agency has determined that the PWS has returned to compliance (i.e., either covered the reservoir or physically taken offline), then the Primacy Agency should submit a "returned to compliance" enforcement action and link it to the original treatment technique violation. The date of the action should be the date the Primacy Agency made that determination. SDWIS/FED processing will modify the end date of the original violation to be the same date as the "returned to compliance" reported.
C1203	Enforcement Action Date	20040115
C1205	Enforcement Follow-Up Action	SOX ( <i>Followed-up by Primacy Agency</i> )
Y5000	Associated Violation ID	0300001

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234586	0200001		I	C1103	0300		
D1	GA1234586	0200001		I	C1105	47		
D1	GA1234586	0200001		I	C1107	20020515		
E1	GA1234586	0400001		I	C1203	20040115		
E1	GA1234586	0400001		I	C1205	SOX		
E1	GA1234586	0400001		I	Y5000	0200001		

## 2.3 Monitoring & Reporting (M&R) Violations

### General Discussion of Monitoring and Reporting (M&R) Violations

M&R violations of the LT1ESWTR are reported for water systems that have failed to conduct the required turbidity monitoring or report the results of the monitoring, have failed to conduct appropriate individual filter turbidity trigger response activities or have otherwise failed to report required information to the Primacy Agency. All LT1ESWTR violations are reported as violations of the rule, rather than of a specific contaminant. The contaminant code 0300 is utilized for the LT1ESWTR violations reported to SDWIS/FED. Only one M&R violation may be reported for a facility per compliance period, for each violation type. The type 29 violation is considered by EPA to be a major violation. The type 38 violation can be either major or minor, depending upon the severity of the missed sampling and reporting. Thus, for type 29 violations, the Major violation flag (C1131) field is to be reported as "Y" to represent "Yes" instead of reporting multiple violation. The following Table 2-15 is a summary of the CFE and IFE turbidity monitoring requirements under the LT1ESWTR.

**Table 2-13. Turbidity Monitoring Requirements for Conventional and Direct Filtration Systems**

Type/Location of Sample	Frequency
Combined Filter Effluent (CFE)	Collect and analyze a sample every four (4) hours of operation. Less frequent monitoring is allowed for systems serving 500 or fewer people.
Individual Filter Effluent (IFE)	Monitor continuously and record values every fifteen (15) minutes of filter operation.

**Table 2-14. M&R Violations Under the LT1ESWTR**

Violation Code	Contaminant Code	Monitoring and Reporting Violations	Section Where Discussed in This Document
29	0300	<b>Major:</b> Failure to conduct follow-up activities triggered by individual filter turbidity exceedances.	Section 2.3.1
38	0300	<b>Major:</b> Failure to collect and report 90% of required combined filter effluent turbidity samples	Section 2.3.2
		<b>Major:</b> Failure to report all individual filter monitoring has been conducted	Section 2.3.2
		<b>Minor:</b> Any other failure to monitor or report	Section 2.3.2

#### 2.3.1 Type 29/0300: Monitoring and Reporting Violations - Failure to conduct individual filter monitoring follow-up activities



***Cross-reference to Implementation Guidance:***

Section I, pages 16 - 18

Section II, pages 7 - 9

Section V, pages 2 & 6

<b>Table 2-15. Violation Type: 29/0300</b>		
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Monitoring and Reporting Violations</b>
29	0300	Failure to conduct follow-up activities triggered by individual filter turbidity exceedances (multiple).

<b>Table 2-16 Individual Filter Follow Up Activities*</b>		
<b>Violation 29/0300</b>	<b>Rule Citation</b>	<b>Section Where Discussed in This Document</b>
Failure to report to the Primacy Agency by the 10 <sup>th</sup> of the month following a turbidity exceedance (> 1.0 NTU in 2 consecutive recordings taken 15 minutes apart)	40 CFR141.563(a)	Section 2.3.1.1
Failure to conduct and/or report to the Primacy Agency a self-assessment of an individual filter within 14 days of a turbidity exceedance (>1.0 NTU in 2 consecutive recordings taken 15 minutes apart in each of 3 consecutive months)	40 CFR141.563(b)	Section 2.3.1.2
Failure to have a comprehensive performance evaluation conducted by the Primacy Agency or a third party no later than 60 days after a turbidity exceedance (> 2.0 NTU in 2 consecutive recordings taken 15 minutes apart in 2 consecutive months) and have the evaluation completed and submitted to the Primacy Agency no later than 120 days following the exceedance.	40 CFR141.563(c)	Section 2.3.1.3

\* These follow-up activities apply only to systems using conventional or direct filtration treatment.

