

**FINAL FORM REGUALTION  
EQB #7-439  
(IRRC #2797)**

**SAFE DRINKING WATER AMENDMENTS (STAGE 2  
DISINFECTANTS AND DISINFECTION BYPRODUCTS  
RULE (STAGE 2 DBPR) LONG TERM 2 ENHCANCED  
SURFACE WATER TREATMENT RULE (LT2ESWTR)  
AND GROUNDWATER RULE (GWR))**

**THIS FINAL REGULATION IS A COMBINATION OF  
THREE PROPOSED REGULATIONS:**

**#7-425 EQB (IRRC #2734): SAFE DRINKING  
WATER (GROUNDWATER RULE)**

**#7-426 EQB (IRRC #2735): LOING-TERM 2  
ENHANCED SURFACE WATER  
TREATMENT RULE (SAFE DRINKING  
WATER)**

**#7-427 EQB (IRRC #2736): SAFE DRINKING  
WATER (STAGE 2 DISINFECTANTS AND  
DISINFECTION BYPRODUCTS RULE)**

**ANY INFORMATION PERTAINING TO THIS FINAL CAN  
BE FOUND ON OUR WEBSITE UNDER IRRC #2797.**



# Regulatory Analysis Form

(Completed by Promulgating Agency)



## SECTION I: PROFILE

(1) Agency

Department of Environmental Protection

(2) Agency Number:

Identification Number: 7-439

IRRC Number:

2797

(3) Short Title:

Safe Drinking Water Amendments (Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR), Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and Groundwater Rule (GWR))

(4) PA Code Cite:

25 Pa. Code, Chapter 109

(5) Agency Contacts (List Telephone Number, Address, Fax Number and Email Address):

Primary Contact: Michele Tate, 772-4768, [mtate@state.pa.us](mailto:mtate@state.pa.us), 717-783-8926

Secondary Contact: Kelly Heffner, 783-8727, [kheffner@state.pa.us](mailto:kheffner@state.pa.us), 717-783-8926

(6) Primary Contact for Public Comments (List Telephone Number, Address, Fax Number and Email Address) – Complete if different from #5:

Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477.

(7) Type of Rulemaking (check applicable box):

- Proposed Regulation
- Final Regulation
- Final Omitted Regulation
- Emergency Certification Regulation;
  - Certification by the Governor
  - Certification by the Attorney General



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(8) Briefly explain the regulation in clear and nontechnical language. (100 words or less)

The proposed amendments will incorporate federal regulations promulgated by EPA in 2006. The proposed amendments will:

- Reduce disease incidence associated with disinfection byproducts (DBPs) that form when public water systems add disinfectants.
- Provide for more consistent and equitable protection from DBPs across the entire distribution system.
- Further protect public health against *Cryptosporidium* and other microbial pathogens in surface water.
- Establish a risk-targeted approach to identify groundwater systems that are susceptible to fecal contamination.
- Define treatment requirements for viruses in groundwater.

(9) Include a schedule for review of the regulation including:

- A. The date by which the agency must receive public comments: N/A
- B. The date or dates on which public meetings or hearings will be held: N/A
- C. The expected date of promulgation of the proposed regulation as a final-form regulation: 4<sup>th</sup> Quarter 2009
- D. The expected effective date of the final-form regulation: 4th Quarter 2009
- E. The date by which compliance with the final-form regulation will be required: December 1, 2009 – October 1, 2014\*  
\*Compliance will be phased in separately for each of the 3 rules; please refer to Annex A for the specific compliance dates for each rule.

- F. The date by which required permits, licenses or other approvals must be obtained: December 1, 2009 – October 1, 2014\*\*  
\*\*Any permits or approvals necessary to comply with the regulation will be required prior to the applicable compliance date; please refer to Annex A for the specific compliance dates for each rule.

(10) Provide the schedule for continual review of the regulation.

The amendments will be reviewed in accordance with the Sunset Review Schedule published by the Department.

## **SECTION II: STATEMENT OF NEED**

(11) State the statutory authority for the regulation. Include specific statutory citation.

The Pennsylvania Safe Drinking Water Act, 35 P.S. § 721.4(a), and sections 1917-A and 1920-A of the Administrative Code of 1929, 71 P.S. §§ 510-17 and 510-20(b).

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- (12) Is the regulation mandated by any federal or state law or court order, or federal regulation? Are there any relevant state or federal court decisions? If yes, cite the specific law, case or regulation as well as, any deadlines for action.

Yes. Section 1413 of the federal Safe Drinking Water Act, 42 U.S.C. § 300g-2a, requires that, in order for the state to retain primary enforcement authority (primacy), the state must adopt drinking water regulations that are "no less stringent than" the national primary drinking water regulations not later than 2 years after the date on which the regulations are promulgated by the United States Environmental Protection Agency (EPA), or must ask EPA for an extension of up to 2 years. The federal drinking water primacy regulations at 40 CFR § 142.12(a) also require the state to adopt all new and revised national primary drinking water regulations contained in 40 CFR Part 141 in order to retain primacy. Furthermore, Section 4(a) of the Pennsylvania Safe Drinking Water Act, 35 P.S. § 721.4(a), requires the Environmental Quality Board to adopt maximum contaminant levels and treatment technique requirements no less stringent than those promulgated under the federal act for all contaminants regulated under the national primary and secondary drinking water regulations. Also Section 5(a) of the state Act, 35 P.S. § 721.5(a), requires the Department to adopt and implement a public water supply program which includes those program elements necessary to assume state primary enforcement responsibility under the federal act.

EPA promulgated the federal Stage 2 DBPR on January 4, 2006, LT2ESWTR on January 5, 2006 and the Groundwater Rule on November 8, 2006. Therefore, Pennsylvania must adopt regulations implementing the federal rules by January 4, 2010 based on the extension granted by EPA. Failure to do so may result in Pennsylvania losing primacy.

- (13) State why the regulation is needed. Explain the compelling public interest that justifies the regulation. Describe who will benefit from the regulation. Quantify the benefits as completely as possible and approximate the number of people who will benefit.

### Stage 2 DBPR

Although the public health benefits of disinfection practices are significant and well-recognized, epidemiological studies have supported a potential association between bladder cancer and DBPs and possibly with colon and rectal cancers. Additionally, exposure to high levels of disinfectants over long periods of time may cause blood and kidney damage and/or reproductive or developmental effects in laboratory animals. The new requirements will further minimize or eliminate harmful DBPs in public water systems.

The proposed amendments will affect approximately 2,645 public water systems (PWSs) which serve a total population of over 10.5 million Pennsylvanians. These 10.5 million people will benefit from a significant reduction in health risks associated with disinfection practices.

### LT2ESWTR

The LT2ESWTR increases public health protection from *Cryptosporidium* by establishing a method to identify and adequately treat surface and GUDI sources with elevated levels of *Cryptosporidium*. Unlike other pathogens, *Cryptosporidium* is resistant to standard disinfection practices, such as chlorination.

*Cryptosporidium* is a common protozoan in the environment and may cause severe gastrointestinal infection, termed cryptosporidiosis, which can last several weeks. The disease poses serious health and mortality risks for sensitive subpopulations including children, the elderly, and pregnant women.

(cont.)

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The LT2ESWTR rule will further protect public health against *Cryptosporidium* and other microbial pathogens in drinking water supplied to approximately 8.4 million Commonwealth citizens.

### GWR

Groundwater systems in Pennsylvania will now be regulated with respect to source water viral contamination. The Centers for Disease Control reports that between 1991 and 2000 groundwater source contamination and inadequate treatment accounted for 51 percent of all waterborne disease outbreaks in the United States. The GWR provides measures to help prevent waterborne viral disease outbreaks.

Regulation of groundwater systems with respect to viral contamination will allow for protection of an estimated 7 million Pennsylvanians (served by 9,100 public water supplies utilizing groundwater sources).

- (14) If scientific data, studies, references are used to justify this regulation, please submit material with the regulatory package. Please provide full citation and/or links to internet source.

Numerous studies were done by EPA during the development of these rules and are referenced in each preamble. For more information, refer to the EPA Microbials and Disinfection Byproducts website at: <http://www.epa.gov/safewater/disinfection/index.html>.

- (15) Describe who and how many will be adversely affected by the regulation. How are they affected?

The proposed amendments are not expected to produce any adverse impacts.

- (16) List the persons, groups or entities that will be required to comply with the regulation. Approximate the number of people who will be required to comply.

All public water systems in Pennsylvania are affected by at least one of these rules as follows:

### Stage 2 DBPR:

The proposed amendments will affect about 2,045 community water systems and about 600 nontransient noncommunity water systems in Pennsylvania. Each of these water systems will need to comply with various requirements of the amendments.

### LT2ESWTR:

These amendments apply to public water systems (PWSs) supplied by surface water sources or ground water under the direct influence of surface water (GUDI) sources. Approximately 355 PWSs filter surface or GUDI sources to provide drinking water to about 8.4 million Commonwealth citizens.

### GWR:

Public water systems supplied by groundwater sources that are not combined with either surface water or GUDI sources prior to treatment will be required to comply with these regulations. These amendments will affect approximately 1,700 community water systems serving of 4 million people and 7,400 noncommunity water systems serving 3 million people.

## **SECTION III: COST AND IMPACT ANALYSIS**

- (17) Provide a specific estimate of the costs and/or savings to the **regulated community** associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

**Stage 2 DBPR:**

The EPA has estimated that the mean annual cost of approximately \$77 million will be borne by the regulated community, nationwide, as a result of this rule. It is estimated that water systems in this Commonwealth will bear nearly \$3.39 million of this total annual cost.

This estimated \$3.39 million includes non-treatment costs of rule implementation such as: the Initial Distribution System Evaluation, Stage 2 DBPR monitoring plans, routine monitoring, reporting, recordkeeping and operational evaluations. Systems required to install treatment to comply with MCLs will accrue the additional costs of treatment installation as well as operation and maintenance costs.

**LT2ESWTR:**

The EPA estimated that, nationwide, the annual cost for public water systems to implement the LT2ESWTR range from \$93 to \$133 million. The total annual cost for Pennsylvania water systems is estimated to be \$2.4 million to \$3.4 million.

PWSs will incur monitoring costs to assess source water *Cryptosporidium* levels. Estimates of laboratory fees, shipping costs, labor hours for sample collection, and hours for reporting results were used to predict source water monitoring costs. PWSs may also be required to install additional treatment based on the results of the source water monitoring.

**GWR:**

EPA estimates the mean annualized nationwide cost for the regulated community as \$50.6 million. This translates to an annual cost for the regulated community in Pennsylvania to be approximately \$2.9 million. This estimate is for the entire regulated community, including local government and state owned public water systems.

Costs will vary considerably due to the current treatment capacity of a system, groundwater source quality and sensitivity of the groundwater source to fecal contamination. EPA estimates corrective actions systems must take in response to any significant deficiencies identified by the Department or in response to the presence of *E. coli* in raw source water may be the most costly expenses a system may incur. Corrective actions include: installing or upgrading treatment to achieve at least 4-log inactivation and/or removal of viruses; providing an alternate source of water; or eliminating a source of fecal contamination. Systems providing sufficient treatment must conduct compliance monitoring to ensure treatment effectiveness. Additional costs may be borne if a system needs to install equipment to continuously monitor a disinfectant residual.

- (18) Provide a specific estimate of the costs and/or savings to **local governments** associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

**Stage 2 DBPR:**

The proposed amendments will affect about 2,645 public water systems in Pennsylvania. Of these systems,

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about 854 are owned by local governments in the form of water and municipal authorities. The local governments that own these systems will incur an estimated annual cost of \$1.1 million.\*

### LT2ESWTR:

The majority of the public water systems affected by the LT2ESWTR are owned by local governments or authorities. The maximum cost for these systems to implement this rule is estimated to be \$2.2 million.\*

### GWR:

The proposed amendments will affect all public water systems serving groundwater not combined with surface water prior to treatment, including local government agencies and municipal authorities operating such systems. Of the 1,675 community water systems in Pennsylvania affected by the GWR, 735 are operated by local governments. There are 158 nontransient noncommunity systems and 180 transient noncommunity systems that are owned by local governments. The total annual cost to these municipalities or other authorities is estimated to be \$420,527.\*

\* It should be noted that, for the purposes of the table in Question (20) on the following page, the local government costs are for compliance with provisions of these rules. That is, local government is considered in this analysis to be a part of the regulated community, *not* the regulating community. Therefore, the estimates provided above are a part of the cost estimates provided in Question (17).

