Section II

Resources and Guidance

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In addition to this Implementation Guidance, a variety of resource materials and technical guidance documents have been prepared by EPA to facilitate understanding and implementing the LT1ESWTR. This section is an overview of each of these resources and includes instructions on how to obtain the documents.

2.1 Technical Guidance Manuals and Video

Two technical guidance manuals are being developed to support the LT1ESWTR. These manuals will aid EPA, State agencies, and affected PWSs in implementing this rule and will help ensure that implementation among these groups is consistent.

The *"LT1ESWTR Disinfection Profiling and Benchmarking Guidance"* summarizes the rule requirements and focuses on the process of creating a disinfection profile and determining a benchmark for a system. Examples are provided that illustrate the necessary steps to calculate log inactivation, create a profile and calculate the benchmark. Information for systems considering modifying disinfection practices is also presented.

The *"LT1ESWTR Turbidity Guidance"* provides detailed information on the following subjects:

1. Rule requirements
2. Turbidimeters
3. Operational modifications for compliance with new turbidity limits

The manual also includes suggested worksheets (with completed examples) for use in complying with the ongoing reporting and recordkeeping requirements. The forms presented in the technical guidance manuals have been incorporated into Section 3: State Implementation of this document to provide an example of how required information may be collected from systems. Systems are reminded to check with their primacy agency to determine if these or other forms are to be used.

In addition to these manuals, a video, "Filter Self-Assessment" will be available from EPA and will provide useful information to help systems comply with this rule.

For more information, contact EPA's Safe Drinking Water Hotline, 1 (800) 426-4791, or see the Office of Ground Water and Drinking Water web page. The rule and guidance documents are located at (http://www.epa.gov/safewater/mdbp/lt1eswtr.html). Hard copies may be ordered through NSCEP (800.490.9198) or NTIS (800.553.6847).

2.2 Rule Presentation

A presentation that can be used for workshops for the LT1ESWTR is available in Power Point format on the EPA web site. (http://www.epa.gov/safewater/mdbp/lt1eswtr.html)

2.3 Quick Reference Guide/Fact Sheets

A Quick Reference Guide and Fact Sheets for the LT1ESWTR may be useful in conveying basic information to water systems, new personnel, and for educating stakeholders about the rule. These are stand-alone documents and are included in Appendix C of this guidance. They are:

- ✓ Long Term 1 Enhanced Surface Water Treatment Rule: A Quick Reference Guide
- ✓ Fact Sheet: Long Term 1 Enhanced Surface Water Treatment Rule
- ✓ Fact Sheet: Disinfection Profiling for the LT1ESWTR
- ✓ Fact Sheet: Disinfection Profiling and Benchmarking for LT1ESWTR
- ✓ Fact Sheet: Long Term 1 Enhanced Surface Water Treatment Rule: Turbidity Provisions for Conventional and Direct Filtration Systems
- ✓ Fact Sheet: Long Term 1 Enhanced Surface Water Treatment Rule: Turbidity Provisions for Slow Sand, Diatomaceous Earth and Alternative Filtration Systems

2.4 Q&As

Questions and Answers (Q&As) on the LT1ESWTR are provided in this section. These questions have been asked of EPA through the Safe Drinking Water Hotline, implementation training, or other means.

2.4.1 Rule Deadlines

[To be inserted later]

2.4.2 *Cryptosporidium*

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 incorporate *Cryptosporidium* into their watershed control programs. If a system meeting the SWTR avoidance criteria fails to address *Cryptosporidium* under the LT1ESWTR, they will be required to filter within 18 months to meet the removal requirements. As before, any failure to meet the SWTR avoidance criteria requires filtration within 18 months. More stringent requirements may be placed on systems avoiding filtration in future regulations.

Q: Can a system use UV 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. A system must physically remove 99 percent of oocysts using filtration *alone*.

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 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*. Whether additional steps are needed will be determined by an onsite assessment of each watershed, currently conducted by the States on an annual basis. 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.

2.4.3 Disinfection Profiling And Benchmarking

Citation	Part Title
§141.530 - 536	Disinfection Profile
§141.540 - 544	Disinfection Benchmark

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 §141.530 - 141.536 and fails to do so, this failure would constitute a treatment technique violation.

Q: Can States use a different method to calculate a disinfection profile?

A: States always have the option to adopt rules that are equally or more stringent to those of EPA. This option offers the possibility that States might develop alternative procedures that EPA could find to be equally stringent and protective of public health.

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".

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 base the determination on this sample data.

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.

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.

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.

Q: Under §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.

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. However, the State can consult with the system and allow changes they determine to be appropriate prior to beginning or completing the disinfection profile. The EPA recognizes that it may not always be practical to postpone necessary changes in disinfection practices until completion of the profile.

Q: What exactly is meant by consultation with the State for systems making 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 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, States must describe "how they will consult" with systems in their primacy revision application (§ 142.16(j)(2)(iii)).

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, or liquid to gas, chlorine would not be considered a significant change, under the LT1ESWTR. States may require notification of such change or approval prior to making the change through other rules

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.

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.

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, but only unfiltered systems are required to use the CT procedure. 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.

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 inatctivation studies be performed in these cases to ensure adequate inactivation of viruses.

The LT1ESWTR, however, requires development of a disinfection profile 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 will approve methods that are acceptable to calculate the logs of inactivation for viruses.

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).

