

comply with individual filter turbidity limits and monitoring and reporting requirements.

Finished Water Reservoirs

§ 141.510 Is my system subject to the new finished water reservoir requirements?

All subpart H systems which serve populations fewer than 10,000 are subject to this requirement.

§ 141.511 What is required for new finished water reservoirs?

If your system initiates construction of a finished water reservoir after [DATE 60 DAYS AFTER DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER] the reservoir must be covered. Finished water reservoirs constructed prior to [DATE 60 DAYS AFTER DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER] are not subject to this requirement.

Additional Watershed Control Requirements

§ 141.520 Is my system subject to the updated watershed control requirements?

If you are a subpart H system serving fewer than 10,000 persons which does not provide filtration, you must continue to comply with all of the watershed control requirements in § 141.71, as well as the additional watershed control requirements in § 141.521.

§ 141.521 What additional watershed control requirements must my system comply with?

Your system must also maintain the existing watershed control program to minimize the potential for contamination by *Cryptosporidium* oocysts in the source water. Your system's watershed control program must, for *Cryptosporidium*:

(a) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and

(b) Monitor the occurrence of activities which may have an adverse effect on source water quality.

§ 141.522 How does the State determine whether my system's watershed control requirements are adequate?

During an onsite inspection conducted under the provisions of

§ 141.71(b)(3), the State must determine whether your watershed control program is adequate to limit potential contamination by *Cryptosporidium* oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of your program to monitor and control detrimental activities occurring in the watershed; and the extent to which your system has maximized land ownership and/or controlled land use within the watershed.

Disinfection Profile

§ 141.530 Who must develop a Disinfection Profile and what is a Disinfection Profile?

All subpart H community and non-transient non-community water systems which serve fewer than 10,000 persons must develop a disinfection profile. A disinfection profile is a graphical representation of your system's level of *Giardia lamblia* or virus inactivation measured during the course of a year. Your system must develop a disinfection profile unless you can demonstrate to the State that your TTHM and HAA5 levels are less than 0.064 mg/l and 0.048 mg/l respectively, prior to January 7, 2003.

§ 141.531 How does my system demonstrate TTHM and HAA5 levels below 0.064 mg/l and 0.048 mg/l respectively?

In order to demonstrate that your TTHM and HAA5 levels are below 0.064 mg/L and 0.048 mg/L, respectively your system must have collected one TTHM and one HAA5 sample taken between 1998–2002. Samples must have been collected during the month with the warmest water temperature, at the point of maximum residence time in your distribution system which indicate TTHM levels below 0.064 mg/l and HAA5 levels below 0.048 mg/L. By January 7, 2003, you must submit a copy of the results to the State along with a letter indicating your intention to forgo development of a disinfection profile because of the results of the sampling. This letter, along with a copy of your TTHM and HAA5 sample lab results must be kept on file for review by the State during a sanitary survey. If the data you have collected is either equal to or exceeds either 0.064 mg/l for

TTHM and/or 0.048 mg/l for HAA5s, you must develop a disinfection profile.

§ 141.532 How does my system develop a Disinfection Profile and when must it begin?

A disinfection profile consists of three steps:

(a) First, your system must collect measurements for several treatment parameters from the plant as discussed in § 141.533. Your system must begin this monitoring no later than January 7, 2003.

(b) Second, your system must use these measurements to calculate inactivation ratios as discussed in §§ 141.534 and 141.535; and

(c) Third, your system must use these inactivation ratios to develop a disinfection profile as discussed in § 141.536.

§ 141.533 What measurements must my system collect to calculate a Disinfection Profile?

Your system must monitor the parameters necessary to determine the total inactivation ratio using analytical methods in § 141.74 (a), once per week on the same *calendar* day each week as follows:

(a) The temperature of the disinfected water must be measured at each residual disinfectant concentration sampling point during peak hourly flow;

(b) If the system uses chlorine, the pH of the disinfected water must be measured at each chlorine residual disinfectant concentration sampling point during peak hourly flow;

(c) The disinfectant contact time(s) ("T") must be determined during peak hourly flow; and

(d) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection must be measured during peak hourly flow.

§ 141.534 How does my system use these measurements to calculate an inactivation ratio?