**2.3.1.1 Type 29/0300: Failure to Report to the State by the 10<sup>th</sup> of the Month Following a IFE Turbidity Exceedance**

***Cross-reference to Rule:*** 40 CFR141.563(a)

### Example System Description - System D:

System D is a subpart H system that treats a single surface water source with a direct filtration plant that has eight individual filters capable of producing 6.91 MGD over a 24-hour period. The system serves 9,000 persons. Pursuant to the treatment technique requirements of the LT1ESWTR, System D must measure the turbidity of the CFE every four hours of operation and record those measurements on a form approved by the Primacy Agency. Additionally, System D must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter turbidity readings must be recorded every 15 minutes during the time each filter is in operation and records of the 15-minute measurements must be retained by the system for at least three years. Systems must report that they have conducted individual filter monitoring within ten days following the end of each month. Systems must also report to the State by the 10<sup>th</sup> of the following month if the IFE exceeded 1.0 NTU in 2 consecutive recordings taken 15 minutes apart.

At the time of the Primacy Agency's sanitary survey, conducted on February 26, 2006, the inspector printed out the individual filter monitoring data and learned the following information, presented in the following four example scenarios. A description of the violation, example data reports, and the data elements and DTF transactions which should be used to report these kinds of violations to SDWIS/FED are presented.

In the following examples #10A, #10B and #10C relevant data is excerpted from turbidity monitoring forms and presented numerically. Shaded cells represent data that has been recorded but does not trigger follow-up activities under the LT1ESWTR.

### Example #10A: M&R 29/0300

Filter number 7 had exceeded 1.0 NTU in two consecutive measurements taken 15 minutes apart on November 11, 2005 and again on December 6, 2005. No report was provided to the Primacy Agency.

<b>Table 2-17. System D Filter #7 November 2005 IFE Turbidity Monitoring Form (Excerpt)</b>								
Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/11			1.2 NTU	1.1 NTU				
11/12								

<b>Table 2-18. System D Filter #7 December 2005 IFE Turbidity Monitoring Form (Excerpt)</b>								
Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/6						1.3 NTU	1.1 NTU	
12/7								

Example #10A. Decision:

These M&R violations are SDWIS coded as 29/0300. System D has incurred two (2) Major M&R violations because of the failure to report by the 10<sup>th</sup> of the following month that the turbidity in filter #7 exceeded 1.0 in two consecutive recordings taken 15 minutes apart in November 2005 (report due by December 10, 2005) and in December 2005 (report due by January 10, 2006). The SDWIS/FED data elements and individual DTF transactions are summarized at the end of the section in Exhibit 2.17.

**2.3.1.2 Type 29/0300: Failure to Perform a Self-Assessment of an Individual Filter**

*Cross-reference to Rule:* 40 CFR141.563(b)

Example #10B: M&R 29/0300

Filter number 3 exceeded 1.0 NTU in two consecutive measurements taken 15 minutes apart on October 31, 2005, November 1, 2005 and December 2, 2005 (3 consecutive months). System D failed to conduct a self-assessment of filter number 3 within 14 days of the trigger and made no report to the Primacy Agency.

<b>Table 2-19. System D Filter #3 October 2005 IFE Turbidity Monitoring Form (Excerpt)</b>								
Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
10/30								
10/31		1.2 NTU	1.1 NTU					

**Table 2-20. System D Filter #3 November 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/1						2.3 NTU	2.1 NTU	
11/2								

**Table 2-21. System D Filter #3 December 2005 IFE Turbidity Monitoring Form  
(Excerpt)**

Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/2		2.2 NTU	2.4 NTU					
12/3								

Example #10B. Decision:

This M&R violation is SDWIS coded as 29/0300. System D has incurred a Major M&R violation because of the failure to conduct a self-assessment of filter number 3 within 14 days of the observation of two consecutive measurements exceeding 1.0 NTU taken 15 minutes apart in three consecutive months on December 2, 2005. The SDWIS/FED data elements and individual DTF transactions are summarized at the end of the section in Exhibit 2.17.