- (19) Provide a specific estimate of the costs and/or savings to **state government** associated with the implementation of the regulation, including any legal, accounting, or consulting procedures which may be required. Explain how the dollar estimates were derived.

State costs are divided into two categories: costs associated with regulatory oversight and costs to implement the rules for state-owned public water systems. The regulatory oversight costs are based on EPA estimates of costs to States nationwide. The costs to state-owned water systems are based on the percentage of Pennsylvania public water systems affected by the regulation that are state-owned.

### Stage 2 DBPR:

*Regulatory Oversight Costs:* The EPA has estimated that a total annual cost of \$12.63 million will be borne by the regulating state agencies, nationwide, as a result of this rule. It is estimated that Pennsylvania will bear approximately \$585,000 of this total annual cost.

*State-owned PWS costs:* There are 32 state-owned PWSs affected by this rule. Of the \$3.39 million annual cost to the regulated community (as described in Question 17), \$41,000 will be incurred by this Commonwealth.\*

*Total State costs:* For the Stage 2 DBPR, the total state costs are estimated to be \$626,000 annually.

### LT2ESWTR:

*Regulatory Oversight Costs:* EPA estimates that States will incur an annualized cost of up to \$1.4 million. In this Commonwealth, this translates to \$35,420.

*State-owned PWS Costs:* There are 17 PWSs that are state-owned water systems. Of the \$3.4 million annual cost for the regulated community (as described in Question 17), Pennsylvania will incur \$161,461 annually.\*

*Total State costs:* For the LT2ESWTR, the total state costs are estimated to be \$196,881 annually.

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GWR:

*Regulatory Oversight Costs:* Implementation of the GWR amendments will result in Pennsylvania state government incurring costs associated with increased sanitary survey frequencies, data management, tracking monitoring information, reviewing action plans and evaluating system treatment efficacy. EPA estimates nationwide costs for state government to be nearly \$11.8 million. The expected annual cost to Pennsylvania DEP to administer the Groundwater Rule equates to \$719,469.

*State-owned PWS Costs:* Additionally, 223 public water systems are owned by state government agencies in locations including state parks, prisons, schools, and highway rest stops. There are 12 community water systems, 16 nontransient noncommunity systems and 195 transient noncommunity systems. The costs for state-owned PWSs to comply with the GWR is estimated to be \$70,441 annually.\*

*Total State costs:* For the GWR, the total state costs are estimated to be \$789,910 annually.

\* It should be noted that for the purposes of the table in Question (20) on the following page, state costs include a portion of the costs to the regulated community for the PWSs that are state-owned. That is, some of the state costs in this analysis are counted in the total for the regulated community. Therefore, the estimates provided above for the state-owned PWS costs are a part of the cost estimates provided in Question (17).

(20) In the table below, provide an estimate of the fiscal savings and costs associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years.

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
<b>Stage 2 DBPR</b>						
<b>SAVINGS:</b>	\$	\$	\$	\$	\$	\$
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Savings</b>	0	0	0	0	0	0
<b>COSTS:</b>						
<b>Regulated Community</b>	3,390,000	3,390,000	3,390,000	3,390,000	3,390,000	3,390,000
<b>Local Government</b>	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000	1,100,000
<b>State Government</b>	626,000	626,000	626,000	626,000	626,000	626,000
<b>Total Costs*</b>	3,975,000*	3,975,000*	3,975,000*	3,975,000*	3,975,000*	3,975,000*
*The total cost is the cost to the regulated community (which includes Local government and the portion of State government costs for state-owned PWSs) plus the State government oversight costs.						
<b>REVENUE LOSSES:</b>	0	0	0	0	0	0
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Revenue Losses</b>	0	0	0	0	0	0

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<b>LT2ESWTR</b>						
<b>SAVINGS:</b>						
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Savings</b>	0	0	0	0	0	0
<b>COSTS:</b>						
<b>Regulated Community</b>	3,364,900	3,364,900	3,364,900	3,364,900	3,364,900	3,364,900
<b>Local Government</b>	2,187,185	2,187,185	2,187,185	2,187,185	2,187,185	2,187,185
<b>State Government</b>	196,881	196,881	196,881	196,881	196,881	196,881
<b>Total Costs*</b>	3,400,320*	3,400,320*	3,400,320*	3,400,320*	3,400,320*	3,400,320*
*The total cost is the cost to the regulated community (which includes Local government and the portion of State government costs for state-owned PWSs) plus the State government oversight costs.						
<b>REVENUE LOSSES:</b>						
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Revenue Losses</b>	0	0	0	0	0	0
<b>GWR</b>						
<b>SAVINGS:</b>						
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Savings</b>	0	0	0	0	0	0
<b>COSTS:</b>						
<b>Regulated Community</b>	2,929,940	2,929,940	2,929,940	2,929,940	2,929,940	2,929,940
<b>Local Government</b>	420,527	420,527	420,527	420,527	420,527	420,527
<b>State Government</b>	789,910	789,910	789,910	789,910	789,910	789,910
<b>Total Costs*</b>	3,649,409	3,649,409	3,649,409	3,649,409	3,649,409	3,649,409
*The total cost is the cost to the regulated community (which includes Local government and the portion of State government costs for state-owned PWSs) plus the State government oversight costs.						
<b>REVENUE LOSSES:</b>						
<b>Regulated Community</b>	0	0	0	0	0	0
<b>Local Government</b>	0	0	0	0	0	0
<b>State Government</b>	0	0	0	0	0	0
<b>Total Revenue Losses</b>	0	0	0	0	0	0

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(20a) Provide the past three year expenditure history for programs affected by the regulation.

<b>Program</b>	<b>FY -3</b>	<b>FY -2</b>	<b>FY -1</b>	<b>Current FY</b>
Environmental Protection Operations (#160-10381)	\$85,898,000	\$87,897,000	\$89,847,000	\$98,582,000
Environmental Program Management (#161-10382)	\$37,594,000	\$37,049,000	\$36,868,000	\$39,909,000

(21) Explain how the benefits of the regulation outweigh any cost and adverse effects.

The amendments are not expected to produce any adverse effects.

**Stage 2 DBPR:**

The EPA has estimated that the nation may realize a total annual benefit of up to \$3.5 billion as a result of avoiding up to 581 cases of bladder cancer per year. In Pennsylvania, this translates into a total annual benefit of up to \$144 million in avoiding up to 24 cases of bladder cancer per year.

This benefit was derived from multiplying the national benefit by the ratio of DBP-exposed Pennsylvanians to DBP-exposed U.S. citizens.

- Estimated nationwide benefits = \$3,500,000,000; estimated number of bladder cancer cases avoided per year = 581
- The ratio of all Pennsylvanians exposed to DBPs to the number of U.S. citizens exposed to DPBs is  $10,455,296 / 254,000,000 = 0.0411$
- Estimated benefits to Pennsylvanians =  $\$3,500,000,000 \times 0.0411 = \$144,069,039$ .
- Estimated # of Pennsylvania bladder cancer cases avoided per year =  $581 \times 0.0411 = 23.9$  cases.

These cost estimates are derived from the Federal Register, Vol. 71, No. 2, pg. 448 and Federal Register, Vol. 63, No. 241, pg. 69438, Table IV-7.

**LT2ESWTR:**

EPA estimates the nation is expected to avoid 89,375 to 1,459,126 illnesses and 20 to 314 deaths annually. Furthermore, EPA estimates the annual present value of the mean benefit of LT2ESWTR rule implementation ranges from \$177 million to \$2.8 billion, depending on the rate of *Cryptosporidium* occurrence.

Projecting the distribution of illnesses and deaths from *Cryptosporidium* within the state of PA is extremely difficult; however, the best available potential estimate would be a \$4.48 million to \$70.84 million annual benefit depending on the rate of *Cryptosporidium* occurrence.

These cost estimates are derived from EPA's national estimates as published in the preamble of the LT2ESWTR (Federal Register, Vol. 71, No. 3, page 730 to 740).

**GWR:**

The EPA calculates the annualized viral illnesses and deaths avoided for Type A virus (rotavirus) to be 39,442 and 2,426 for Type B virus (enterovirus)<sup>1</sup>. The costs associated with endemic viral illness include

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medical costs, lost work time and the reduced utility from being sick. EPA estimates the annualized benefits from illnesses avoided nationwide to equal \$19.7 million<sup>2</sup>. Implementation of the GWR in Pennsylvania is expected to result in the avoidance of approximately 2,400 Type A virus illnesses and 150 Type B virus illnesses.

This benefit was derived from multiplying the nationwide benefits by the ratio of

- Estimated nationwide benefits = \$19,700,000.
- The ratio of all public water systems in Pennsylvania affected by the GWR to the number of all public water systems nationwide affected by the GWR =  $8,983 / 147,330^3 = 0.061$
- Estimated benefits to Pennsylvanians =  $\$19,700,000 \times 0.061 = \$880,527$ .

<sup>1</sup> Federal Register, Vol. 71, No. 216, pg. 65620

<sup>2</sup> Federal Register, Vol. 71, No. 216, pg. 65619

<sup>3</sup> Federal Register, Vol. 71, No. 216, pg. 65625

(22) Describe the communications with and input from the public and any advisory council/group in the development and drafting of the regulation. List the specific persons and/or groups who were involved.

The draft proposed Stage 2 DBPR and LT2ESWTR amendments were presented to the Small Systems Technical Assistance Center Advisory Board (TAC) on November 13, 2007, and the draft proposed GWR amendments were presented to TAC on December 13, 2007. TAC provided a supporting letter with comments for each proposed rule.

Following publication of the proposed amendments, the public was given a 30-day comment period. A ‘Comment and Response’ document was prepared to address comments provided by the public. The draft final-form rulemaking for all three rules was presented to TAC on May 21, 2009. TAC provided a supporting letter with comments on June 24, 2009.

(23) Include a description of any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected.

No alternative regulatory schemes were considered. These are federal rules that must be adopted to retain primacy of the Safe Drinking Water Program.

(24) Are there any provisions that are more stringent than federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulations.

Stage 2 DBPR: The final Stage 2 DBPR amendments are no more stringent than the federal rule.

LT2ESWTR: There are 2 provisions of the LT2ESWTR that are more stringent than the federal rule.

1.) Tier 1 public notice (PN) is required for a LT2ESWTR treatment technique violation resulting from a failure to maintain the required level of treatment for *Cryptosporidium* because it constitutes a breakdown in treatment. Requiring a Tier 1 notice (within 24 hours) is more stringent than the federal regulation. The federal LT2ESWTR only requires a Tier 2 PN (within 30 days) for a treatment technique violation.

Systems with surface water sources or groundwater under the direct influence of surface water (GUDI) sources are required to sample for *Cryptosporidium*. If the results of this monitoring indicate elevated levels of *Cryptosporidium* in the source water, the system is required to install

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additional treatment. A LT2ESWTR treatment technique violation occurs if the PWS is unable to provide the minimum level of additional treatment required. A failure to maintain this additional treatment is considered a breakdown in treatment.

Existing PN requirements classify a breakdown in treatment as a Tier 1 situation requiring a Tier 1 PN. The Department requires Tier 1 PN for those violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.

*Cryptosporidium* is an acute pathogen. Therefore, to adequately protect public health and to be consistent with existing regulations, DEP is requiring a Tier 1 PN for this treatment technique violation.

- 2.) An approved watershed control plan may not be used to meet the required minimum additional log removal credits. It may only be applied as additional log removal beyond the minimum additional treatment required. Applying the watershed control plan only as a secondary toolbox option is more stringent than the federal regulation.

The watershed control plan option is different from other toolbox options in that it relates to efforts undertaken outside of treatment plant operations to reduce the *Cryptosporidium* loading.

Additionally, this option focuses on source water protection, as opposed to in-plant treatment. The watershed control plan credit could be revoked if a spill, discharge or other event contaminates the source water. Systems that rely on this credit to maintain the minimum *Cryptosporidium* log removal credit would incur a Tier 1 treatment technique violation through no fault of their own.