Calculate the total inactivation ratio as follows, and multiply the value by 3.0 to determine log inactivation of *Giardia lamblia*:

If a system...	The system must determine...
(a) Uses only one point of disinfectant application	(1) One inactivation ratio (CT _{calc} /CT _{99.9}) before or at the first customer during peak hourly flow, or

If a system...	The system must determine...
(b) Uses more than one point of disinfectant application before the first customer.	(2) Successive CT _{calc} /CT _{99.9} values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system must calculate the total inactivation ratio by determining (CT _{calc} /CT _{99.9}) for each sequence and then adding the (CT _{calc} /CT _{99.9}) values together to determine (Σ (CT _{calc} /CT _{99.9})). You may use a spreadsheet that calculates CT and/or contains the necessary inactivation tables. (1) The CT _{calc} /CT _{99.9} value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow using the procedure described in the above paragraph.

§ 141.535 How does my system develop a Disinfection Profile if we use chloramines, ozone, or chlorine dioxide for primary disinfection?

If your system uses either chloramines, ozone or chlorine dioxide for primary disinfection, you must also calculate the logs of inactivation for viruses. You must develop an additional disinfection profile for viruses using a method approved by the State.

§ 141.536 If my system has developed an inactivation ratio, what must we do now?

Each inactivation ratio serves as a data point in your disinfection profile. Your system will have obtained 52 measurements (one for every week of the year). This will allow your system and the State the opportunity to evaluate how microbial inactivation varied over the course of the year by looking at all 52 measurements (your Disinfection Profile). Your system must retain the Disinfection Profile data in graphic form, as a spreadsheet, or in some other format acceptable to the State for review as part of sanitary surveys conducted by the State. Your system will need to use this data to calculate a benchmark if considering changes to disinfection practices.

Disinfection Benchmark

§ 141.540 Who has to develop a Disinfection Benchmark?

If you are a subpart H system required to develop a disinfection profile under §§ 141.530 through 141.536, your system must develop a Disinfection Benchmark if you decide to make a significant change to disinfection practice. State approval must be obtained before you can implement a significant disinfection practice change.

§ 141.541 What are significant changes to disinfection practice?

Significant changes to disinfection practice are:

- (a) Changes to the point of disinfection;

- (b) Changes to the disinfectant(s) used in the treatment plant;

- (c) Changes to the disinfection process; or

- (d) Any other modification identified by the State.

§ 141.542 How is the Disinfection Benchmark Calculated?

If your system is making a significant change to its disinfection practice, it must calculate a disinfection benchmark using the following procedure:

- (a) To calculate a disinfection benchmark a system must perform the following steps:

Step 1: Using the data your system collected to develop the Disinfection Profile, determine the average *Giardia lamblia* inactivation for each calendar month by dividing the sum of all *Giardia lamblia* inactivations for that month by the number of values calculated for that month.

Step 2: Determine the lowest monthly average value out of the twelve values. This value becomes the disinfection benchmark.

- (b) [Reserved]

§ 141.543 What if my system uses chloramines or ozone for primary disinfection?

If your system uses chloramines, ozone or chlorinated dioxide for primary disinfection your system must calculate the disinfection benchmark from the data your system collected for viruses to develop the disinfection profile in addition to the *Giardia lamblia* disinfection benchmark calculated under § 141.542. The disinfection benchmark must be calculated as described in § 141.542.

§ 141.544 What must my system do if considering a significant change to disinfection practices?

If your system is considering a significant change to the disinfection practice, it must complete a disinfection benchmark(s) as described in §§ 141.542 and 141.543 and provide the

benchmark(s) to your State. Your system may only make a significant disinfection practice change after receiving State approval. The following information must be submitted to the State as part of their review and approval process:

- (a) A description of the proposed change;
- (b) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark;
- (c) An analysis of how the proposed change will affect the current levels of disinfection; and
- (d) Additional information requested by the State.

Combined Filter Effluent Requirements

§ 141.550 Is my system required to meet subpart T combined filter effluent turbidity limits?

All subpart H systems which serve populations fewer than 10,000, and are required to filter, must meet combined filter effluent requirements. Unless your system consists of slow sand or diatomaceous earth filtration, you are required to meet the combined filter effluent turbidity limits in § 141.551. If your system uses slow sand or diatomaceous earth filtration you must continue to meet the combined filter effluent turbidity limits in § 141.73.