**2.3.1.3 Type 29/0300: Failure to Arrange for a Comprehensive Performance Evaluation**

*Cross-reference to Rule:* 40 CFR141.563(c)

Example #10C: M&R 29/0300

Filter number 3 exceeded 2.0 NTU in two consecutive measurements taken 15 minutes apart on both November 1, 2005 and December 2, 2005 (2 consecutive months) which triggered a CPE. System D had not, at the time of the sanitary survey (February 26, 2006), made arrangements for the Primacy Agency or a third party approved by the Primacy Agency to conduct a CPE (required to have been arranged within 60 days of the last trigger).

<b>Table 2-22. System D Filter #3 November 2005 IFE Turbidity Monitoring Form (Excerpt)</b>								
Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
11/1						2.3 NTU	2.1 NTU	
11/2								

<b>Table 2-23. System D Filter #3 December 2005 IFE Turbidity Monitoring Form (Excerpt)</b>								
Date	Time							
	<12:00 pm	12:00 pm	12:15 pm	12:30 pm	12:45 pm	1:00 pm	1:15 pm	>1:15 pm
12/2		2.2 NTU	2.4 NTU					
12/3								

Example #10C. Decision:

This M&R violation is SDWIS coded as 29/0300. System D has incurred a Major M&R violation because of the failure to have the CPE arranged by no later than 60 days after the observation on December 2, 2005 of the second of two consecutive measurements exceeding 2.0 NTU taken 15 minutes apart in two consecutive months. System D is at risk of being out of compliance for additional time if they do not complete the CPE and submit the results within 120 days of December 2, 2005 (the date the second consecutive (month) filter number 3 exceedance was measured). The CPE must be submitted to the Primacy Agency by no later than April 1, 2006. The SDWIS/FED data elements and individual DTF transactions are summarized at the end of the section.

Example #10 Summary:

During the month of November, the system incurred one Type 29/0300 M&R violation for failure to report to the State following an IFE turbidity exceedance. During the month of December, the system incurred two Type 29/0300 M&R violations for failure to report to the State by the 10<sup>th</sup> of the month following an IFE turbidity exceedance and for failure to perform a Filter Self-Assessment. Although the Primacy Agency should appropriately respond to both of the violations from the month of December, the Primacy Agency should only submit one M&R violation report to SDWIS for the month of December. During the month of February the system incurred one Type 29/0300 violation for failure to arrange for a

CPE within 60 days after the observation of two consecutive IFE measurements exceeding 2.0 NTU taken 15 minutes apart in 2 consecutive months.

### Public Notice Requirements

According to the provisions of 40 CFR 141.201, the system must provide Tier 3 public notice for these violations.

### System Reporting

Within ten days after the end of each month the system must report to the Primacy Agency that continuous monitoring was conducted at each individual filter and that the system recorded results of that monitoring every fifteen minutes and will maintain the records for three years. The system must also report for any individual filter turbidity measurement that meets any of the following:

- two consecutive measurements taken fifteen minutes apart > 1.0 NTU
- two consecutive measurements taken fifteen minutes apart > 1.0 NTU in each of three consecutive months
- two consecutive measurements taken fifteen minutes apart > 2.0 NTU in two consecutive months

The report must include the filter number, the turbidity measurement, and the date(s) on which the exceedance(s) occurred.

### Primacy Agency to SDWIS/FED Reporting

Although the Primacy Agency should appropriately respond to all documented violations of the rule, SDWIS/FED should receive only one M&R violation report per monitoring period for each violation type for each PWS. Since Type 29/0300 violations are reported monthly, by system, to the Primacy Agency, and since all type 29/0300 violations are Major violations, the Primacy Agency should report one Type 29/0300 M&R violation, flagged as Major ("Y" in C1131) for November 2005, December 2005 and February 2006. In example #10C above, the issue of a potential Major M&R violation during April of 2006 is raised, however, at the time of the sanitary survey, System D's compliance with the April submittal date for the required CPE report is unknown.

The appropriate SDWIS/FED Individual Filter Trigger Response violation (29/0300) data elements and individual DTF transactions for a violation in November 2005 are listed below in Exhibit 2.17. The same entry should be made for the months of December 2005 and February 2006 (with associated C1107 and C1109 dates). It should be noted that the deadline date by which the system should have arranged for a CPE falls in February 2006. All individual filter M&R violations are considered Major. The Major violation flag (C1131), if reported, must be "Y." SDWIS/FED will default the value to "Y" if not it is not reported.