2.4.4 Turbidity Standards (Combined Filter Effluent)

Citation	Part Title
§141.550 - 553	Combined Filter Effluent

Q: In terms of compliance with the combined filter effluent turbidity levels, does 0.3 NTU really mean 0.349 NTU and does 1 NTU really mean 1.49 NTU?

A: Yes, due to rounding of significant figures.

Q: A system may substitute continuous turbidity monitoring for grab sample monitoring every four hours. Which results of the continuous monitoring would the system report?

A: 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 0.3 NTU, and the date and value of recorded measurements greater than 1 NTU.

2.4.5 Individual Filter Provisions

Citation	Part Title
§141.560 - 564	Individual Filter Turbidity Requirements

Q: As a system brings filters on line, at different times, do they need separate timers on each filter or can they take all 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.

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.

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 you 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 public health protection for the maximum number of people. Configurations which 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 which believe that they fall under this category should consult with the State. However, it is likely that some of these plants/filters are plumbed such that they can install turbidimeters on individual filters, and therefore should.

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 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.

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.

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.

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 would have the option of measuring and recording turbidity at 15 minute intervals using a bench top turbidimeter until the on-line unit returned to normal.

Q: If a system is required to have a Comprehensive Performance Evaluation (CPE) conducted by the State or a third party, is the system liable if the State or third party does not conduct the CPE within 90 days (and the delay is clearly the fault of the State or third party, not the system)?

A: 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. When the State chooses to perform the CPE and is unable to do so within the time frame established by the rule, it has the authority to issue an administrative order that includes the establishment of a more appropriate compliance schedule.

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 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.

2.4.6 Alternative Filtration Technologies

Citation	Part Title
§141.552	Combined Filter Effluent Requirements

Q: Why are diatomaceous earth and slow sand filters not required to meet the more stringent turbidity requirements of 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. Therefore, they are not required to meet more stringent requirements under the LT1ESWTR.

Q: Will a State have to re-evaluate alternative filtration technologies previously approved under the 1989 SWTR for the purposes of the *Cryptosporidium* removal requirements of the LT1ESWTR?

A: Yes, States will have to re-evaluate alternative filtration technologies previously approved under the SWTR in order to determine whether they are capable of 2-log removal of *Cryptosporidium* cysts.

Q: How will a State approve an alternative filtration technology that reduces the turbidity to levels that cannot be reliably measured using turbidimeters? How will the PWS determine compliance with the LT1ESWTR turbidity requirements?

A: States are required by §142.16(j)(iv) to explain how they plan to approve alternative technologies and establish turbidity performance requirements for such technologies. The State would approve the above-referenced alternative filtration technology in the same manner it would use for other technologies that might be less effective in terms of turbidity removal and would then establish performance standards that would ensure appropriate inactivation/removal

of *Giardia lamblia* and viruses and removal of *Cryptosporidium*. For purposes of compliance it would not be necessary to measure down to the level of actual turbidity removal. It is only necessary to accurately measure turbidity at the levels established by the State as performance standards for the technology. The State may require an equally stringent performance requirement such as frequent integrity testing for membrane systems.

Q: Can States allow log removal credit for GWUDI systems for natural filtration?

A: States have the discretion to consider "natural filtration" an alternative technology. Examples where this might be appropriate are well designed off-stream infiltration galleries and Ranney collectors. Pursuant to §141.552 the system would have to demonstrate to the State that it 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. The State would then have to establish performance standards that ensure the removal and inactivation requirements are achieved.

Q: Are contact absorption clarifiers and dissolved air floatation considered sedimentation in the conventional filtration process as defined in 141.2?

A: The State has the flexibility to consider these processes as part of the conventional filtration process. However, once the process has been categorized, the State should be consistent in implementation for all their systems. If these processes are not classified as part of conventional filtration, they are considered alternative filtration technologies and must meet the regulatory provisions that address those technologies.

2.4.7 General Program Requirements - Primacy

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. 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 would also have to confirm that there are no State audit laws preventing enforcement of the rules.

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 they have submitted a complete and final primacy revision application to EPA, AND they have 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 (two years plus up to a two 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.

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, the processes used by States to identify GWUDI under the existing SWTR would still apply. When identifying GWUDI, States use a process that considers indicators that cysts might be present and does not look specifically for cysts. Even though *Cryptosporidium* oocysts are different from *Giardia* cysts, the process is not required to be updated.

Q: Can States "bundle" regulations in their primacy revision package?

A: Yes, States may combine two or more rules in one primacy revision package provided that the States' adoption of the rules falls within the statutory two year period and two year extension period, if applicable.

Q: May a State adopt the LT1ESWTR by reference?

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

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.

2.4.8 Violations, SDWIS Reporting and SNC Definitions

Q: If a system receives 2 treatment technique violations in 1 month, is that counted as two TT violations toward SNC?

A: Yes.

Q: How frequently are SNC determinations made? Can a system potentially receive a SNC designation every month? every quarter? every year?

A: Significant Non-Compliance (SNC) determinations for all rules, including the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) and the Stage 1

Disinfectants/Disinfection Byproducts Rule (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 which covers the 12 month compliance period which ended the previous quarter.

Q: If a system does not profile and is required to, what kind of violation is it?

A: Failure to profile is a treatment technique violation.

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.

2.4.9 Data Reporting and Recordkeeping

[To be inserted later]

2.4.10 Other

[To be inserted later]