DEP applauds and supports efforts to implement a watershed control plan, and the regulation allows systems to pursue this valuable toolbox option. The Department also encourages systems to pursue additional log removal treatment beyond the minimum required by their Bin classification in order to provide a margin of safety regarding the removal of *Cryptosporidium*.

GWR: There are four provisions of the GWR that are more stringent than federal requirements. The Department developed the alternative language because it was felt to be a better alternative to protect public health and to be consistent with existing Pennsylvania drinking water regulations.

- 1.) Federal requirements found in 40 CFR § 141.402(b)(5) contain assessment source water monitoring requirements that allow source water sampling at a location after treatment if approved by the state. The Department does not allow source water sampling at a location after treatment for assessment source water sampling and triggered monitoring requirements. Sampling at a location after treatment could give a misrepresentation of the source water quality, therefore possibly leading to inadequate treatment.
- 2.) The Department proposes under § 109.1302(a)(4) to require all community water systems with groundwater sources to reliably achieve at least 4-log treatment of viruses. This component of the proposed rulemaking is more stringent than the federal requirements. Under § 109.202(c)(2), existing requirements for community systems in Pennsylvania are already more stringent than federal regulations. Unlike the federal requirements, Pennsylvania mandates that all community water systems provide continuous disinfection. The Pennsylvania GWR requirement that all community systems maintain at least 4-log treatment of viruses for their groundwater sources will ensure that the disinfection treatment is properly operated to adequately protect public health. Community water systems with disinfection treatment that meets the existing design standards specified in § 109.602 are able to achieve 4-log treatment of viruses. Additionally, this requirement will be phased in from April 1, 2011 to April 1, 2013, for those systems that need to modify their

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disinfection treatment.

- 3.) Under § 109.1302(a)(2), the Department establishes a default entry point minimum free chlorine residual of 0.40 mg/L, or its equivalent, for all community systems beginning the date the final regulations become effective. Community water systems must maintain the default minimum residual until successfully demonstrating that an alternative residual other than 0.40 mg/L will provide at least 4-log treatment of viruses. The default residual is being required to better protect public health during the interim period between the effective date of this rule and the date when the Department has verified a system is providing 4-log treatment of viruses.

The default residual of 0.40 mg/L was determined using the free chlorine log inactivation tables published by the EPA and the Department's existing disinfection design standards specified in § 109.602.

- 4.) Tier 1 public notice (PN) is required for a GWR treatment technique violation resulting from a failure to provide 4-log treatment for viruses. Requiring a Tier 1 notice (within 24 hours) is more stringent than the federal regulation. The federal GWR only requires a Tier 2 PN (within 30 days) for a treatment technique violation.

For systems required to provide 4-log treatment of viruses, a GWR treatment technique violation occurs when the PWS fails to maintain this level of treatment (i.e. there is a breakdown in treatment).

Existing PN requirements classify a breakdown in treatment as a Tier 1 situation requiring a Tier 1 PN. The Department requires Tier 1 PN for those violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure. Viruses are acute pathogens. Therefore, to adequately protect public health and to be consistent with existing regulations, DEP is requiring a Tier 1 PN for this treatment technique violation.

- (25) How does this regulation compare with those of other states? How will this affect Pennsylvania's ability to compete with other states?

All of the other 49 states will need to comply with or adopt the federal Stage 2 DBPR, LT2ESWTR and GWR. Therefore, this final-form rulemaking will not put Pennsylvania at a competitive disadvantage with any other state.

- (26) Will the regulation affect any other regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations.

The amendments will be incorporated into the existing language of 25 Pa Code Chapter 109. The amendments should not affect any existing or proposed regulations of DEP or any other state agency.

- (27) Submit a statement of legal, accounting or consulting procedures and additional reporting, recordkeeping or other paperwork, including copies of forms or reports, which will be required for implementation of the regulation and an explanation of measures which have been taken to minimize these requirements.

### Stage 2 DBP

The Stage 2 DBPR will require that water systems conduct the IDSE and submit the report to the Department. This initial implementation will be completed prior to the Department receiving primacy. It is anticipated that systems conducting compliance monitoring will use existing Department forms to submit

## **Regulatory Analysis Form**

data. Therefore, no additional data forms or paperwork will be necessary.

### LT2ESWTR

The LT2ESWTR amendments will create additional reporting, record keeping and paperwork requirements. It is anticipated that our current data reporting forms can be modified to facilitate any additional monitoring and reporting and that no additional data or paperwork will be necessary.

### GWR

The GWR will not change existing requirements, but it will add new requirements for groundwater systems. Community water systems will need to complete and submit a form that demonstrates how 4-log treatment will be provided at each entry point and describes how compliance monitoring will be conducted. Systems conducting compliance monitoring because 4-log treatment of viruses is provided will need to use existing Department forms to submit disinfection data on a monthly basis.

(28) Please list any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, elderly, small businesses, and farmers.

### Stage 2 DBPR and LT2ESWTR:

The amendments were originally developed to protect everyone and should have no disproportionate effect on any one particular group. However, the Safe Drinking Water Program is prepared to develop special provisions, or provide special services, to accommodate any such group as the need arises.

### GWR:

§ 109.1302(a)(4) establishes a timeline to comply with the requirement for all community water systems to provide at least 4-log treatment of viruses based on the population served. Phasing in this requirement from 2011 to 2013 will afford small systems time to budget if additional costs are anticipated to meet this provision.

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Copy below is hereby approved as to form and legality.  
Attorney General

By: (Deputy Attorney General)

DATE OF APPROVAL

Check if applicable  
Copy not approved. Objections attached.

Copy below is hereby certified to be true and correct copy of a document issued, prescribed or promulgated by:

**DEPARTMENT OF ENVIRONMENTAL  
PROTECTION  
ENVIRONMENTAL QUALITY BOARD**

(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-439

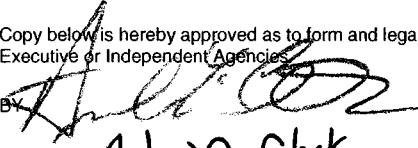
DATE OF ADOPTION September 15, 2009

BY John Hanger

TITLE JOHN HANGER  
CHAIRPERSON

EXECUTIVE OFFICER CHAIRMAN OR SECRETARY

Copy below is hereby approved as to form and legality  
Executive or Independent Agencies

  
By Andrew C. Clark  
DATE OF APPROVAL SEP 24 2009

(Deputy General Counsel)  
(Chief Counsel - Independent Agency)  
~~(Strike inappropriate title)~~

Check if applicable. No Attorney General Approval or objection within 30 days after submission.

### NOTICE OF FINAL RULEMAKING

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ENVIRONMENTAL QUALITY BOARD

Safe Drinking Water Amendments

25 Pa. Code, Chapter 109



**Notice of Final Rulemaking**  
**Department of Environmental Protection**  
**Environmental Quality Board**  
**(25 Pa. Code, Chapter 109 – Safe Drinking Water)**  
**(Stage 2 Disinfectants and Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule, and Groundwater Rule)**

**Order**

The Environmental Quality Board (Board) by this Order amends 25 Pa. Code, Chapter 109 (relating to Safe Drinking Water). The amendments incorporate the provisions of the federal Stage 2 Disinfectants and Disinfection Byproduct Rule (Stage 2 DBPR), the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and the Groundwater Rule (GWR) to retain primary enforcement authority (primacy). These revisions were initially proposed in three separate packages that have been merged for clarity and consistency.

The Stage 2 DBPR supplements the Stage 1 DBPR by requiring water systems to meet disinfection byproducts (DBPs) maximum contaminant levels (MCLs) at each monitoring site in the distribution system. These amendments will reduce the potential risks of cancer and reproductive and developmental health effects associated with DBPs by reducing peak levels of DBPs in public drinking water systems.

The LT2ESWTR will further protect public health against *Cryptosporidium* and other microbial pathogens in drinking water. These amendments will supplement existing microbial treatment regulations and target public water systems (PWSs) with higher potential risk from *Cryptosporidium*.

The GWR will provide for increased protection against microbial pathogens in public water systems that use groundwater sources by establishing a risk-targeted approach to identify groundwater sources that are susceptible to fecal contamination using *E. coli* as the indicator organism for source water monitoring. These amendments will build upon the existing Total Coliform Rule by establishing corrective actions, monitoring and source treatment provisions as part of the risk-based strategy.

This order was adopted by the Board at its meeting of September 15, 2009.

**A. Effective Date**

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final rulemaking.

**B. Contact Persons**

For further information, contact Lisa Daniels, Acting Chief, Division of Operations Monitoring and Training, P.O. Box 8467, Rachel Carson State Office Building, Harrisburg, PA 17105-8467, (717) 772-4018, or Marylou Barton, Assistant Counsel, Bureau of Regulatory Counsel, P.O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Persons with a disability may use the AT&T Relay Service by calling 1-800-

654-5984 (TDD users) or 1-800-654-5988 (voice users). This final-form rulemaking is available electronically through the DEP Web site (<http://www.dep.state.pa.us>).

### **C. Statutory Authority**

The final-form rulemaking is being made under the authority of Section 4 of the Pennsylvania Safe Drinking Water Act (35 P.S. § 721.4), which grants the Board the authority to adopt rules and regulations governing the provision of drinking water to the public, and Sections 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§ 510-17 and 510-20).

### **D. Background and Purpose**

#### *Stage 2 DBPR*

Since the discovery of total trihalomethanes (TTHM) in drinking water in 1974, other DBPs have been identified and studied for their health effects. Many of these studies have shown DBPs to be carcinogenic and/or to cause reproductive or developmental effects in laboratory animals. Studies have also shown that high levels of the disinfectants themselves may cause health problems over long periods of time, including damage to both the blood and the kidneys. While many of these studies have been conducted at high doses, the weight of the evidence indicates that DBPs present a potential public health problem that must be addressed. In 1992, the U.S. Environmental Protection Agency (EPA) initiated a rulemaking process to address public health concerns associated with disinfectants, DBPs, and microbial pathogens. The EPA's most significant concern in developing regulations for disinfectants and DBPs was the need to ensure that adequate treatment is maintained for controlling risks from microbial pathogens. One of the major goals addressed in the rulemaking process was to develop an approach that would reduce the level of exposure from disinfectants and DBPs without undermining the control of microbial pathogens. The intention was to ensure that drinking water is microbiologically safe at the limits set for disinfectants and DBPs and that these chemicals do not pose an unacceptable health risk at these limits.

The Stage 1 DBPR regulated treatment practices at public water systems to eliminate or minimize disinfectant levels and DBPs that may cause harmful health effects. The Stage 1 DBPR established maximum residual disinfectant levels (MRDLs) for chlorine and chlorine dioxide. MCLs were also established for TTHM, five haloacetic acids (HAA5), bromate and chlorite. The Stage 1 DBPR also regulated pre-filtration treatment techniques for public water systems that use conventional filtration to reduce source water Total Organic Carbon (TOC), which may serve as a precursor to DBPs.

The EPA promulgated the federal Stage 2 DBPR on January 4, 2006; minor corrective amendments were published on June 29, 2009. The Stage 2 DBPR augments the Stage 1 DBPR by targeting the highest risk systems for changes beyond those required for Stage 1 DBPR. The Stage 2 DBPR focuses on monitoring for, and reducing concentrations of, TTHM and HAA5. These two groups of DBPs act as indicators for the various byproducts of chemical disinfection. A reduction in TTHM and HAA5 generally indicates an overall reduction of DBPs.

The Stage 2 DBPR will reduce DBP peaks and provide for more consistent, equitable protection from DBPs across the entire distribution system. The Stage 2 DBPR requires PWSs to identify the higher risk monitoring locations through the Initial Distribution System Evaluation (IDSE) and then lower DBP peaks in distribution systems by making operational or treatment changes as needed to meet the MCLs at all sampling locations. The Stage 2 DBPR

changes how MCL compliance is determined. Instead of calculating a system level running annual average based on results from all samples collected in the distribution system, MCL compliance will be determined for *each* sample site as a locational running annual average (LRAA).