## Exhibit 2.17 Major LT1ESWTR M&R Violation - Response to Individual Filter Triggers Data Elements and DTF Transactions

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	29
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	<i>Must be one month later than C1107</i>
C1131	Major Violation Flag	<i>Y (default)</i>

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234588	0600001		I	C1103	0300		
D1	GA1234588	0600001		I	C1105	29		
D1	GA1234588	0600001		I	C1107	20051101		
D1	GA1234588	0600001		I	C1109	20051130		
D1	GA1234588	0600001		I	C1131	Y		

### 2.3.2 Type 38/0300: Failure to Collect and Report Filter Effluent Turbidity Monitoring

#### *Cross-reference to LT1ESWTR Implementation Guidance:*

Section V, pages 2 & 7

There are two distinct situations that define a Type 38/0300 M&R violation. They are described below in Sections 2.3.2.1 and 2.3.2.2. They are followed by individual examples of each definition (Examples #11 and #12). Finally, the data elements and individual DTFs used to report to SDWIS are presented.

#### Example System Description - System E:

System E is a subpart H system that treats a single surface water source with a direct filtration plant that has four individual filters capable of producing 3.46 MGD over a 24-hour period. The system serves 5,000 persons. Pursuant to the treatment technique requirements of the SWTR and LT1ESWTR, System E must measure the turbidity of the CFE every four hours of operation and record those measurements on a form approved by the Primacy Agency. Additionally, System E must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter turbidity readings must be recorded every 15 minutes during the time each filter is in operation and records of the 15-minute measurements must be retained by the system for at least three years. Systems must report that they have conducted individual filter monitoring within ten days following the end of each month. If the IFE

exceeded 1.0 NTU in 2 consecutive recordings taken 15 minutes apart, systems must also report this and the reason for the exceedance to the State by the 10<sup>th</sup> of the following month.

### 2.3.2.1 Type 38/0300: Failure to Monitor or Report Required CFE Samples

Table 2-24. Violation Type: 38/0300			
Violation Code	Contaminant Code	Monitoring and Reporting Violations	Rule Citation
38	0300	Major: Failure to collect and report at least 90% of required combined filter effluent turbidity sample results.  Minor: Any other failure to monitor or report.	40 CFR141.570(a)

#### 2.3.2.1.1 Major - Failure to Collect and Report at Least 90% of Required Combined Filter Effluent Samples

#### Minor - Any Other Failure to Monitor or Report

##### Example #11: M&R 38/0300

System E's operator takes samples of the CFE every four hours and measures turbidity. The results of these turbidity measurements are recorded on a daily CFE form approved by the Primacy Agency and the operator submits the completed forms to the Primacy Agency prior to the 10<sup>th</sup> day of the following month. However, on April 15, 2006, System E's operator went on extended medical leave for 90 days. During this period of time (April 15, 2006 to July 15, 2006) although some samples were taken, the backup operators failed to collect or report 25% of the required CFE samples, resulting in collection of only 75% of required samples during that time period.

##### Example #11 Decision: M&R 38/0300

This M&R violation is SDWIS coded as 38/0300. System E has incurred 3 Major M&R reporting violations (1 for each month) for the months of April, May and June of 2006 because of the failure to collect or report the necessary CFE samples.

##### Public Notice Requirement

According to the requirements of 40 CFR141.201, the system must provide Tier 3 public notice regarding the violation.

##### System Reporting

Within ten days after the end of each month the system must report to the Primacy Agency that continuous monitoring was conducted at each individual filter and that the system recorded results of that monitoring every fifteen minutes and will maintain the records for three years. The system must also report for any individual filter turbidity measurement that meets any of the following:

- two consecutive measurements taken fifteen minutes apart > 1.0 NTU



- two consecutive measurements taken fifteen minutes apart > 1.0 NTU in each of three consecutive months
- two consecutive measurements taken fifteen minutes apart > 2.0 NTU in two consecutive months

The report must include the filter number, the turbidity measurement(s), the date(s) on which the exceedance(s) occurred, and if the follow-up action has been completed.

#### Primacy Agency to SDWIS/FED Reporting

The SDWIS/FED data elements and individual DTF transactions are summarized at the end of the section and are illustrated in Exhibit 2.18.

