



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

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 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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The general description provided here may not apply to a particular situation based upon the circumstances. Interested parties are free to raise questions and objections about the substance of this guidance and the appropriateness of the application of this guidance to a particular situation. EPA and other decisionmakers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this guidance where appropriate.

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Abbreviations

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

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

Rule Requirements

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1.1 Introduction

The Long-Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) was published in the *Federal Register* on January 14, 2002 [67 FR 1812; See www.epa.gov/safewater/mbdp/lt1eswtr.html]. This rule is part of a series of rules, the “Microbial-Disinfectants/Disinfection Byproducts Cluster” (M-DBP Cluster), to be published over several years. The rule cluster is intended to improve control of 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, specifically *Cryptosporidium*, in public water systems (PWSs) serving fewer than 10,000 people without significantly increasing the potential risks from chemical contaminants. It utilizes the same framework as the Interim Enhanced Surface Water Treatment Rule (IESWTR), that applies to systems serving 10,000 or more people. The LT1ESWTR was proposed concurrently with the Filter Backwash Recycling Rule (FBRR), which addresses the recycle of filter backwash within the treatment process. The Filter Backwash Recycling Rule was finalized as a separate rule [66 FR 31086; See www.epa.gov/safewater/filterbackwash.html].

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

1.1.1 History

The 1974 Safe Drinking Water Act (SDWA) called for EPA to regulate drinking water by creating the national interim primary drinking water regulations (NIPDWR). In 1979, the first interim standard addressing DBPs was set for total trihalomethanes (TTHMs), a group of four volatile organic chemicals which form when disinfectants react with natural organic matter in the water.

Although the SDWA was amended slightly in 1977, 1979, and 1980, the most significant changes to the 1974 law occurred when the SDWA was reauthorized in 1986. Waterborne disease outbreaks of giardiasis demonstrated that disease-causing microbial contamination had not been sufficiently controlled under the original Act. In addition, several hundred chemical contaminants were known to occur in the environment, but few were regulated in public water systems. To safeguard public health, the 1986 Amendments required EPA to set health goals, or maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs) for 83 named contaminants. EPA was also required to establish additional regulations within certain time frames, require disinfection of all surface water supplies, specify filtration requirements for nearly all water systems that draw their water from surface sources, and develop additional programs to protect ground water supplies.

In 1989, EPA issued two important National Primary Drinking Water Regulations (NPDWR): The Total Coliform Rule (TCR) and the Surface Water Treatment Rule (SWTR). The TCR and SWTR provide the foundation for the M-DBP Cluster and are summarized below.

Total Coliform Rule

The TCR covers all public water systems. Coliforms are easily detected in water and are used to indicate a water system’s vulnerability to pathogens. In the TCR, EPA set a MCLG of zero for total coliforms. EPA also set an MCL for total coliforms and required testing of total-coliform positive cultures for the presence of *E. coli* or fecal coliforms, these latter indicating more immediate health risks from sewage or fecal contamination. In addition, the TCR required sanitary surveys every 5 years (or 10 years for non-

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

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, & LT1ESWTR 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	LT1ESWTR 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
<p>General Requirements and Compliance Dates</p>	<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>
<p>Watershed Control Requirements to Avoid Filtration</p>	<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	LT1ESWTR
<p>Combined Filter Effluent Turbidity Provisions - 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 95th 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 95th 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 [§141.551]</p> <p>No new frequency provisions.</p>
<p>Combined Filter Effluent Turbidity Provisions - 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 ≤ 500.</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 95th 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	LT1ESWTR
<p>Individual Filter Effluent (IFE) Turbidity Provisions -</p> <p>Conventional or Direct Filtration Treatment Only</p>	<p>Not applicable</p>	<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 <i>5 working days</i>.</p> <p>[§141.174]</p> <p>System must report that they have conducted IFE monitoring by the 10th 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 <i>14 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>
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter¹ exceeds 1.0 NTU in 2 consecutive recordings 15 minutes apart</p>	<p>Not applicable</p>	<p>The system must report the date(s), filter number, and turbidity values that exceeded 1.0 NTU by the 10th 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	LT1ESWTR
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter¹ 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>	<p>Not applicable</p>	<p>The system must report the filter number, turbidity value and dates(s) in which the exceedance occurred by the 10th 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>	<p>No requirement</p>
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter¹ exceeds 1.0 NTU in 2 consecutive recordings 15 minutes apart for 3 months in a row</p>	<p>Not applicable</p>	<p>The system must report the filter number, turbidity measurements and dates(s) on which the exceedance occurred by the 10th 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	LT1ESWTR
<p>IFE Follow-up Action -</p> <p>If the turbidity of an individual filter¹ 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 10th 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 60 days after the filter exceeded 2.0 NTU for the second straight month, <i>and</i> must be completed and the report submitted within 120 days after the final exceedance.</p> <p>[§141.563(c)]</p>
Disinfection Profile Applicability ²	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	LT1ESWTR
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	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].
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	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].
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	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].
January 14, 2004	Final primacy applications must be submitted to EPA unless granted an extension [40 CFR §142.12(b)(1)].