The Stage 2 DBPR also defines an operational evaluation level (OEL). The OEL is an LRAA threshold meant to help systems identify if they are in danger of exceeding the MCL in the following monitoring quarter. The process alerts the system to the potential of an MCL violation if DBP concentrations remain at their current level and encourages the system to consider whether operational changes are necessary to reduce DBP levels.

The OEL is the sum of the two previous quarters' TTHM or HAA5 results plus twice the current quarter's TTHM or HAA5 result, divided by four. An OEL exceedance occurs if the OEL for TTHM exceeds 0.080 mg/L or the OEL for HAA5 exceeds 0.060 mg/L at any monitoring location. If an OEL exceedance occurs, the system must conduct an operational evaluation and submit a written report of the evaluation to the Department no later than 90 days after the system is notified of the analytical result that caused the OEL exceedance.

#### *LT2ESWTR*

The EPA promulgated the federal LT2ESWTR on January 5, 2006. The LT2ESWTR applies to PWSs supplied by surface water or groundwater under the direct influence of surface water (GUDI) sources. Surface water and GUDI sources have been shown to contain *Cryptosporidium* and other pathogens which pose a public health risk. In humans, *Cryptosporidium* may cause a severe gastrointestinal infection, termed *Cryptosporidiosis*, which can last several weeks. *Cryptosporidiosis* poses serious health and mortality risks for sensitive subpopulations including children, the elderly, pregnant women, organ transplant recipients and persons with weakened immune systems.

*Cryptosporidium* is common in the environment and is targeted by the LT2ESWTR because it has been identified as the cause of a number of waterborne disease outbreaks in the United States. The EPA has concluded that existing treatment requirements do not provide adequate public health protection in filtered PWSs with the highest source water *Cryptosporidium* levels. Unlike other microbial contaminants, *Cryptosporidium* is resistant to inactivation using standard disinfection practices such as chlorination. The LT2ESWTR increases public health protection from *Cryptosporidium* by establishing a method to identify and adequately treat surface and GUDI sources with elevated levels of *Cryptosporidium*.

PWSs must monitor their source water (the influent water entering the treatment plant) to determine an average *Cryptosporidium* level. Larger systems must monitor for *Cryptosporidium*, *E.coli*, and turbidity at least once per month for 24 consecutive months. Small systems may initially monitor for *E.coli* as an indicator organism and are required to monitor for *Cryptosporidium* only if their *E. coli* levels exceed specified "trigger" values.

Applicable PWSs will be classified in one of four treatment categories (or "bins") based on the results of the source water *Cryptosporidium* monitoring. The higher the *Cryptosporidium* concentration of the source water, the higher the bin classification. This bin classification determines the degree of additional *Cryptosporidium* treatment, if any, the filtered PWS must provide above and beyond existing treatment requirements. The EPA suspects that the majority of filtered PWSs will be classified in Bin 1, which carries no additional treatment requirements. PWSs classified in Bins 2, 3 or 4 must achieve additional 1.0-log to 2.5-logs of treatment for *Cryptosporidium* using at least one of 16 microbial toolbox options. The microbial toolbox

provides feasible treatment options specifically targeted at *Cryptosporidium* and establishes design and operational standards for each option. The toolbox options include standards for *Cryptosporidium* inactivation and removal processes.

The EPA believes that implementation of the LT2ESWTR will significantly reduce levels of infectious *Cryptosporidium* in finished drinking water. In addition, the treatment technique requirements of this proposed rulemaking will increase protection against other microbial contaminants by improving overall filter plant treatment.

#### GWR

The EPA promulgated the federal GWR on November 8, 2006. This final rulemaking will incorporate necessary federal requirements to: (1) establish a risk-targeted approach to identify ground water systems that are susceptible to fecal contamination; (2) define adequate treatment technique requirements for the inactivation and/or removal of viruses; (3) create guidelines including corrective action alternatives for systems to respond in a timely and appropriate manner to significant deficiencies identified by the Department during inspections; and (4) include additional requirements for notifying the public.

Groundwater has been traditionally regarded to be safer than surface water due to the natural filtering that occurs as groundwater travels through aquifer media. New evidence suggests that groundwater may be susceptible to viral contamination despite this natural filtering, particularly in karst aquifers where contaminants are more readily transported through conduits and fissures dissolved in the limestone. Groundwater supplies can become contaminated with fecal pathogens when surface water infiltrates karst aquifers or when high densities of livestock farming operations or on-lot sewage treatment systems overwhelm the natural protective barriers of non-karst aquifers.

The viral pathogens that may be found in groundwater sources with fecal contamination include enteric viruses such as Echovirus, Coxsackie viruses, Hepatitis A and E, Rotavirus, and Noroviruses. Vulnerable groundwater sources have also been found to contain enteric bacterial pathogens such as *E. coli*, *Salmonella spp.*, *Shigella spp.*, and *Vibrio cholera*. The Centers for Disease Control reports that between 1991 and 2000, groundwater source contamination and inadequate treatment accounted for 51 percent of all waterborne disease outbreaks in the United States.

Groundwater systems in Pennsylvania were not previously regulated with respect to source water viral contamination. Community groundwater systems were only required to provide continuous disinfection and maintain a detectable disinfectant residual throughout the distribution system. Systems, particularly smaller systems, can potentially satisfy this requirement with entry point disinfectant residuals that are too low to effectively inactivate viruses. Thus, community systems meeting the current disinfection requirement may not be providing the public with adequate protection from viral contamination. Noncommunity groundwater systems are not required to provide disinfection; persons consuming water from these systems are not afforded any protection other than that provided by the characteristics of the source aquifer. The GWR amendments will improve public health protection by ensuring that appropriate corrective actions are taken in response to fecal contamination of source water or the identification of significant deficiencies.

The final-form rulemaking was submitted to the Small Water Systems Technical Assistance Center Advisory Board (TAC) for review and discussion on May 21, 2009. Comments were received from the TAC on June 24, 2009.

#### **E. Summary of Changes to the Proposed Rulemaking**

The proposed regulations were published in the Pennsylvania Bulletin separately, as three individual rulemaking packages as follows:

- GWR was published in the Bulletin on November 29, 2008, with a 30-day comment period.
- LT2ESWTR was published in the Bulletin on December 20, 2008, with a 30-day comment period.
- Stage 2 DBPR was published in the Bulletin on December 20, 2008 with a 30-day comment period.

As a result of the notices of proposed rulemaking, the Board received a number of comments from a total of 7 commentators, including EPA and the Independent Regulatory Review Commission. A Comment and Response document have been proposed to address the comments and it is available from the Department. Below is a list of changes that were made to the proposed rulemaking.

##### *§ 109.1 Definitions*

BAT -- This definition was amended in response to an EPA comment regarding consistency with the federal BAT requirements found throughout 40 CFR Part 141.

Conventional filtration This definition was amended to correct typographical errors in the proposed rulemaking as it was published.

Wholesale systems -- The word “consecutive” in the definition of wholesale systems was replaced with “public water” to be consistent with the intent of the federal definition and with the definition of consecutive water system in our regulations.

GAC10 and GAC20 -- These definitions were added in response to an EPA comment regarding consistency with federal definitions found in 40 CFR 141.2.

##### *§ 109.202(c)(1)(vi)(D)*

This clause was deleted and the text was moved to paragraph 109.202(c)(2).

##### *§ 109.301(8)(vi)*

This subparagraph was edited in response to an EPA comment to correct the cross references to sections of the federal regulations that have been vacated.

##### *§ 109.301(12)(i)(B)(I)(-c-)*

This subitem was edited in response to an EPA comment to correct the cross reference to disinfection byproduct precursors required monitoring.

##### *§ 109.301(12)(ii)(A)(I)*

This subclause was amended to clarify the requirement that any system part of a combined distribution system shall comply at the same time as the system with the earliest compliance date in the combined distribution system.

*§ 109.301(12)(ii)(A)(II)*

This subclause was amended for consistency. The phrase “consecutive systems” was replaced with “consecutive water systems” to be consistent with the definition in § 109.1.

*§ 109.301(12)(ii)(A)(III)*

This subclause was added in response to an EPA comment to clarify that the proposed regulation does not clearly specify that Stage 1 MCL requirements are applicable only until the effective dates of the Stage 2 DBP Rule.

*§ 109.301(12)(ii)(B)(I)*

This subclause was amended in response to an EPA comment to clarify that water systems monitor in accordance with their Stage 2 DBP Rule monitoring plan.

*§ 109.301(12)(ii)(B)(II)*

This subclause was amended to clarify the cross reference to the Stage 2 DBP Rule monitoring plan.

*§ 109.301(12)(ii)(B)(III)*

The subclause was revised in response to an EPA comment to be consistent with a correction to the federal monitoring requirements found in 40 CFR 141.621(a)(2) as it was published in the June 29, 2009 Federal Register.

*§ 109.301(12)(ii)(D)(IV)*

This subclause was amended and moved to § 109.301(12)(ii)(C)(VII) in response to an EPA comment.

*§ 109.301(12)(ii)(E)(III) and § 109.301(12)(ii)(E)(IV)*

These subclauses were revised to clarify the compliance calculations.

*§ 109.304(c)*

This subsection was amended in response to an EPA comment to address a missing cross-reference for the LT2ESWTR.

*§ 109.408(a)*

This subsection was amended for clarity and consistency. A treatment technique violation under the LT2ESWTR requires a Tier 1 public notice because Tier 1 notice is required for any breakdown in treatment necessary to remove acute microbial pathogens. Systems required to install additional treatment to remove *Cryptosporidium* under LT2ESWTR are doing so in response to monitoring that has shown elevated levels of *Cryptosporidium* in the source water. The Department requires Tier 1 PN for those violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure.

*Cryptosporidium* is an acute pathogen. Therefore, to adequately protect public health and to be consistent with existing regulations, DEP is requiring a Tier 1 PN for this treatment technique violation.

Additionally, for consistency in Chapter organization, paragraphs 7 & 8 were renumbered as paragraphs 10 & 11.

**§ 109.505(a)(2)(i)(A-B)**

These subclauses were deleted and the text has been added to subsection § 109.505(b).

**§ 109.505(b)**

This subsection was amended to clarify that noncommunity water systems (NCWS) which have not obtained a construction permit under § 109.503 or an operations permit under § 109.504 and are providing 4-log treatment of viruses under Subchapter M shall obtain a noncommunity water system 4-log treatment of groundwater permit.

**§ 109.605**

This section was amended to add a missing cross-reference and for Chapter organization. Subsection (3) was amended to add the missing cross-reference for the LT2ESWTR and the existing subsections were renumbered.

Subsection (5) was amended to clarify that a public water system developing a new groundwater source which has tested positive for *E. coli* during new source sampling shall provide 4-log treatment of viruses.

**§ 109.701(a)(8)(ii)**

This subparagraph was revised to clarify that the reporting requirements for systems monitoring for either chlorine or chloramines under § 109.301(13) include both the number of samples and the arithmetic average of all distribution samples taken in the last month.

**§ 109.701(a)(9)**

This paragraph was amended to correct a typographical error and in response to an EPA comment. The bracket showing that the text in this paragraph will be deleted was erroneously dropped at printing. This misprint caused EPA's comment that the proposed regulation is not clear as to specifically whether the RAA or LRAA are to be reported and that the proposed regulation does not differentiate how the RAA and LRAA reporting process will change after the Stage 2 effective date.

Under 40 CFR 141.629(a)(3), States have the option to perform calculations and determine compliance for water systems and whether the system is eligible for reduced monitoring. The Department has chosen to calculate LRAA values and determine compliance for water systems in Pennsylvania. Systems are only required to report the results of analyses conducted under § 109.701(a)(1), not the RAA and LRAA calculations. Therefore, paragraph 9 was deleted.

**§ 109.701(a)(10)**

This paragraph was amended in response to an EPA comment to clarify the reporting requirements for disinfection byproduct precursors. Public water systems are required to only report analytical results because the Department calculates compliance. Therefore, this

paragraph was deleted to be consistent with the reporting requirements for other regulated contaminants.

*§ 109.701(d)(1) and (2)* -

These paragraphs were revised to be consistent with federal recordkeeping requirements under 40 CFR Part 141 and 142.