#### **2.3.2.2 Type 38/0300 Major: Failure to Complete and Report Required Individual Filter Monitoring**

<b>Table 2-25. Violation Type: 38/0300</b>			
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Monitoring and Reporting Violations</b>	<b>Rule Citation</b>
38	0300	Major: Failure to report, within 10 days of end of month, that all individual filter monitoring has been conducted	40 CFR141.570(b)

#### Example #12: M&R 38/0300

During the 90 day period that System E's operator is on extended medical leave the backup operators also fail to report on a monthly basis that individual filter effluent has been monitored on a continuous basis and that the results of such monitoring has been measured and recorded at 15-minute intervals for each filter.

#### Example #12 Decision:

This M&R violation is SDWIS coded as 38/0300. System E has incurred 3 Major M&R violations (1 for each month) for the failure in each month to report that the individual filter effluent has been monitored as required.

#### Public Notice Requirement

According to the requirements of 40 CFR141.201, the system must provide Tier 3 public notice regarding the violation.

#### System Reporting

Within ten days after the end of each month the system must report to the Primacy Agency that continuous monitoring was conducted at each individual filter and that the system recorded results of that monitoring every 15 minutes and will maintain the records for three years. The system must also report for any individual filter turbidity measurement that meets any of the following:

- two consecutive measurements taken fifteen minutes apart > 1.0 NTU
- two consecutive measurements taken fifteen minutes apart > 1.0 NTU in each of three consecutive months

- two consecutive measurements taken fifteen minutes apart  $> 2.0$  NTU in two consecutive months

The report must include the filter number, the turbidity measurement, and the date(s) on which the exceedance(s) occurred.

Within 10 days of his return the operator submits the completed notification to the Primacy Agency prior to the 10<sup>th</sup> day of the following month that continuous monitoring was conducted at each individual filter and that the results were recorded.

#### Primacy Agency to SDWIS/FED Reporting

Although the Primacy Agency should appropriately respond to all documented violations of the rule, only one M&R violation is reported per monitoring period for each violation type. Type 38 /0300 violations are reported monthly, by the system, to the Primacy Agency, and may be either Major or Minor violations. The examples above illustrate that the water system incurred a number of violations during the months of April, May and June. If there are both Major and Minor Type 38/0300 violations at the same system, during the same reporting period (month in this case), then preference for SDWIS reporting should be given to the Major violation. The details of the violation are not reported to SDWIS, only the type.

The appropriate SDWIS/FED Major M&R sampling violation data elements and individual DTF transactions for Example #11 and Example #12 are listed below in Exhibit 2.18.

## Exhibit 2.18 LT1ESWTR M&R Major Sampling Violation Data Elements and DTF Transactions

### Data Elements:

Number	Name	Value or Comment
C0101	PWS-ID	Qualifier 1
C1101	Violation ID	Qualifier 2
C1103	Contaminant	0300
C1105	Violation Type	38
C1107	Compliance Period Begin Date	
C1109	Compliance Period End Date	Must be one month later than C1107 (defaulted if neither C1109 nor C1111 is reported)
C1131	Major Violation Flag	Y = Major, N = Minor

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-36	37-41
D1	GA1234589	0600001		I	C1103	0300	
D1	GA1234589	0600001		I	C1105	38	
D1	GA1234589	0600001		I	C1107	20060401	
D1	GA1234589	0600001		I	C1109	20060430	
D1	GA1234589	0600001		I	C1131	Y	
D1	GA1234589	0600002		I	C1103	0300	
D1	GA1234589	0600002		I	C1105	38	
D1	GA1234589	0600002		I	C1107	20060501	
D1	GA1234589	0600002		I	C1109	20060531	
D1	GA1234589	0600002		I	C1131	Y	
D1	GA1234589	0600003		I	C1103	0300	
D1	GA1234589	0600003		I	C1105	38	
D1	GA1234589	0600003		I	C1107	20060601	
D1	GA1234589	0600003		I	C1109	20060630	
D1	GA1234589	0600003		I	C1131	Y	

## 2.4 Recordkeeping Violations

### General Discussion of Recordkeeping Violations

Under the LT1ESWTR, one type of Recordkeeping violation is reported to SDWIS/FED. A Recordkeeping violation is reported for water systems that fail to maintain, in a reviewable format, the results of individual filter monitoring for at least 3 years from the date of sample collection. All LT1ESWTR violations are reported as violations of the rule, rather than of a specific contaminant. The contaminant code 0300 is utilized for the LT1ESWTR violations reported to SDWIS/FED.