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"> • Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)]; and • Meet the combined filter effluent (CFE) turbidity requirements of 40 CFR §141.551: <ul style="list-style-type: none"> ▶ ≤0.3 NTU CFE 95 percent of the time; and ▶ At no time exceed 1 NTU
January 1, 2005*	<p>Systems using slow sand or diatomaceous earth filtration must:</p> <ul style="list-style-type: none"> • Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)]; and • Continue to meet the CFE turbidity requirement limits in 40 CFR §141.73 of the SWTR: <ul style="list-style-type: none"> ▶ ≤1 NTU CFE 95 percent of the time; and ▶ At no time exceed 5 NTU
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"> • Install and properly operate a technology that reliably achieves 99 percent removal of <i>Cryptosporidium</i> oocysts [§141.500(a)]; • 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 • Meet state-established alternative CFE turbidity requirements based on a demonstration by the system as described in §141.552.
January 1, 2005*	<p>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.</p>

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)

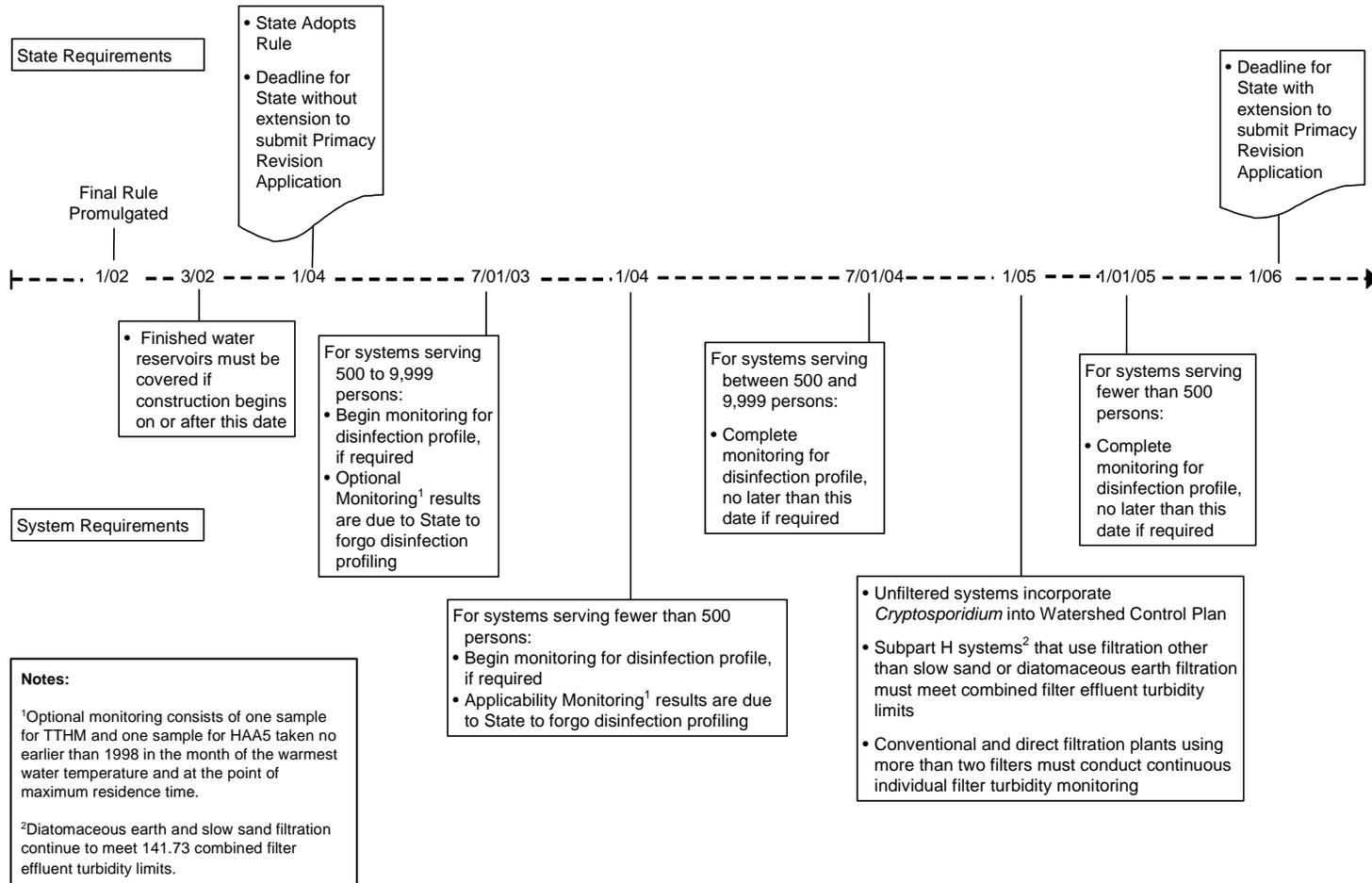
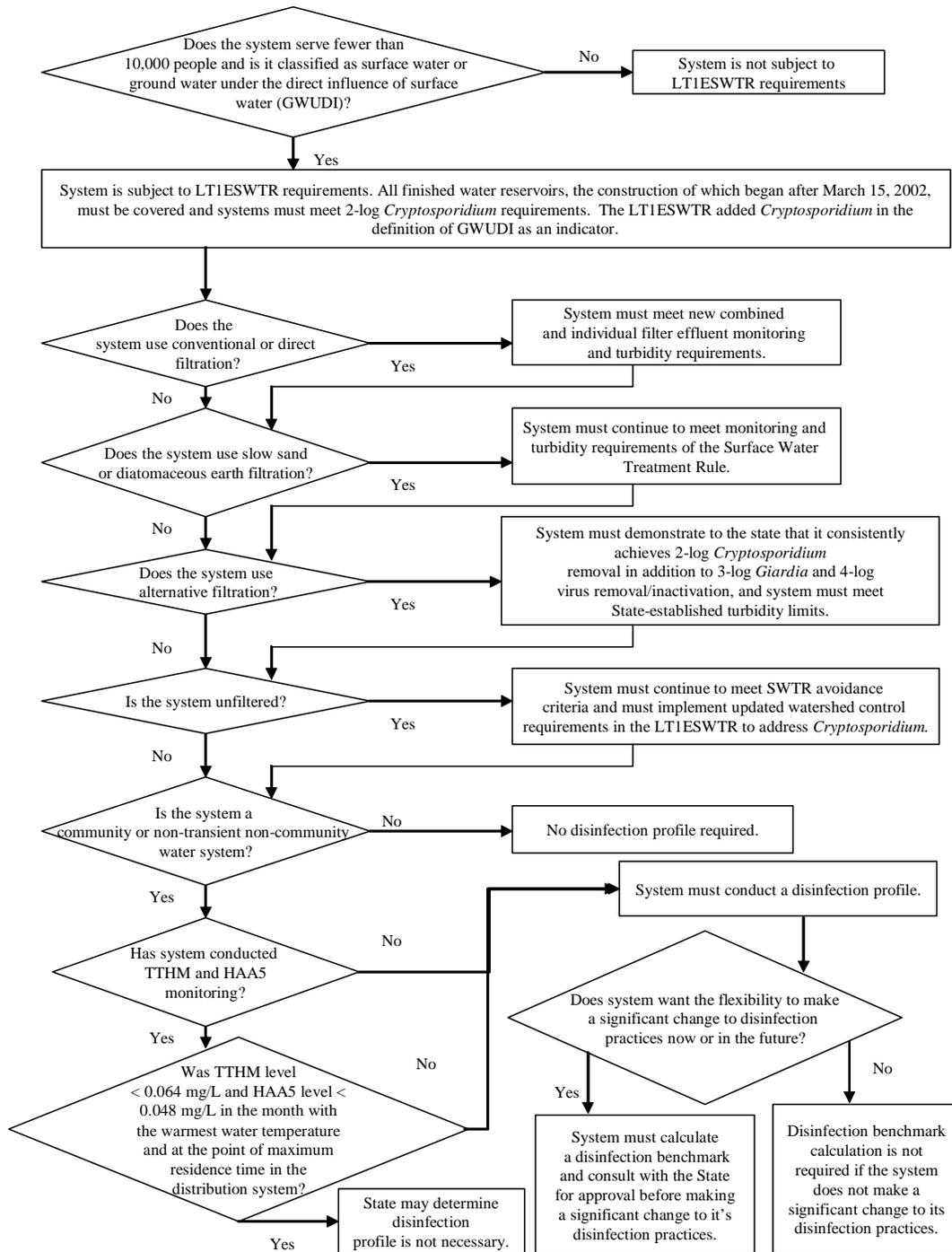