*§ 109.701(g)(2)(ii)(A)*

This clause was amended in response to an EPA comment to clarify and correct a cross-reference. The sentence was revised to read “The monitoring plan must contain the elements in subclauses (I)-(III) and be completed no later than the date systems conduct their initial monitoring under § 109.301(12)(ii)(A).”

*§ 109.701(g)(2)(ii)(A)(IV)*

This subclause was deleted. Under 40 CR 142.16(m), EPA gives States the option to modify, on a case-by-case basis, the TTHM and HAA5 monitoring requirements for a wholesale and consecutive system that are connected. Water quality may vary greatly between PWSs because of changing water chemistry. Although treatment and operational practices of the wholesaler will affect the water quality in the consecutive system, the consecutive system is responsible for maintaining the quality of the water supplied to their consumers. The Department believes that the monitoring requirements specified in § 109.301(12)(ii) are necessary to ensure acceptable water quality. It is not protective of public health to allow any reduction in monitoring requirements beyond those already covered in § 109.301(12)(ii)(C). Therefore, the Department will not modify the monitoring requirements of a wholesale and consecutive system on a case-by-case basis.

*§ 109.701(g)(2)(ii)(B)*

This clause was revised in response to an EPA comment to clarify whether the monitoring described are locations under the Stage 1 DBPR or Stage 2 DBPR.

*§ 109.701(g)(2)(ii)(D)*

This clause was amended to clarify that all systems must submit their modified monitoring plan to the Department. This is consistent with § 109.701(g)(2)(ii)(C) which requires all systems to submit their initial monitoring plan to the Department.

*§ 109.701(g)(2)(iii)(A)*

This clause was amended to clarify that PWSs on a quarterly monitoring frequency have to calculate an OEL for each sampling location. The OEL is an LRAA threshold, calculated quarterly, that is meant to help systems identify if they are in danger of exceeding the MCL.

*§ 109.701(g)(2)(iii)(C)(II)*

The subclause was edited in response to an EPA comment to correct a cross reference for the schedule to submit the OEL report after an OEL exceedance.

*§ 109.705(b)(1)*

The federal Groundwater Rule allows state regulatory agencies to reduce the minimum frequency with which they conduct sanitary surveys at community water systems (CWS) from 3 years to 5 years *if* the State determines the CWS has “outstanding performance”. This federal option was included in the proposed GWR. However, upon further discussion with staff it has been decided that the 3-year minimum frequency for conducting a sanitary survey should not be extended. A 3-year frequency ensures protection of public health and allows greater opportunity for the Department to offer compliance assistance to a CWS. Accordingly, all references to “outstanding performance” and associated incentives have been removed from this final-form rulemaking. This will not place any additional burden on a CWS or Department resources because this is the current minimum frequency for conducting sanitary surveys.

*§ 109.705(b)(2)*

Text has been deleted which referenced the alternative schedule for states to conduct sanitary surveys at a CWS which has been deleted from the Final Annex A under § 109.705(b)(1).

*§ 109.801*

This section was amended to address missing cross-references for the Lead and Copper Rule, LT2ESWTR and GWR.

*§ 109.810(b)*

This subsection was amended because the proposed rulemaking was based on the Chapter 109 language in existence at the time of publication. However, § 109.810(b) was revised as part of the General Update revisions, which were published as final-form rulemaking on May 23, 2009 at 39 Pa. B. 2661. Therefore, these revisions show the proposed changes based on the currently existing language.

*§ 109.901(b) and (c)*

These subsections were amended to be consistent with federal regulations found in 40 CFR 141.4 regarding the exceptions to obtaining a variance. Variances and exemptions are not permitted for the MCL for total coliforms, nor for the treatment techniques for PWSs using surface water, GUDI or groundwater sources.

*§ 109.903(b) and (c)*

These subsections were amended to be consistent with federal regulations found in 40 CFR 141.4 regarding the exceptions to obtaining an exemption. Variances and exemptions are not permitted for the MCL for total coliforms, nor for the treatment techniques for PWSs using surface water, GUDI or groundwater sources.

*§ 109.1003*

This section was amended for clarity and to be consistent with Chapter organization. The cross-reference for LT2ESWTR source water monitoring requirements has been added to subsection (f). Subsection (b) was amended for clarity. The proposed subsection (f) was renumbered as subsection (g).

*§ 109.1201(b)*

This subsection was amended for clarity and consistency with the requirements of the Stage 2 DBPR. Paragraph (1) was amended for consistency. Paragraph (2) was deleted as unnecessary because subsection (a) already defines the water systems affected by this subchapter.

*§ 109.1202(c)*

This subsection was amended in response to a public comment to clarify when systems may begin the second round of source water monitoring. The intent is that there is at least a 6-year window between the 2 rounds of source water monitoring. Systems that used grandfathered data or that completed the first round of monitoring early may wish to begin the second round of monitoring before the deadline specified in federal regulations. Therefore, text has been added to clarify when the second round of monitoring may be started.

*§ 109.1202(h) -- (p)*

Subsection (h) was deleted and moved to Section 109.1205. The grandfathering provisions of the LT2ESWTR are incorporated by reference. To clarify that all of the grandfathering provisions are incorporated by reference, this text was moved to a separate section of Subchapter L.

The remaining subsections were renumbered and cross-references were updated to maintain Chapter organization.

*§ 109.1203(e)*

Paragraphs 1-4 were amended to clarify that water systems must provide the additional level of treatment specified at all times.

*§ 109.1203(n) and (o)*

These subsections were amended to clarify that both filtered and unfiltered surface water or GUDI systems must provide the additional treatment required if the bin classification increases as a result of the second round of source water monitoring.

*§ 109.1204(b)*

This subsection was amended to be consistent with the federal requirements for a watershed control program found in 40 CFR 141.715(b)(1). A watershed control program may not be used as a toolbox option for unfiltered water systems.

*§ 109.1205*

This section was amended for clarity and Chapter organization. The grandfathering provisions of the LT2ESWTR are incorporated by reference. To clarify that all of the grandfathering provisions are incorporated by reference, this text was moved to a separate section of Subchapter L.

*§ 109.1206(e)*

This subsection was amended to clarify the reporting requirements for *Cryptosporidium* and *E. coli*.

*§ 109.1206(f) -- (l)*

This subsection was deleted because the grandfathering provisions are incorporated by reference in section § 109.1205. The remaining subsections were renumbered for Chapter organization.

§ 109.1206(h)

This section was amended to clarify the reporting requirements for systems with Bin 1 sources. Systems with Bin 1 sources that are using alternative treatment technologies for LT2ESWTR have the same toolbox component reporting requirements as systems using Bin 2 or higher sources.

§ 109.1302(a)(2)

This paragraph was amended to clarify the minimum disinfectant residual that must be maintained to demonstrate 4-log inactivation of viruses. The residual of 0.4 mg/L has been changed to 0.40 mg/L because the decimal place is significant when calculating log-inactivation by free chlorine. The calculation used to determine this minimum residual was performed assuming that the design standards set forth in Part II of the Department's *Public Water Supply Manual* (DEP ID# 383-2125-108) are met. The results of the calculation indicate that, in a system satisfying the design requirements, 4-log treatment of viruses is achieved with a minimum residual of 0.40 mg/L. For example, under the proposed regulation, a minimum residual of 0.36 mg/L free chlorine would round to 0.4 mg/L and meet the regulatory requirement but would not provide 4-log inactivation of viruses. This edit to the final regulation corrects that oversight.

This paragraph was also amended in response to a public comment to clarify that the Department will not specify an alternative free chlorine minimum residual, but rather approve an alternative residual. A PWS may propose an alternative residual that provides at least 4-log treatment of viruses. This alternative residual may be either above or below the default residual of 0.40 mg/L.

§ 109.1302(a)(4)

This paragraph has been revised to clarify that 4-log treatment of viruses must be achieved before the first customer, not at the entry point of the distribution system. This provision allows a community water system to utilize the length of transmission line from the entry point to the first customer for log inactivation credit if it is not able to achieve 4-log treatment at the entry point.

§ 109.1302(a)(4)(i-iii)

January dates have been changed to April dates, which allows PWSs an additional three months to comply with the requirement to provide 4-log treatment of viruses. The additional months will also give the Department greater time to review submissions of 4-log demonstrations under § 109.1302(a)(3), which may be necessary in circumstances where the system needs to make physical modifications.

§ 109.1302(a)(6)

This paragraph was amended to clarify that a community water system must provide 4-log treatment for a new source when the source is put into service, not when the entry point is put into service. This change was made to capture new sources that are developed to serve existing entry points.

**§ 109.1302(b)(1)**

This paragraph was amended to clarify that a noncommunity water system may utilize the length of transmission line from the entry point to the first customer for log inactivation credit if it is not able to provide 4-log treatment at the entry point.

**§ 109.1302(c)(1)(iii)**

This subparagraph was amended to clarify that PWSs providing 4-log treatment of viruses must provide adequate treatment prior to the first customer; PWSs shall not be permitted to provide treatment at the first customer. Under existing regulations, Point-of-Use treatment devices are prohibited.

Additionally, this subparagraph was amended to clarify when PWSs that have Department-approved 4-log treatment must begin compliance monitoring.

**§ 109.1302(c)(4)**

This paragraph was amended for clarity and consistency with federal regulations found in 40 CFR 141.404(a). PWSs must correct any significant deficiency within 120 days or an alternate deadline established by the Department.

**§ 109.1303(a)**

This subsection was amended to clarify that PWSs must comply with triggered monitoring requirements unless it has successfully demonstrated to the Department that they are capable of providing 4-log treatment of viruses and the Department has approved the submittal. Once the Department approves a system's 4-log treatment submission, compliance monitoring shall commence and triggered monitoring requirements no longer apply.

**§ 109.1303(b)**

This subsection was amended to clarify the 24-hour time limit for collecting source water samples.

**§ 109.1303(c)**

This subsection was amended to clarify that a PWS must have a representative sampling plan approved by the Department prior to the notification to begin triggered source water monitoring in order to reduce the number of source water samples required to be collected.

**§ 109.1303(c)(1-2)**

These paragraphs set forth the conditions under which the Department would permit representative sampling allowing a reduced number of source water samples that must be collected in response to a total coliform-positive result. Paragraph 1 states that systems may reduce the number of source samples to be collected if multiple sources draw from the same hydrogeologic setting. Paragraph 2 states the PWS may sample sources which are representative of Total Coliform Rule monitoring locations in situations where these sources feed separate distribution systems with no interconnection, if a monitoring plan is approved by the Department prior to notification of a total coliform-positive sample collected under § 109.1303(a).

**§ 109.1303(f)**

This subsection was amended in response to a public comment to be consistent with the federal GWR regulations found in 40 CFR 141.402(a)(5) to allow a PWS to forgo collecting triggered source water samples if the routine total coliform positive sample has been invalidated within the 24 hour time limit under § 109.1303(a). Although the Department has included this provision, it is highly unlikely that a public water system will have a routine total coliform-positive sample invalidated within the 24-hour timeline established under the federal Groundwater Rule.

*§ 109.1304(a)*

This subsection has been amended in response to a TAC comment. The phrase “...a groundwater system is using a fecally-contaminated groundwater source...” has been changed to “...a groundwater system using a groundwater source with fecal contamination...”

*§ 109.1304(a)(1)(i)-(vii)*

These subparagraphs were amended to enhance the readability of paragraph (1).

*§ 109.1304(a)(1)(iv)*

This subparagraph was amended to clarify that triggered source water samples may be used to satisfy the requirements of assessment source water monitoring when approved by the Department.

*§ 109.1304(a)(3)*

This paragraph was deleted. This was a typographical error in the proposed rulemaking. Provisions relating to invalidation of an *E. coli*-positive sample are covered in § 109.1304(b).

*§ 109.1305(a)*

This subsection was amended to clarify that the Department will approve, rather than specify, the minimum disinfectant residual necessary to achieve 4-log treatment of viruses.

*§ 109.1305(a)(2)(i)*

This subparagraph was amended to clarify that grab sampling may be allowed at a location other than the entry point, if approved by the Department.