#### 2.4.1 Type 09/0300: Failure to Maintain the Results of Individual Filter Monitoring for at Least 3 Years From Date of Sample Collection

*Cross-reference to LT1ESWTR Implementation Guidance:*

Section I, page 2 & 8

Section V, pages 2 & 8

Table 2-26. Violation Type: 09/0300			
Violation Code	Contaminant Code	Recordkeeping Violations	Rule Citation
09	0300	Failure to maintain the results of individual filter monitoring for at least 3 years after the date of sample collection.	40 CFR141.571(a)

#### Example System Description - System F:

System F is a subpart H system that treats a single surface water source with a direct filtration plant that has four individual filters capable of producing 3.46 MGD over a 24-hour period. The system serves 5,000 persons. Pursuant to the treatment technique requirements of the LT1ESWTR, System F must measure the turbidity of the CFE every four hours of operation and record those measurements on a form approved by the Primacy Agency. Additionally, System F must have continuous monitoring turbidimeters placed on the effluent of each individual filter and must measure the turbidity continuously while each filter is producing water that goes to the clearwell. These individual filter turbidity readings must be recorded every 15 minutes during the time each filter is in operation and records of the 15-minute measurements must be retained by the system for at least three years. Systems must report that they have conducted individual filter monitoring within ten days following the end of each month. Systems must also report to the State by the 10<sup>th</sup> of the following month if the IFE exceeded 1.0 NTU in 2 consecutive recordings taken 15 minutes apart. If the IFE exceeded 1.0 NTU in 2 consecutive recordings taken 15 minutes apart, systems must also report this and the reason for the exceedance to the State by the 10<sup>th</sup> of the following month.

#### Example #13: Recordkeeping 09/0300

A representative from the Primacy Agency travels to System F on January 5, 2006 to conduct a sanitary survey. During the sanitary survey, she asks to see the individual filter monitoring results and learns that they are purged from System F's SCADA system at the end of each quarter and no other records of such measurements are retained.

#### Example #13 Decision:

This violation is SDWIS coded as 09/0300. System F has incurred a recordkeeping violation because records of individual filter turbidity measurements have not been maintained for at least three years after the date of sample collection (they are purged from the SCADA system at the end of each quarter and no other records are kept).

#### Public Notice Requirements

According to the requirements of 40 CFR141.201, the system must provide Tier 3 public notice regarding the violation.

#### System Reporting Requirements

There are no specific system reporting requirements for this violation.

#### Primacy Agency to SDWIS/FED Reporting

For SDWIS/FED reporting, the violation begin date is the date on which the Primacy Agency becomes aware of the failure on January 5, 2006 (20060105). The violation is considered to be returned to compliance when the water system documents to the primacy agency that it has 3-years of filter turbidity monitoring data. The appropriate SDWIS/FED recordkeeping violation data elements and individual DTF transactions for violation Type 09/0300 are listed in Exhibit 2.19.

## Exhibit 2.19 Recordkeeping Violation - Failure to Maintain Results of Individual Filter Effluent Measurements For at Least 3 Years After Date of Sample Data Elements and DTF Transactions

### Data Elements:

<u>Number</u>	<u>Name</u>	<u>Value or Comment</u>
C0101	PWS-ID	<i>Qualifier 1</i>
C1101	Violation ID	<i>Qualifier 2</i>
C1103	Contaminant	0300
C1105	Violation Type	09
C1107	Compliance Period Begin Date	<p>This date should not be provided with the violation. SDWIS/FED processing will generate a default date of 12/31/2015. When the primacy agency has determined that the PWS is compliant (i.e., collected and kept on site 3 years of individual filter turbidity measurements), then the primacy agency needs to submit a "returned to compliance" enforcement action and link it to the original record keeping violation. The date of the action should represent the date the primacy agency made that determination. SDWIS/FED processing will modify the end date of the original violation to be the same date as the "returned to compliance" reported.</p>
C1109	Compliance Period End Date	

### DTF Transactions:

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
D1	GA1234585	0600001		I	C1103	0300		
D1	GA1234585	0600001		I	C1105	09		
D1	GA1234585	0600001		I	C1107	20060105		

## **Section 3**

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# **General SDWIS Reporting**

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# **General SDWIS Reporting & SDWIS Inventory Reporting**

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## **3.1 Federally Reported Violations**

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Under SDWIS/FED reporting, Primacy Agencies report when violations occur. In the interest of reducing the reporting burden on Primacy Agencies, EPA has limited the number and type of violations to be reported to SDWIS/FED. However, PWSs must still keep records and report all required information to the Primacy Agency. Any violation of the rule, whether included in the accompanying table or not, is a basis for a Primacy Agency or federal enforcement action. Table 3-1 summarizes the violation and contaminant codes that will be used when it is necessary to report violations of the LT1ESWTR to SDWIS/FED.