Figure 1.2: General Requirements of the LT1ESWTR



1.4 Requirements of the Rule: Public Water Systems

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 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).

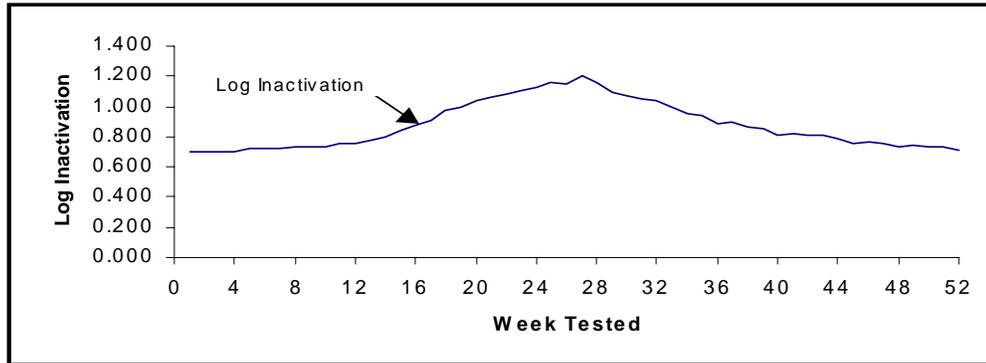
1.4.2.1 Who must develop a disinfection profile?

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.

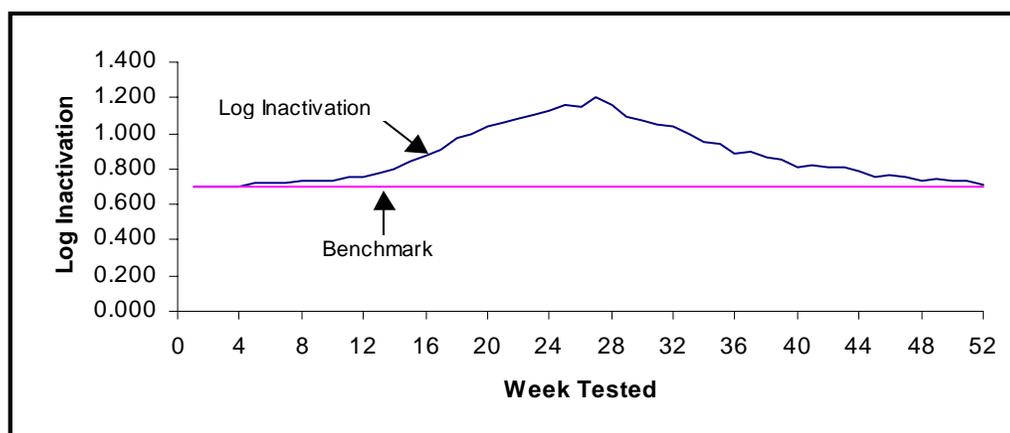
1.4.2.4 When could a state approve a more representative data set for disinfection profiling?