§ 141.551 What strengthened combined filter effluent turbidity limits must my system meet?

Your system must meet two strengthened combined filter effluent turbidity limits.

- (a) The first combined filter effluent turbidity limit is a "95th percentile" turbidity limit which your system must meet in at least 95 percent of the turbidity measurements taken each month. Measurements must continue to be taken as described in § 141.74(a) and
- (c). The following table describes the required limits for specific filtration technologies.

If your system consists of . . .	Your 95th percentile turbidity value is . . .
(1) Conventional filtration or direct filtration	0.3 NTU.
(2) Membrane filtration	0.3 NTU or a value determined by the State (not to exceed 1 NTU) based on a demonstration conducted by the system as described in § 141.552.
(3) All other "alternative" filtration	A value determined by the State (not to exceed 1 NTU) based on the demonstration described in § 141.552.

(b) The second combined filter effluent turbidity limit is a "maximum" turbidity limit which your system may at no time exceed during the month. Measurements must continue to be taken as described in § 141.74(a) and (c). The following table describes the required limits for specific filtration technologies.

If your system consists of . . .	Your maximum turbidity value is . . .
(1) Conventional filtration or direct filtration	1 NTU.
(2) Membrane filtration	1 NTU or a value determined by the State (not to exceed 5 NTU) based on a demonstration conducted by the system as described in § 141.552.
(3) All other "alternative" filtration	A value determined by the State (not to exceed 5 NTU) based on the demonstration as described in § 141.552.

§ 141.552 If my system consists of "alternative filtration" and is required to conduct a demonstration, What is required of my system and how does the State establish my turbidity limits?

(a) If your system is required to conduct a demonstration (see tables in § 141.551), your system must demonstrate to the State, using pilot plant studies or other means, that your system's filtration, in combination with disinfection treatment, consistently achieves:

- (1) 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts;
- (2) 99.99 percent removal and/or inactivation of viruses; and
- (3) 99 percent removal of *Cryptosporidium* oocysts.

(b) If the State approves your demonstration, it will set turbidity performance requirements that your system must meet:

- (1) At least 95 percent of the time (not to exceed 1 NTU); and
- (2) That your system must not exceed at any time (not to exceed 5 NTU).

§ 141.553 If my system practices lime softening, is there any special provision regarding my combined filter effluent?

If your system practices lime softening, you may acidify representative combined filter effluent turbidity samples prior to analysis using a protocol approved by the State.

Individual Filter Turbidity Requirements

§ 141.560 Is my system subject to individual filter turbidity requirements?

If your system is a subpart H system serving fewer than 10,000 people and utilizing conventional filtration or direct filtration, you must conduct continuous monitoring of turbidity for each individual filter at your system. The following requirements apply to individual filter turbidity monitoring:

- (a) Monitoring must be conducted using an approved method in § 141.74(a);

(b) Calibration of turbidimeters must be conducted using procedures specified by the manufacturer;

(c) Results of individual filter turbidity monitoring must be recorded every 15 minutes;

(d) Monthly reporting must be completed according § 141.570; and

(e) Records must be maintained according to § 141.571.

§ 141.561 What happens if my system's turbidity monitoring equipment fails?

If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring until the turbidimeter is back on-line. A system has five working days to resume continuous monitoring before a violation is incurred.

§ 141.562 What follow-up action is my system required to take based on turbidity monitoring of individual filters?

Follow-up action is required according to the following tables:

If the turbidity of an individual filter exceeds...	The system must...
(a) If the turbidity of an individual filter exceeds 1.0 NTU (in two consecutive recordings).	Submit an exceptions report to the State by the 10th of the month which includes the filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU.

If an exceptions report is submitted for the same filter...	The system must...
(b) If an exceptions report is submitted for the same filter three months in a row.	Conduct a self-assessment of the filter within 14 days of the exceedance and report that the self assessment was conducted by the 10th of the following month. The self assessment must consist of at least the following components: Assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.

If an exceptions report is submitted for the same filter...	The system must...
(c) If an exceptions report is submitted for the same filter two months in a row and both months contain exceedances of 2.0 NTU (in 2 consecutive recordings).	(1) Arrange to have a comprehensive performance evaluation (CPE) conducted by the State or a third party approved by the State no later than 30 days following the exceedance and have the evaluation completed and submitted to the State no later than 90 days following the exceedance, Unless— (2) 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.