*§ 109.1305(b)*

This subsection was amended to remove references to membrane technology. Currently, there are no available integrity testing protocols sensitive enough to locate defects in the membrane that could allow the passage of viruses. Therefore, no log removal credit can be awarded. If integrity testing protocols become available in the future, membrane technology may be used and shall follow requirements established in the current § 109.1305(b).

*§ 109.1306(a)*

This subsection was amended to clarify that a PWS currently holding a valid operation permit shall submit forms provided by the Department to demonstrate 4-log treatment of viruses.

*§ 109.1306(b)*

This subsection was created to further explain the responsibilities of a noncommunity water system not operating under a construction and operating permit that is demonstrating and providing 4-log treatment of viruses under subchapter M. A “noncommunity water system 4-log treatment of groundwater permit” has been created for such systems. This is part of a new, abbreviated permitting process specifically designed for noncommunity water systems that choose to, or are required to, provide 4-log treatment of viruses under the GWR.

**§ 109.1307(a)(1)(i)**

This subparagraph was amended to clarify a compliance monitoring location may either be at the entry point or another Department-approved location.

**§ 109.1307(a)(1)(i)(A-C)**

These clauses were amended to be consistent with Safe Drinking Water-General Update revisions published as final-form rulemaking on May 23, 2009 at 39 Pa. B. 2661.

**F. Benefits, Costs and Compliance**

**Benefits**

The Stage 2 DBPR will reduce DBP peaks and provide for more consistent, equitable protection from DBPs across the entire distribution system. The Stage 2 DBPR will affect approximately 2,045 community water systems and 600 nontransient noncommunity water systems serving 10.5 million Pennsylvanians. These 10.5 million people will benefit from a reduction in health risks associated with disinfection practices, such as bladder cancer and kidney damage. The EPA has estimated that the Nation may realize a total annual benefit of up to \$3.5 billion as a result of avoiding up to 581 cases of bladder cancer per year. In Pennsylvania, this translates into a total annual benefit of up to \$144 million in avoiding up to 24 cases of bladder cancer per year.

The LT2ESWTR rule will further protect public health against *Cryptosporidium* and other microbial pathogens in 355 PWSs that supply water to approximately 8.4 million Commonwealth citizens. Additional *Cryptosporidium* treatment is expected to result in a reduced rate of *Cryptosporidium*-related illnesses and death. The EPA estimates that after full implementation of the LT2ESWTR, on average, the Nation is expected to avoid 89,375 to 1,459,126 illnesses and 20 to 314 deaths annually. Furthermore, the EPA estimates the annual benefit of LT2ESWTR implementation ranges from \$177 million to \$2.8 billion, depending on the rate of *Cryptosporidium* occurrence. In Pennsylvania, this translates into a total annual benefit of \$4.48 million to \$70.84 million depending on the rate of *Cryptosporidium* occurrence.

The GWR establishes monitoring requirements to ensure adequate treatment is provided at groundwater systems and defines a risk-targeted approach to identify groundwater sources that are vulnerable to fecal contamination. Implementation of the Rule will create public health benefits for approximately 7 million Pennsylvanians resulting from the reduction in endemic acute viral illness and death. Although most illnesses caused by viruses are mild, some viruses may produce severe health effects in children, the elderly, and those with compromised immune systems. The EPA has estimated that the nation may avoid 41,868 illnesses associated with viruses. In Pennsylvania, this translates to 2,553 illnesses avoided. EPA estimated the national annual benefits from the GWR implementation to be \$16 million for community water systems, \$900,000 for nontransient noncommunity systems and \$2.7 million for transient noncommunity

systems. In Pennsylvania, this translates to annual benefits of \$632,657, \$54,548 and \$193,321 respectively, totaling \$880,527.

### **Compliance Costs**

All public water systems in Pennsylvania are affected by at least one of these rules. The costs associated with these three rules will vary because the requirements for each are different and the number of PWSs affected by each rule is different. The annual costs associated with each rule are as follows:

<b>Rule</b>	<b>No. of Systems Affected</b>	<b>Total Annual Costs</b>
Stage 2 DBPR	2,650	\$3,390,000
LT2ESWTR	355	\$3,364,900
GWR	9,100	\$2,929,940
Total		\$9,684,840

For the Stage 2 DBPR, the estimated \$3.39 million includes non-treatment costs of rule implementation such as: the Initial Distribution System Evaluation, Stage 2 DBPR monitoring plans, routine monitoring, reporting, recordkeeping and operational evaluations. PWSs required to install treatment to comply with MCLs will accrue the additional costs of treatment installation as well as operation and maintenance costs.

For the LT2ESWTR, PWSs will incur monitoring costs for turbidity, *E. coli*, and *Cryptosporidium* to assess source water *Cryptosporidium* levels. Estimates of laboratory fees, shipping costs, labor hours for sample collection, and hours for reporting results were used to predict source water monitoring costs. PWSs are required to conduct two rounds of source water monitoring unless the PWS installs additional treatment to achieve the maximum level of treatment required for *Cryptosporidium* as a result of the rule. Some PWSs will be required to install additional treatment based on the results of the source water monitoring.

For the GWR, costs will vary considerably due to the current treatment capacity of a system, groundwater source quality and sensitivity of the groundwater source to fecal contamination. EPA estimates corrective actions systems must take in response to any significant deficiencies identified by the Department or in response to the presence of *E. coli* in raw source water may be the most costly expenses a system may incur. Corrective actions include: installing or upgrading treatment to achieve at least 4-log inactivation and/or removal of viruses; providing an alternate source of water; or eliminating a source of fecal contamination. Systems providing sufficient treatment must conduct compliance monitoring to ensure treatment effectiveness. Additional costs may be borne if a system needs to install equipment to continuously monitor a disinfectant residual.

For this Commonwealth, there are costs associated with regulatory oversight and costs to state-owned public water systems. The details for the Commonwealth costs are as follows:

Rule	Oversight Costs	No. of PWSs Affected	State-owned PWS Costs*	Total Annual Costs
Stage 2 DBPR	\$585,000	32	\$41,000	\$626,000
LT2ESTWR	\$35,420	17	\$161,461	\$196,881
GWR	\$719,469	223	\$70,441	\$789,910
Total	\$1,339,889	-----	\$272,902	\$1,612,791

\*The cost estimates for state-owned PWSs are part of (*not* in addition to) the total cost estimates for the regulated community.

### Compliance Assistance Plan

Pennsylvania's PENNVEST Program offers financial assistance to public water systems that qualify. Eligibility is based upon factors such as public health impact, compliance necessity, and project/operational affordability. Assistance is in the form of a low-interest loan and in hardship cases additional grant funds may be awarded.

The Safe Drinking Water Program has established a network of regional and central office training staff that is responsive to identifiable training needs. The target audience in need of training may be program staff, the regulated community or both.

In addition to this network of training staff, the Bureau of Water Standards and Facility Regulation have staff dedicated to providing both training and outreach support services to public water system operators. The DEP internet site also contains the *Drinking Water & Wastewater Treatment System Operator Information Center* internet site, which provides a bulletin board of timely, useful information for treatment plant operators.

### Paperwork Requirements

The Stage 2 DBPR will require that water systems conduct the IDSE and submit the report to the Department. Most of this initial implementation will be completed prior to Department receiving primacy. It is anticipated that little additional paperwork will be necessary for the routine monitoring and reporting upon adoption of this final rulemaking.

The LT2ESWTR amendments will create additional reporting, record keeping and paperwork requirements. It is anticipated that our current data reporting forms can be modified to facilitate any additional monitoring and reporting and that no additional data or paperwork will be necessary.

The GWR will not change existing requirements, but it will add new requirements for groundwater systems. Community water systems will need to complete and submit a form that demonstrates how 4-log treatment will be provided at each entry point and describes how compliance monitoring will be conducted. Systems conducting compliance monitoring because 4-log treatment of viruses is provided will need to use existing Department forms to submit disinfection data on a monthly basis.

It is anticipated that this additional monitoring and reporting will be easily facilitated by the addition of one or two new data reporting forms and that little additional paperwork will be necessary.

#### **G. Pollution Prevention**

Not applicable.

#### **H. Sunset Review**

The regulations will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulation effectively fulfills the goals for which it was intended.

#### **I. Regulatory Review**

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on November 19, 2008, the Department submitted a copy of the notice of proposed rulemaking for the GWR, published 38 Pa.B. 6483 (November 29, 2008) and on November 24, 2008, the Department submitted a copy of the notice of proposed rulemaking for the LT2ESWTR and Stage 2 DBP rules, published at 38 Pa.B. 7035 (December 20, 2008) and 38 Pa.B. 7055 (December 20, 2008), respectively, to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees.

Under section 5(c) of the Regulatory Review Act, IRRC and the Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing these final-form regulations, the Department has considered all comments from IRRC, the Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act, on \_\_\_\_\_ these final-form regulations were deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on \_\_\_\_\_, and approved the final-form regulations.

#### **J. Findings of the Board**

The Board finds that

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202) and regulations promulgated thereunder at *1 Pennsylvania Code* §§ 7.1 and 7.2.

(2) A public comment period was provided as required by law, and all comments were considered.

(3) These regulations do not enlarge the purpose of the proposals published as follows:

- GWR at 38 Pa. B. 6483 (November 29, 2008);
- LT2ESWTR at 38 Pa.B. 7035 (December 20, 2008); and

- Stage 2 DBPR at 38 Pa.B. 7055 (December 20, 2008).

(4) These regulations are necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

#### **K. Order of the Board**

The Board, acting under the authorizing statutes, orders that:

- (a) The regulations of the Department of Environmental Protection, *25 Pennsylvania Code*, Chapter 109, are amended to read as set forth in Annex A.
- (b) The Chairperson of the Board shall submit this order and Annex A to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.
- (c) The Chairperson of the Board shall submit this order and Annex A to the Independent Regulatory Review Commission and the Senate and House Environmental Resources and Energy Committees as required by the Regulatory Review Act.
- (d) The Chairperson of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau, as required by law.
- (e) This order shall take effect immediately.

BY:

JOHN HANGER  
Chairperson  
Environmental Quality Board

## Annex A

### TITLE 25. ENVIRONMENTAL PROTECTION

#### PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

##### Subpart C. PROTECTION OF NATURAL RESOURCES

###### ARTICLE II. WATER RESOURCES

###### CHAPTER 109. SAFE DRINKING WATER

###### Subchapter A. GENERAL PROVISIONS

###### **§ 109.1. Definitions.**

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

\* \* \* \* \*

BAT—Best Available Technology—The best technology, treatment techniques or other means which the Administrator finds are available for achieving compliance with maximum contaminant levels. **THIS CHAPTER INCORPORATES BY REFERENCE THE BAT SPECIFIED IN 40 CFR PARTS 141 AND 142 (RELATING TO NATIONAL PRIMARY DRINKING WATER REGULATIONS; AND NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION).**

\* \* \* \* \*

**Bag filter**--A pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. It is typically constructed of a nonrigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to outside.

**Bank filtration**--A water treatment process that uses a well to recover surface water that has naturally infiltrated into groundwater through a riverbed or bank. Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well.

**Bin**--A category based on the level of *Cryptosporidium* present in source water. Four potential bins exist, 1 through 4. The higher the bin, the higher the concentration of source water *Cryptosporidium*.

\* \* \* \* \*

**Cartridge filter**--A pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. It is typically constructed as rigid or semirigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

\* \* \* \* \*

Combined distribution system--The interconnected distribution system consisting of the distribution systems of wholesale systems and of the public water systems that obtain finished water from another public water system.

\* \* \* \* \*

Conventional filtration--The series of processes for the purpose of substantial particulate removal consisting of coagulation, flocculation, [sedimentation] clarification, AND granular media [and] filtration. The clarification step must be a solid/liquid separation process where accumulated solids are removed during this separate component of the treatment system.

\* \* \* \* \*

DBP--Disinfection byproduct.

\* \* \* \* \*

Dual sample set--A set of two samples collected at the same time and same location, with one sample analyzed for TTHM and the other sample analyzed for HAA5. Dual sample sets are collected for the purposes of conducting an IDSE and determining compliance with the TTHM and HAA5 MCLs under Subchapter G (relating to system management responsibilities).