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).

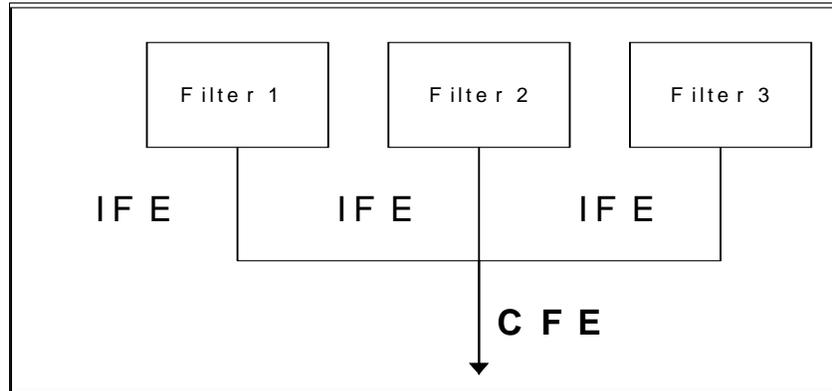
1.4.3.2 What are the requirements for *Cryptosporidium* control for unfiltered systems?

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 95th 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 95th 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 th 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 <ul style="list-style-type: none"> • 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 10th 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 95th 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 10th 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 10th 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 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):
 - 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 10th 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

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 LT1ESWTR, 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

Frequently Asked Questions (FAQs)

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2.1 Long Term One Enhanced Surface Water Treatment Rule

2.1.1 *Cryptosporidium*

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

- 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.
- 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).
- 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.
- 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.
- 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).

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 95th 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 LT1ESWTR 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 95th 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

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 LT1ESWTR 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
CCR Q71, 75	Greenleaf Filter Plant Q38	Recordkeeping Requirements Q41, 72
Certification Letter Q60	Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources Q22, 31	Rotavirus Q22
Changes in Disinfection Practice Q6, 12, 21, 22, 24-28, 70	Guidance Manual for Compliance with the Long Term 1 Enhances Surface Water Treatment Rule: Turbidity Provisions Q9	Rule Language Q66
Chloramines Q22	GWUDI Q58, 62	Sanitary Survey Q19, 70
Chlorine Q22, 26	Hepatitis A Virus Q22	Secondary Filter Q37
Combined Filter Effluent (CFE) Q29-32, 37, 72	IESWTR Q6-7, 53, 68	Sedimentation Q59
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		Watershed Q1, 4
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Section III

State Implementation

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3.1 Overview of Implementation

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

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

* 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 95th 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 Primacy Requirements. The state's primacy application for the IESWTR 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

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 primacy agency chooses to keep a record of sending the notice, it provides a hard-copy document the primacy 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. 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

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

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

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

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 affect 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

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 ²)		
Hydraulic Loading Conditions	Average operating flow (mgd or gpm)		
	Peak instantaneous operating flow (mgd or gpm)		
	Average hydraulic surface loading rate (gpm/ft ²)		
	Peak hydraulic surface loading rate (gpm/ft ²)		
	Changes in hydraulic loading rate (gpm/ft ²)		
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 ²) 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

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 LT1ESWTR 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

Because the reporting requirements for combined filter effluent and individual filter effluent turbidity are the same for both the IESWTR and LT1ESWTR, states may choose to use the same data reporting forms for all systems regardless of whether they are subject to the IESWTR or LT1ESWTR. It is expected states already have reporting forms or policies on reporting formats available for system use.

The *LT1ESWTR 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 ≤ 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 ≤ 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 ¹	D ²	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					
17					
18					
19					
20					
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.

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 10th 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 10th 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				X Community				
PWSID: _____			# of Filters: 4				Non-Community				
A	B	C	D	E	F	G	H	I	J	K	L
						Coagulant	Coagulant	Maximum			
	Operating	Influent				Name:	Name:	Combined		No. of	No. of
	Time	Water Treated	Raw	Treated	Raw	Alum		Filter	No. of	Turbidity	Turbidity
Day	Hrs/Day	Gal/Day	pH	pH	NTU	PPM	PPM	NTU	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 10th 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 IESWTR.) 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

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

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

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

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

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

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

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.