Table 5.2, from the *LT1ESWTR Implementation Guidance*, contains the federally reportable violations for the LT1ESWTR in more detail. These violations are listed by contaminant or requirement and violation type. The table includes the SDWIS/FED reporting codes, the regulatory citation, system type affected, a detailed description of the violation, and the initial compliance date. This table will contribute to a user's understanding of those violations listed in SDWIS.

### **SDWIS/FED Reporting**

This section provides guidance to EPA Regions and Primacy Agencies on reporting facility information and violations of the LT1ESWTR and DBP rules to the national SDWIS/FED database.

The SDWIS/FED reporting requirements in this section apply to systems of all types and sizes. Although the method of violation determination may differ between systems, a particular violation code will define the same violation at any system.

### **SDWIS/FED Data Transfer File (DTF) Format**

Data are reported to SDWIS/FED via a formatted Data Transfer File (DTF). Exhibit 3.1 depicts the format of a DTF transaction. Refer to *SDWIS/FED Data Entry Instructions* for further information regarding DTF processing and construction, particularly modification and deletion issues which are not covered in this document.

<b>Table 3-1. SDWIS/FED Codes for Federal Reporting Under the LTIESWTR</b>		
<b>Violation Code</b>	<b>Contaminant Code</b>	<b>Treatment Technique (TT) Violations</b>
37	0300	Failure to profile or consult w/Primacy Agency (disinfection changes)
43	0300	Combined filter effluent exceeds 1 NTU/Primacy Agency-set maximum requirements
44	0300	More than 5% of monthly combined filter effluent samples exceed 0.3 NTU/Primacy Agency-set maximum requirements
47	0300	Construction of an uncovered finished water storage facility
		<b>Monitoring and Reporting Violations</b>
29	0300	<b>Major:</b> Failure to conduct follow-up activities triggered by individual filter turbidity exceedances.
38 <sup>1</sup>	0300	<b>Major:</b> Failure to collect and report 90% of required combined filter effluent turbidity samples
		<b>Major:</b> Failure to report all individual filter monitoring has been conducted
		<b>Major:</b> Failure to report combined filter effluent maximum turbidity exceedances by the end of the next business day
		<b>Minor:</b> Any other failure to monitor or report
		<b>Recordkeeping Violations</b>
09	0300	Failure to maintain the results of individual filter monitoring for at least 3 years

### Exhibit 3.1 General DTF File and Transaction Format

1-2	3-11	12-18	19-25	26	27-31	32-71	72-74	75-80
Form ID	Qual 1	Qual 2	Qual 3	DIM Code	DE Number	Data Value	Blank	Batch Sequence Number

Form ID	An identification number that allows input of certain types of data.
Form B1	Used for Source/Entity Data in Inventory Reporting.
Form B2	Used for Treatment Data.
Form B3	Used for Facility Flow Data.
Form D1	Used for Violation Data.
Form E1	Used for Enforcement Data.
Qualifier 1	The Public Water System Identifier (PWS-ID) of the Water System to be inserted, modified, or deleted.
Qualifier 2	Contains an ID that further defines what record is to be inserted, modified, or deleted. Qualifier 2 contains the SE ID when reporting facilities and Treatments, the violation ID when reporting violations, and the enforcement ID when reporting enforcements.
Qualifier 3	Contains an ID that further defines what record is to be inserted, modified, or deleted. Qualifier 3 contains the treatment ID when reporting treatments.
DIM Code	D= Delete I = Insert M = Modify
Data Element Number	The DTF data element number (e.g., C0483, C1105) identifying a specific element to be inserted, modified, or deleted.
Data Value	The data value associated with the data element number.
Batch Sequence Number	The number assigned to the group of data being submitted. Used to sequence processing against the database, if required.