\* \* \* \* \*

Finished water--[Water that has been treated in compliance with the treatment technique requirements established in this chapter by a permitted public water system and is ready for consumption by the public.] Water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as necessary to maintain water quality in the distribution system (for example, booster disinfection or addition of corrosion control chemicals).

\* \* \* \* \*

Flowing stream--A course of running water flowing in a definite channel.

\* \* \* \* \*

GAC10--A GRANULAR ACTIVATED CARBON FILTER BED WITH AN EMPTY BED CONTACT TIME OF 10 MINUTES BASED ON AVERAGE DAILY FLOW AND A CARBON REACTIVATION FREQUENCY OF EVERY 180 DAYS, EXCEPT THAT THE REACTIVATION FREQUENCY FOR GAC10 USED AS A BAT SHALL BE 120 DAYS.

GAC20--A GRANULAR ACTIVATED CARBON FILTER BED WITH AN EMPTY BED CONTACT TIME OF 20 MINUTES BASED ON AVERAGE DAILY FLOW AND A CARBON REACTIVATION FREQUENCY OF EVERY 240 DAYS.

\* \* \* \* \*

Groundwater--Water that is located within the saturated zone below the water table and is available to supply wells and springs.

\* \* \* \* \*

IDSE--Initial Distribution System Evaluation.

\* \* \* \* \*

LRAA--Locational running annual average--The average, computed quarterly, of quarterly arithmetic averages of all analytical results for samples taken at a particular monitoring location during the most recent 4 calendar quarters.

\* \* \* \* \*

Lake/reservoir--A natural or man made basin or hollow on the earth's surface in which water collects or is stored that may or may not have a current or single direction of flow.

\* \* \* \* \*

Log inactivation --A measure of the amount of viable microorganisms that are rendered nonviable during disinfection processes and is defined as:

$$\underline{\text{Log inactivation} = \log\left(\frac{N_o}{N_D}\right)}$$

Where,

$N_o$  = Initial concentration of viable microorganisms

$N_D$  = Concentration of viable microorganisms after disinfection

Log = Logarithm to base 10

Log inactivation is related to percent inactivation, defined as:

$$\underline{\text{Percent inactivation} = \left(1 - \frac{N_D}{N_o}\right) * 100}$$

Common log-inactivation values and corresponding percent inactivation values include:

<u>Log Inactivation</u>	<u>Percent Inactivation</u>
<u>0.5-log</u>	<u>68.4%</u>
<u>1.0-log</u>	<u>90.0%</u>
<u>1.5-log</u>	<u>96.8%</u>
<u>2.0-log</u>	<u>99.0%</u>
<u>2.5-log</u>	<u>99.7%</u>
<u>3.0-log</u>	<u>99.9%</u>
<u>4.0-log</u>	<u>99.99%</u>

Log removal --A measure of the physical removal of a targeted contaminant or disease-causing microorganism (or its surrogate) during water treatment processes and is defined as:

$$\underline{\text{Log removal}} = \log\left(\frac{N_o}{N_R}\right)$$

Where,

$N_o$  = Initial concentration of targeted contaminant or disease-causing microorganism (or its surrogate)

$N_R$  = Concentration of targeted contaminant or disease-causing microorganism (or its surrogate) after removal

Log = Logarithm to base 10

Log removal is related to percent removal, defined as:

$$\underline{\text{Percent removal}} = \left(1 - \frac{N_R}{N_o}\right) * 100$$

Common log-removal values and corresponding percent removal values include:

<u>Log Removal</u>	<u>Percent Removal</u>
<u>0.5-log</u>	<u>68.4%</u>
<u>1.0-log</u>	<u>90.0%</u>
<u>1.5-log</u>	<u>96.8%</u>
<u>2.0-log</u>	<u>99.0%</u>
<u>2.5-log</u>	<u>99.7%</u>
<u>3.0-log</u>	<u>99.9%</u>
<u>4.0-log</u>	<u>99.99%</u>

Log treatment--A measure of the removal or inactivation, or Department-approved combination of removal and inactivation, of a targeted contaminant or disease-causing microorganism (or its surrogate) during water treatment processes and is defined as:

$$\underline{\text{Log treatment} = \text{Log removal} + \text{Log inactivation}}$$

Or,

$$\underline{\text{Log treatment} = \log\left(\frac{N_o}{N_T}\right)}$$

Where,

$N_o$  = Initial concentration of a targeted contaminant or disease-causing microorganism (or its surrogate)

$N_T$  = Concentration of a targeted contaminant or disease-causing microorganism (or its surrogate) after treatment

Log = Logarithm to base 10

Log treatment is related to percent treatment, defined as:

$$\underline{\text{Percent treatment} = \left(1 - \frac{N_T}{N_o}\right) * 100}$$

Common log treatment values and corresponding percent treatment values include:

<u>Log Treatment</u>	<u>Percent Treatment</u>
<u>0.5-log</u>	<u>68.4%</u>
<u>1.0-log</u>	<u>90.0%</u>
<u>1.5-log</u>	<u>96.8%</u>
<u>2.0-log</u>	<u>99.0%</u>
<u>2.5-log</u>	<u>99.7%</u>
<u>3.0-log</u>	<u>99.9%</u>
<u>4.0-log</u>	<u>99.99%</u>

\* \* \* \* \*

Membrane filtration --

(i) A pressure or vacuum driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test.

(ii) The term includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration and reverse osmosis.

\* \* \* \* \*

**Microorganism**--Any of a number of unicellular, multicellular or colonial bacteria, fungi, protozoa, archaea or viruses whose individuals are too small to be seen by the human eye without magnification.

\* \* \* \* \*

**Plant intake**--The works or structures at the head of a conduit through which water is diverted from a source (for example, a river or lake) into the treatment plant.

\* \* \* \* \*

**Presedimentation**--A preliminary treatment process used to remove gravel, sand and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

\* \* \* \* \*

**RAA**--Running annual average--The average, computed quarterly, of quarterly arithmetic averages of all analytical results for samples taken during the most recent 4 calendar quarters.

\* \* \* \* \*

**Significant deficiency**--A defect in design, operation or maintenance, or a failure or malfunction of the sources, treatment, storage or distribution system that the Department determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.

\* \* \* \* \*

**2-stage lime softening**--A process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

\* \* \* \* \*

**Wholesale system**--A public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more [consecutive] PUBLIC WATER systems.

**§ 109.5. Organization of chapter.**

\* \* \* \* \*

**(e) SUBCHAPTER L (RELATING TO THE LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE) APPLIES TO ALL PUBLIC WATER SYSTEMS USING SURFACE WATER OR GUDI SOURCES.**

~~**{(e)} (f) Subchapter M (relating to additional requirements for groundwater sources) applies to all public water systems that use groundwater, excluding those systems that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment UNDER § 109.202(c)(1) (RELATING TO STATE MCLS, MRDLS AND TREATMENT TECHNIQUE REQUIREMENTS).**~~

**Subchapter B. MCLs, MRDLs OR TREATMENT TECHNIQUE REQUIREMENTS**

**§ 109.202. State MCLs, MRDLs and treatment technique requirements.**

\* \* \* \* \*

(c) *Treatment technique requirements for pathogenic bacteria, viruses and protozoan cysts.* A public water system shall provide adequate treatment to reliably protect users from the adverse health effects of microbiological contaminants, including pathogenic bacteria, viruses and protozoan cysts. The number and type of treatment barriers and the efficacy of treatment provided shall be commensurate with the type, degree and likelihood of contamination in the source water.

(1) A public water supplier shall provide, as a minimum, continuous filtration and disinfection for surface water and GUDI sources. The treatment technique ~~[shall]~~ must provide at least 99.9% removal and inactivation of *Giardia lamblia* cysts, and at least 99.99% removal and inactivation of enteric viruses. Beginning January 1, 2002, public water suppliers serving 10,000 or more people shall provide at least 99% removal of *Cryptosporidium* oocysts. Beginning January 1, 2005, public water suppliers serving fewer than 10,000 people shall provide at least 99% removal of *Cryptosporidium* oocysts. The Department, depending on source water quality conditions, may require additional treatment as necessary to meet the requirements of this chapter and to protect the public health.

\* \* \* \* \*

(ii) The combined total effect of disinfection processes utilized in a filtration plant shall achieve at least a 90% inactivation of Giardia cysts and a 99.9% inactivation of viruses, as determined by CTs and measurement methods established by the EPA. The residual disinfectant concentration in the water delivered to the distribution system prior to the first customer may not be less than .2 mg/L for more than 4 hours, as demonstrated by measurement taken under § 109.301(1). Failure to maintain this level that extends beyond 4 hours constitutes a breakdown in treatment. A system that experiences a breakdown in treatment shall, under § 109.701(a)(3) (relating to

reporting and recordkeeping), notify the Department within 1 hour after the water system learns of the violation or the situation, and shall provide public notice in accordance with § 109.408 (relating to Tier 1 public notice—~~form, manner and frequency~~ **CATEGORIES, TIMING AND DELIVERY** of notice)

\* \* \* \* \*

(vi) For a source including springs, infiltration galleries, cribs or wells permitted for use by the Department prior to May 16, 1992, and determined by the Department to be a GUDI source, the public water supplier shall:

\* \* \* \* \*

**[(D) Monitor source water for *Cryptosporidium* as specified in § 109.1202(f) (relating to monitoring requirements).]**

\* \* \* \* \*

**(2) IN ADDITION TO MEETING THE REQUIREMENTS OF PARAGRAPH 1, A PUBLIC WATER SUPPLIER USING SURFACE WATER OR GUDI SOURCES SHALL ALSO COMPLY WITH THE REQUIREMENTS OF, AND ON THE SCHEDULES IN, SUBCHAPTER L (RELATING TO LONG-TERM 2 ENHANCED SURFACE WATER TREATMENT REQUIREMENTS).**

**[(2)] (3) A community public water system shall provide continuous disinfection and comply with Subchapter M (relating to additional requirements for groundwater sources) for groundwater sources.**

\* \* \* \* \*

**§ 109.204. Disinfection profiling and benchmarking.**

(a) The disinfection profiling and benchmarking requirements, established by the EPA under the National Primary Drinking Water Regulations in 40 CFR 141.172, 141.530--141.536, 141.540--141.544, **141.570(c)** and **(d) and 141.708--141.709** are incorporated by reference except as otherwise established by this chapter.

\* \* \* \* \*

**Subchapter C. MONITORING REQUIREMENTS**

**§ 109.301. General monitoring requirements.**

Public water suppliers shall monitor for compliance with MCLs, MRDLs and treatment technique requirements in accordance with the requirements established by the EPA under the National Primary Drinking Water Regulations, 40 CFR Part 141 (relating to national primary drinking water regulations), except as otherwise established by this chapter unless increased monitoring is required by the Department under § 109.302 (relating to special monitoring requirements). Alternative monitoring requirements may be established by the Department and may be implemented in lieu of monitoring requirements for a particular National Primary

Drinking Water Regulation if the alternative monitoring requirements are in conformance with the Federal act and regulations. The monitoring requirements shall be applied as follows:

\* \* \* \* \*

*(8) Monitoring requirements for public water systems that obtain finished water from another public water system.*

\* \* \* \* \*

(vi) Community water systems and nontransient noncommunity water systems that obtain finished water from another permitted public water system shall comply with the monitoring requirements for disinfection byproducts and disinfectant residuals in paragraphs (12)(i)–  
{(iii)} (v) and (13).

\* \* \* \* \*

**{(vii)} (viii) A public water supplier that obtains finished water from another permitted public water system using groundwater shall comply with Subchapter M (relating to additional requirements for groundwater sources).**

\* \* \* \* \*

*(12) Monitoring requirements for disinfection byproducts and disinfection byproduct precursors.* Community water systems and nontransient noncommunity water systems that use a chemical disinfectant or oxidant shall monitor for disinfection byproducts and disinfection byproduct precursors in accordance with this paragraph. Community water systems and nontransient noncommunity water systems that obtain finished water from another public water system that uses a chemical disinfectant or oxidant to treat the finished water shall monitor for TTHM{s} and HAA5 in accordance with this paragraph. Systems that use either surface water or GUDI sources and that serve at least 10,000 persons shall begin monitoring by January 1, 2002. Systems that use either surface water or GUDI sources and that serve fewer than 10,000 persons, or systems that use groundwater sources, shall begin monitoring by January 1, 2004. Systems monitoring for disinfection byproducts and disinfection byproduct precursors shall take all samples during normal operating conditions. Systems monitoring for disinfection byproducts and disinfection byproduct precursors shall use only data collected under this chapter to qualify for reduced monitoring. Compliance with the MCLs and monitoring requirements for TTHM{s}, HAA5, chlorite (where applicable) and bromate (where applicable) shall be determined in accordance with 40 CFR 141.132 and 141.133 (relating to monitoring requirements; and compliance requirements) which are incorporated herein by reference.