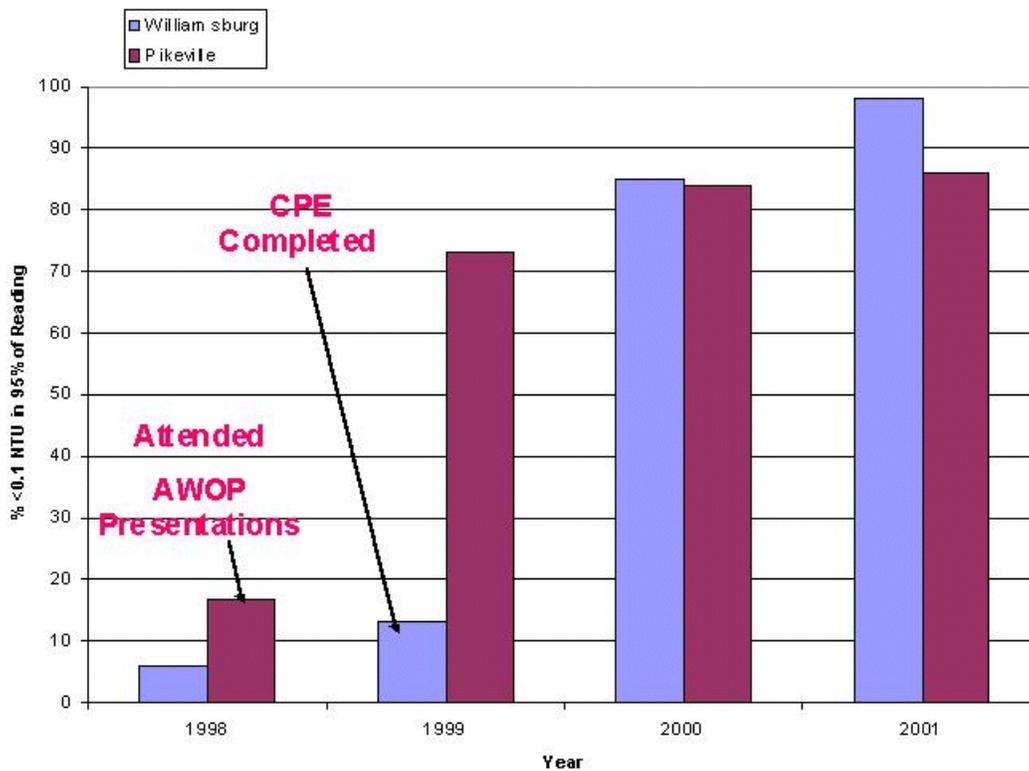
1. Benefits to the effectiveness of the state drinking water programs.
2. Impacts on the performance of individual systems.
3. Impact on the performance of systems state-wide.

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

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"> • Preliminary Approval Request • Draft State Regulations and/or Statutes • Regulation Crosswalk 	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"> • Adopted State Regulations • Regulation Crosswalk • 40 <i>CFR</i> 142.10 Primacy Update Checklist • 40 <i>CFR</i> 142.14 and 142.15 Reporting and Recordkeeping • 40 <i>CFR</i> 142.16 Special Primacy Requirements • Attorney General's Enforceability Certification 	By January 14, 2004*
EPA final review and determination: <ul style="list-style-type: none"> • Regional review (program and ORC) • Headquarters concurrence and waivers (OGWDW and OECA)*** • Public Notice • Opportunity for hearing • EPA's Determination 	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.