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## **Section 4**

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# **Additional Sources of Information**

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# Additional Sources for Technical Information on the LT1ESWTR

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## **SDWIS/FED Documents**

### SDWIS/FED Data Entry Instructions

This document provides details for the creation of all parts of DTF transactions

### SDWIS/FED Online Data Dictionary

This application provides details on every table and field contained in SDWIS/FED, including definitions, permitted values, names, and editing requirements.

### LT1ESWTR Disinfection Profiling and Benchmarking Technical Guidance Manual (EPA 816-R-03-004)

**Objective:** Help determine if a disinfection profile (an evaluation of current disinfection practices) is required and how to do one; when a disinfection benchmark must be determined and how to extract it from the profile; and how a PWS should use the benchmark, in consultation with the Primacy Agency, to assure protection from microbial risk is maintained when the system changes its disinfection practice.

**Contents:** The manual provides detailed information on the following subjects: applicability of the profiling and benchmarking requirements to PWSs; procedures for generating a disinfection profile, including example profiles; methods for calculating the disinfection benchmark, including example calculations; the use of the benchmark in modifying disinfection practices, communication with the Primacy Agency, and assessing significant changes to disinfection practices; the development of the profiling and benchmarking regulations; the significance of the log inactivation concept and CT values for inactivations achieved by various disinfectants; and the determination of contact time.

### LT1ESWTR Turbidity Provisions Technical Guidance Manual (EPA 816-R-03-005)

**Objective:** To provide information on the turbidity requirements in LT1ESWTR and on concepts surrounding turbidity.

**Contents:** The manual includes information on turbidity requirements, data collection, data management, filter self-assessments, and other treatment processes related to turbidity.

### Alternative Disinfectants and Oxidants Guidance Manual (EPA 815-R-99-014)

**Objective:** To provide technical data and engineering information on disinfectants and oxidants that are not as commonly used as chlorine so that systems can evaluate their options for developing disinfection schemes to control water quality problems such as zebra mussels and Asiatic clams, and oxidation to control water quality problems associated with iron and manganese.

**Contents:** The manual discusses six disinfectants and oxidants: ozone, chlorine dioxide, potassium permanganate, chloramines, ozone/hydrogen peroxide combinations, and ultraviolet light. A decision tree is provided to assist in evaluating which disinfectant, or disinfectants, is most appropriate given certain site-specific conditions (e.g., water quality conditions, existing treatment, and operator skill). The manual also contains a summary of existing alternative disinfectants used in the U.S. and cost estimates for the use of alternative disinfectants.

### Guidance Manual for Conducting Sanitary Surveys of Public Water Systems (EPA 815-R-99-016)

- Objective: Provides an overview of how to conduct a sanitary survey of all water systems using surface water and ground water under the direct influence of surface water. It is intended to help Primacy Agency agencies improve their sanitary survey programs where needed.
- Contents: The manual provides information about the objective and regulatory context of sanitary surveys. It covers four principal stages of a sanitary survey: planning, including preparatory steps to be taken by inspectors before conducting the on-site portion conducting the on-site survey, compiling a sanitary survey report, and performing follow-up activities.

Uncovered Finished Water Reservoirs Manual (EPA 815-R-99-011)

- Objective: To provide information on ways to limit water quality degradation in existing uncovered finished water reservoirs.
- Contents: Provides detailed information on the following subjects: developing and implementing comprehensive open finished water reservoir management plans based on site-specific conditions; identifying potential sources of contamination in open finished water reservoirs and potential mitigation measures; employing different methods to control the degradation of water quality while it resides in the reservoir; monitoring schemes that can be used to characterize water quality and identify water quality degradation before it becomes severe and difficult to correct.

Microbial and Disinfection Byproducts Rules Simultaneous Compliance Guidance Manual (EPA 815-R-99-015)

- Objective: To assist PWSs on complying simultaneously with various drinking water regulations (e.g., Stage 1 DBPR, IESWTR, Lead and Copper Rule, and the Total Coliform Rule). The manual discusses operational problems systems may encounter when implementing these rule.
- Contents: The manual provides detailed information on the requirements in the Stage 1 DBPR and the IESWTR.

Implementation Guidance for the LT1ESWTR

- Objective: To assist Primacy Agencies with implementation of the LT1ESWTR, including preparation of primacy revision application packages.
- Contents: The manual contains chapters on rule overview, primacy implementation issues, primacy revision packages, PN and CCR requirements related to the rule, and SDWIS reporting.



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