§ 141.563 My system practices lime softening. Is there any special provision regarding my individual filter turbidity monitoring?

If your system utilizes lime softening, you may apply to the State for alternative turbidity exceedance levels for the levels specified in the table in § 141.562. You must be able to demonstrate to the State that higher

turbidity levels in individual filters are due to lime carryover only, and not due to degraded filter performance.

Reporting and Recordkeeping Requirements

§ 141.570 What does subpart T require that my system report to the State?

This subpart T requires your system to report several items to the State. The

following table describes the items which must be reported and the frequency of reporting. Your system is required to report the information described below, if it is subject to the specific requirement shown in the first column.

Corresponding requirement	Description of information to report	Frequency
(a) Combined Filter Effluent Requirements.	(1) The total number of filtered water turbidity measurements taken during the month.	By the 10th of the following month.
	(2) The number and percentage of filtered water turbidity measurements taken during the month which are greater than your system's required 95th percentile limit.	By the 10th of the following month.
	(3) The date and value of any turbidity measurements taken during the month which exceed the maximum turbidity value for your filtration system.	(i) Within 24 hours of exceedance and (ii) By the 10th of the following month.
(b) Individual Filter Turbidity Requirements.	(1) That your system conducted individual filter turbidity monitoring during the month.	By the 10th of the following month.
	(2) The filter number(s), corresponding date(s), and the turbidity value(s) which exceeded 1.0 NTU during the month..	By the 10th of the following month only if— (ii) 2 consecutive values exceeded 1.0 NTU.
	(3) That a self assessment was conducted within 14 days of the date it was triggered.	(i) 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) only if— (ii) A self-assessment is required.
	(4) That a CPE is required and the date that it was triggered	(i) By the 10th of the following month only if— (ii) A CPE is required.
	(5) Copy of completed CPE report	Within 90 days after the CPE was triggered.
(c) Disinfection Profiling	(1) Results of applicability monitoring which show TTHM levels <0.064 mg/l and HAA5 levels <0.048 mg/l. (Only if your system wishes to forgo profiling) or that your system has begun disinfection profiling.	No later than January 7, 2003.
(d) Disinfection Benchmarking	(1) A description of the proposed change in disinfection, your system's disinfection profile for <i>Giardia lamblia</i> (and, if necessary, viruses) and disinfection benchmark, and an analysis of how the proposed change will affect the current levels of disinfection.	Anytime your system is considering a significant change to its disinfection practice.

§ 141.571 What records does subpart T require my system to keep?

Your system must keep several types of records based on the requirements of subpart T. The following table describes

the necessary records, the length of time these records must be kept, and for which requirement the records pertain. Your system is required to maintain records described in this table, if it is

subject to the specific requirement shown in the first column. For example, if your system uses slow sand filtration, you would not be required to keep individual filter turbidity records:

Corresponding requirement	Description of necessary records	Duration of time records must be kept
(a) Individual Filter Turbidity Requirements.	Results of individual filter monitoring	At least 3 years.
(b) Disinfection Profiling	Results of Profile (including raw data and analysis)	Indefinitely.
(c) Disinfection Benchmarking	Benchmark (including raw data and analysis)	Indefinitely.
(d) Covered Reservoirs	Date of construction for all uncovered finished water reservoirs utilized by your system.	Indefinitely.

PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

13. The authority citation for Part 142 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

14. Section 142.14 is amended by revising paragraphs (a)(3), (a)(4)(i), (a)(4)(ii) introductory text, and (a)(7) to read as follows:

§ 142.14 Records kept by States.

(a) * * *

(3) Records of turbidity measurements must be kept for not less than one year. The information retained must be set forth in a form which makes possible comparison with the limits specified in §§ 141.71, 141.73, 141.173 and 141.175, 141.550-141.553 and 141.560-141.563 of this chapter. Until June 29, 1993, for any public water system which is providing filtration treatment and until December 30, 1991, for any public water system not providing filtration treatment and not required by the State to provide filtration treatment, records kept must be set forth in a form which makes possible comparison with the limits contained in § 141.13 of this chapter.

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(4)(i) Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness in accordance with §§ 141.72 and 141.74 of this chapter and the reporting requirements of §§ 141.75, 141.175, and 141.570, of this chapter must be kept for not less than one year.