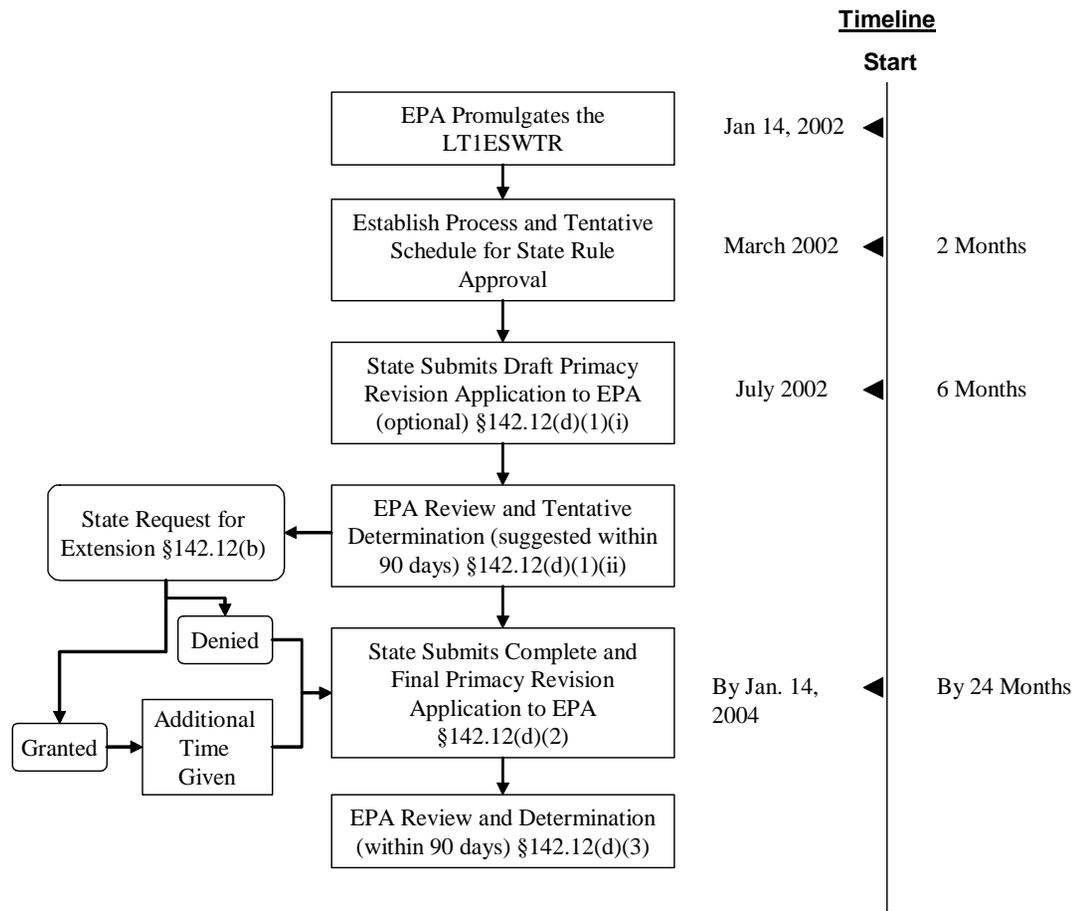
The state and Region should agree to a plan and timetable for submitting the state primacy revision application as soon as possible after rule promulgation—ideally within five months of promulgation.

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

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	
_____	_____	Issue notices of violation (NOVs) for treatment technique and monitoring/reporting violations of the LT1ESWTR
_____	_____	Provide immediate technical assistance to PWSs with treatment technique and/or monitoring/reporting violations to try to bring them into compliance.
_____	_____	Refer all violations to EPA for enforcement if they have not been resolved within 60 days of the period that triggered the violation. Provide information as requested to conduct and complete any enforcement action referred to EPA.
_____	_____	Other

iv) Providing technical assistance to public water systems.

State	EPA	
_____	_____	Conduct training within the state for PWSs on LT1ESWTR rule requirements.
_____	_____	Provide technical assistance through written and/or verbal correspondence to PWSs.
_____	_____	Provide on-site technical assistance to PWSs as requested and needed to ensure compliance with this regulation.
_____	_____	Coordinate with other technical assistance providers and organization to provide accurate information and aid in a timely manner.
_____	_____	Other

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

State	EPA	
_____	_____	Report any violations incurred by PWSs for these regulations each quarter.
_____	_____	Report any enforcement actions taken against PWSs for these regulations each quarter.
_____	_____	Report any variances or exemptions granted for PWSs for these regulations each quarter.
_____	_____	Other

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	
_____	_____	Acquire additional resources to implement these regulations (List of specific steps being taken attached as <u>{List A}</u>).
_____	_____	Provide quarterly updates describing the status of acquiring additional resources.
_____	_____	Other

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

<p>Model Language</p> <p>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.</p>
<p>Model Language</p> <p>I. For States with No Audit Privilege and/or Immunity Laws</p> <p>Furthermore, I certify that [State / Commonwealth of (3)] has not enacted any environmental audit privilege and/or immunity laws.</p> <p>II. For States with Audit Laws that do Not Apply to the State Agency Administering the Safe Drinking Water Act</p> <p>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].</p>
<p>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</p> <p>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.</p> <p>Seal of Office</p> <p>_____</p> <p>Signature</p> <p>_____</p> <p>Name and Title</p> <p>_____</p> <p>Date</p> <p>(1) State Attorney General or attorney for the primacy agency if it has independent legal counsel</p> <p>(2) 40 CFR 142.11(a)(7)(i) for initial primacy applications or 142.12(c)(1)(iii) for primacy program revision applications.</p> <p>(3) Name of State or Commonwealth</p> <p>(4) Name of Tribe</p> <p>(5) Name of Primacy Agency</p>

4.4 Guidance for the Special Primacy Requirements of the LT1ESWTR

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 *LTIESWTR 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. *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. (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. *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. (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

SDWIS Reporting and SNC Definitions

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

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

Violation Code	Contaminant Code	Treatment Technique (TT) Violations
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)
		Monitoring and Reporting (M/R) Violations
29	0300	Major: Failure to conduct follow-up activities triggered by individual filter turbidity exceedances.
38 ¹	0300	Major: Failure to collect and report 90 percent of required combined filter effluent turbidity samples
		Major: Failure to report all individual filter monitoring has been conducted
		Minor: Any other failure to monitor or report
		Recordkeeping Violations
09	0300	Failure to maintain the results of individual filter monitoring for at least 3 years
		Public Notification (PN) Violation
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 th 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. M/R Minor Any other failure to monitor or report.	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*
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

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

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

Type of Notification	By When?	By What Means?	Deadline to Certify Compliance
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

Violation	Type	Public Notification	Inclusion in CCR	Required Language
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 ¹ (PN, CCR)
Exceedance of 95 th -percentile turbidity limit in more than 5% of monthly CFE turbidity samples	TT	Tier 2	Required	Turbidity Health Effects ¹ (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 ² (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 ² (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 ² (PN, CCR)
Failure to collect CFE turbidity monitoring results as required	Monitoring	Tier 3	Required	Monitoring & Testing ³ (PN)

Violation	Type	Public Notification	Inclusion in CCR	Required Language
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 ³ (PN)
Failure to conduct follow-up actions triggered by regular IFE monitoring	Monitoring	Tier 3	Required	Monitoring & Testing ³ (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 10th 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 pre-disinfectant 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 10th 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

<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 ≤ 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	
<u>Water Quality Data at Treatment Plant #2</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples ≤ 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	
<u>Violations at Treatment Plants #1 and #2</u>						
<ul style="list-style-type: none"> 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. <i>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.</i> We are not aware of any increased incidence of waterborne disease in the community connected with these isolated exceedances. <p>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.</p>						

Example 3: Exceedance of 95th 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)

Total Filter Measurements	# ≤ 0.3 NTU	% ≤ 0.3 NTU	Date > 1 NTU	Value of > 1 NTU
186	167	90%	--	--

Table 6-7. System D 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 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 95th 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 95th 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 ≤ 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 ≤ 0.3 NTU is $< 95\%$	N/A	91%	July, 2006	Yes	soil runoff
	TT violation if any sample > 1 NTU		--	--	No	
<u>Violations at Treatment Plants #1 and #2</u>						
<ul style="list-style-type: none"> 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. <i>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.</i> 						

Example 4: Exceedance of 95th 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 10th 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)

Total Filter Measurements	# ≤ 0.5 NTU	% ≤ 0.5 NTU	Date > 1 NTU	Value of > 1 NTU
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 95th-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 95th Percentile Turbidity Exceedance

<u>Water Quality Data</u>						
Contaminant	MCL/MRDL/TT	MCLG	Value	Date	Violation	Source
Turbidity	TT violation if percentage of samples ≤ 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 10th day of the following month. Systems must also report to the state by the 10th 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 10th 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 10th 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 10th 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 10th 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 10th 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 10th 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.