(ii) Records of decisions made on a system-by-system and case-by-case basis under provisions of part 141, subpart H, subpart P, or subpart T of this chapter, must be made in writing and kept at the State.

* * * * *

(7) Any decisions made pursuant to the provisions of part 141, subpart P or subpart T of this chapter.

(i) Records of systems consulting with the State concerning a modification to disinfection practice under §§ 141.172(c), 141.170(d), and 141.544 of this chapter, including the status of the consultation or approval.

(ii) Records of decisions that a system using alternative filtration technologies, as allowed under §§ 141.173(b) and § 141.552 of this chapter, can consistently achieve a 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The decisions must include State-set enforceable turbidity limits for each system. A copy of the decision must be kept until the decision is reversed or revised. The State must provide a copy of the decision to the system.

(iii) Records of systems required to do filter self-assessment, CPE, or CCP under the requirements of § 141.175 and § 141.562 of this chapter.

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15. Section 142.15 is amended by adding paragraphs (c)(6) and (c)(7) and (c)(8).

§ 142.15 Reports by States.

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(c) * * *

(6) Recycle return location. A list of all systems moving the recycle return location prior to the point of primary coagulant addition. The list must also contain all the systems the State granted alternate recycle locations, describe the alternative recycle return location, and briefly discuss the reason(s) the alternate recycle location was granted and is due [DATE 60 MONTHS AFTER DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER].

(7) Self assessment determination. A list of all systems performing self assessments must be reported to EPA. The list must state whether individual plants exceeded State approved operating capacity during self assessment monitoring and whether the State required modification to recycle practice. A brief description of the modification to recycle practice required at each plant must be provided. If a plant exceeded State approved operating capacity, and the State did not require modification of recycle practice, the State must provide a brief explanation for this decision. Self assessment results must be reported no later than [DATE 54 MONTHS AFTER DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER].

(8) Direct filtration determination. A list of all direct filtration systems recycling within the treatment process must be submitted to EPA. The list must state which systems were required to modify recycle practice and briefly describe the modification and the reason it was required. It must also identify systems not required to modify recycle practice and provide a brief description of the reason modification to recycle practice was not required. The list must be submitted no later than [DATE 54 MONTHS AFTER DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER].

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16. Section 142.16 is amended by adding paragraph (b)(2)(v), (b)(2)(vi), and (b)(2)(vii) and (i) to read as follows:

§ 142.16 Special primacy requirements.

* * * * *

(b) * * *

(2) * * *

(v) The application must describe the criteria the State will use to determine alternate recycle locations for public water systems applying to return spent filter backwash, thickener supernatant,

or liquids from dewatering to an alternate location other than prior to the point of primary coagulant addition.

(vi) The application must describe the criteria the State will use to determine whether public water systems completing self assessments are required to modify recycle practice and the criteria that will be used to specify modifications to recycle practice.

(vii) The application must describe the criteria the State will use to determine whether direct filtration systems are required to change recycle practice and the criteria that will be used to specify changes to recycle practice.

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(i) *Requirements for States to adopt 40 CFR part 141, subpart T Enhanced Filtration and Disinfection.* In addition to the general primacy requirements enumerated elsewhere in this part, including the requirement that State provisions are no less stringent than the federal requirements, an application for approval of a State program revision that adopts 40 CFR part 141, subpart T Enhanced Filtration and Disinfection, 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 shall determine whether a CTA must be conducted based on results of a CPE which indicate the potential for improved performance, and a finding by the State that the system is able to receive and implement technical assistance provided through the CTA. A CPE is a thorough review and analysis of a system's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance. During the CTA phase, the system must identify and systematically address factors limiting performance.

The CTA is a combination of utilizing CPE results as a basis for follow-up, implementing process control priority-setting techniques and maintaining long-term involvement to systematically train staff and administrators.

(2) *State practices or procedures.* (i) Section 141.536 of this chapter—How the State will approve a method to calculate the logs of inactivation for viruses for a system that uses either chloramines or ozone for primary disinfection.

(ii) Section 141.544 of this chapter—How the State will approve modifications to disinfection practice.

(iii) Section 141.552 of this chapter—For filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, diatomaceous earth filtration, or membrane 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 (or membrane filtration), 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.

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