*(i) TTHM{s} and HAA5 Stage 1 DBP Rule.*

\* \* \* \* \*

*(B) Reduced monitoring.* Systems shall monitor for TTHM{s} and HAA5 for at least 1 year prior to qualifying for reduced monitoring. Systems serving at least 500 persons and that use either surface water or GUDI sources shall monitor source water TOC monthly for at least 1 year prior to qualifying for reduced monitoring. The Department retains the right to require a system that meets the requirements of this clause to resume routine monitoring.

(I) For systems serving at least 500 persons that use either surface water or GUDI sources and that have a source water TOC running annual average that is no greater than 4.0 mg/L, a TTHM running annual average that is no greater than 0.040 mg/L and an HAA5 running annual average that is no greater than 0.030 mg/L, the required monitoring is reduced according to items (-a) and (-b). Systems serving at least 10,000 persons shall resume routine monitoring as prescribed in clause (A) if the TTHM running annual average exceeds 0.060 mg/L or the HAA5 running annual average exceeds 0.045 mg/L. Systems serving from 500 to 9,999 persons shall resume routine monitoring as prescribed in clause (A) if the annual TTHM average exceeds 0.060 mg/L or the annual HAA5 average exceeds 0.045 mg/L. Systems serving at least 500 persons that must resume routine monitoring shall resume routine monitoring in the quarter immediately following the quarter in which the system exceeded the specified TTHM or HAA5 criteria.

\* \* \* \* \*

(-c-) Beginning April 1, 2008, systems not monitoring under the provisions of subparagraph (ii) (v) shall take monthly TOC samples every 30 days at a location prior to any treatment, to qualify for reduced monitoring for TTHM and HAA5 under this subparagraph. In addition to meeting other criteria for reduced monitoring in this section, the source water TOC running annual average must be less than OR EQUAL TO 4.0 mg/L (based on the most recent 4 quarters of monitoring) on a continuing basis at each treatment plant to reduce or remain on reduced monitoring for TTHM and HAA5. Once qualified for reduced monitoring for TTHM and HAA5 under this section, a system may reduce source water TOC monitoring to quarterly TOC samples taken every 90 days at a location prior to any treatment.

(II) For systems that use only groundwater sources not included under subclause (I), the required monitoring is reduced according to the following:

\* \* \* \* \*

(-b-) For systems serving fewer than 10,000 persons that have an annual TTHM average that is no greater than 0.040 mg/L and an annual HAA5 average that is no greater than 0.030 mg/L for 2 consecutive years or an annual TTHM average that is no greater than 0.020 mg/L and an annual HAA5 average that is no greater than 0.015 mg/L for 1 year, the required monitoring is reduced to one sample per 3-year cycle per treatment plant. The sample shall be taken at a location that represents a maximum residence time during the month of warmest water temperature. The 3-year cycle shall begin on January 1 following the quarter in which the system qualifies for reduced monitoring. If the TTHM annual average exceeds 0.060 mg/L, or the HAA5 annual average exceeds 0.045 mg/L the system shall resume routine monitoring as prescribed in clause (A), except that systems that exceed either a TTHM or HAA5 MCL shall increase monitoring to at least one sample per quarter per treatment plant beginning in the quarter immediately following the quarter in which the system exceeds the TTHM or HAA5 MCL.

(ii) TTHM[s] and HAA5 Stage 2 DBP Rule.

(A) Applicability and schedule.

(I) Community water systems and nontransient noncommunity water systems using a primary or residual disinfectant other than ultraviolet light or delivers water that has been treated with a primary or residual disinfectant other than ultraviolet light shall monitor for compliance with the MCLs based on the LRAA for TTHM[s] and HAA5. [A consecutive] ANY system [or wholesale system] THAT IS PART OF A COMBINED DISTRIBUTION SYSTEM shall comply at the same time as the system with the earliest compliance date in the combined distribution system. Systems shall comply with [the requirements of] this subparagraph as follows:

- (-a-) Systems serving 100,000 or more people begin April 1, 2012.
- (-b-) Systems serving from 50,000 to 99,999 people begin October 1, 2012.
- (-c-) Systems serving from 10,000 to 49,999 people begin October 1, 2013.
- (-d-) Systems serving less than 10,000 people:
  - (-1-) Begin October 1, 2013, if no *Cryptosporidium* monitoring is required under §§ 109.1201--109.1204. [(Editor's Note: §§ 109.1201 - 109.1204 are proposed to be added at 38 Pa.B. 7035 (December 20, 2008).)]
  - (-2-) Begin October 1, 2014, if *Cryptosporidium* monitoring is required under §§ 109.1201--109.1204.

(II) For the purpose of the schedule under this subparagraph, the Department may determine that the combined distribution system does not include certain consecutive WATER systems based on factors such as receiving water from a wholesale system only on an emergency basis or receiving only a small percentage and small volume of water from a wholesale system. The Department may also determine that the combined distribution system does not include certain wholesale systems based on factors such as delivering water to a consecutive WATER system only on an emergency basis or delivering only a small percentage and small volume of water to a consecutive WATER system.

(III) ALL SYSTEMS MONITORING UNDER THIS PARAGRAPH SHALL COMPLY WITH SUBPARAGRAPH (i) UNTIL THE DATES SPECIFIED IN THIS SUBPARAGRAPH.

(B) Routine monitoring.

(I) A system that submitted an IDSE report shall begin monitoring at the locations and months recommended in the IDSE report unless the Department notifies the system that other locations or additional locations are required. A system that submitted a 40/30 certification, or qualified for a very small system waiver or a nontransient noncommunity water system serving less than 10,000, shall monitor at the locations and dates identified in its STAGE 2 DBP RULE monitoring plan following the schedule in § 109.701(g)(2)(ii) (relating to reporting and recordkeeping).

(II) A system required to conduct quarterly monitoring shall begin monitoring in the first full calendar quarter that includes the compliance date specified in clause (A). A system required to conduct monitoring at frequencies less than quarterly shall begin monitoring in the calendar month recommended in the IDSE report in accordance with 40 CFR 141.601 and 141.602 (relating to standard monitoring; and system specific studies) as incorporated by reference or the calendar month identified in the [Subchapter G (relating to system management responsibilities)] STAGE 2 DBP RULE monitoring plan [relating to § 109.701(g)(2)(ii)] no later than 12 months after the APPLICABLE compliance date under clause (A).

(III) Monitoring shall be conducted at no fewer than the number of locations identified in the table under subclauses (IV) and (V). All systems shall monitor during the month of highest DBP concentrations. Systems on quarterly monitoring shall [take dual] sample [sets] every 90 days at each monitoring location[, except for community water systems using surface water or GUDI sources serving 500–3,300. Systems on annual monitoring and community water systems using surface water or GUDI sources serving 500–3,300 are required to take individual TTHM and HAA5 samples (instead of a dual sample set) at the locations with the highest TTHM and HAA5 concentrations, respectively. Only one location with a dual sample set per monitoring period is needed if the highest TTHM and HAA5 concentrations occur at the same location (and month, if monitored annually)]. SAMPLING AT EACH MONITORING LOCATION SHALL BE CONDUCTED AS FOLLOWS:

(-a-) SYSTEMS USING SURFACE WATER OR GUDI SOURCES SERVING A POPULATION GREATER THAN 3,300 AND SYSTEMS USING GROUNDWATER SOURCES SERVING A POPULATION OF 500 OR GREATER SHALL TAKE DUAL SAMPLE SETS AT EACH MONITORING LOCATION.

(-b-) SYSTEMS USING SURFACE WATER OR GUDI SOURCES SERVING A POPULATION OF 3,300 OR LESS AND SYSTEMS USING GROUNDWATER SOURCES SERVING A POPULATION LESS THAN 500 SHALL TAKE INDIVIDUAL TTHM AND HAA5 SAMPLES AT THE LOCATIONS WITH THE HIGHEST TTHM AND HAA5 CONCENTRATIONS, RESPECTIVELY.

(-c-) SYSTEMS SERVING A POPULATION LESS THAN 500 MAY TAKE A DUAL SAMPLE SET AT ONE LOCATION PER MONITORING PERIOD IF THE HIGHEST TTHM AND HAA5 CONCENTRATIONS OCCUR AT THE SAME LOCATION AND DURING THE SAME MONTH.

(IV) Community water systems and nontransient noncommunity water systems using surface water or GUDI sources shall monitor as follows:

<u>Population size</u>	<u>Monitoring frequencies</u>	<u>Distribution system monitoring location total per monitoring period</u>
<u>&lt; 500</u>	<u>Annually</u>	<u>2</u>
<u>500--3,300</u>	<u>Quarterly</u>	<u>2</u>
<u>3,301--9,999</u>	<u>Quarterly</u>	<u>2</u>
<u>10,000--49,999</u>	<u>Quarterly</u>	<u>4</u>
<u>50,000--249,999</u>	<u>Quarterly</u>	<u>8</u>
<u>250,000--999,999</u>	<u>Quarterly</u>	<u>12</u>
<u>1,000,000--4,999,999</u>	<u>Quarterly</u>	<u>16</u>
<u>≥ 5,000,000</u>	<u>Quarterly</u>	<u>20</u>

**(V) Community water systems and nontransient noncommunity water systems using ground water sources shall monitor as follows:**

<u>Population size</u>	<u>Monitoring frequencies</u>	<u>Distribution system monitoring location total per monitoring period</u>
<u>&lt; 500</u>	<u>Annually</u>	<u>2</u>
<u>500--9,999</u>	<u>Annually</u>	<u>2</u>
<u>10,000--99,999</u>	<u>Quarterly</u>	<u>4</u>
<u>100,000--499,999</u>	<u>Quarterly</u>	<u>6</u>
<u>≥ 500,000</u>	<u>Quarterly</u>	<u>8</u>

**(VI) An undisinfected system that begins using a disinfectant other than UV light after the dates under 40 CFR 141.600 (relating to general requirements) as incorporated by reference for complying with the IDSE requirements, shall consult with the Department to identify compliance monitoring locations. The system shall develop a monitoring plan under § 109.701(g)(2)(ii) that includes those monitoring locations.**

**(VII) Systems shall use analytical techniques adopted by the EPA under the Federal act for TTHM and HAA5 analyses. Laboratories that have received accreditation by the Department shall conduct analyses.**

**(C) Reduced monitoring.**

**(I) Systems may reduce monitoring to the level specified in the table under subclauses (II) and (III) if, after at least 4 consecutive quarters, the LRAA is equal to or less than 0.040 mg/L for TTHM and equal to or less than 0.030 mg/L for HAA5 at all monitoring locations. Only data collected under subparagraph (i) and this subparagraph may be used to qualify for reduced monitoring. Systems with surface water or GUDI sources shall also take monthly TOC samples every 30 days at a location prior to any treatment, to qualify for reduced monitoring for TTHM and HAA5 under this clause. In addition to meeting other criteria for reduced monitoring in this clause, the source water**

TOC running annual average (based on the most recent 4 quarters of monitoring) must be equal to or less than 4.0 mg/L on continuing basis at each treatment plant to reduce monitoring for TTHM and HAA5. Once qualified for reduced monitoring for TTHM and HAA5 under this clause, a system may reduce source water TOC monitoring to quarterly TOC samples taken every 90 days at a location prior to any treatment.

(II) Community water systems and nontransient noncommunity water systems using surface water or GUDI sources may reduce monitoring as follows:

<u>Population size</u>	<u>Monitoring frequencies</u>	<u>Distribution system monitoring location total per monitoring period</u>
<u>&lt;500</u>	<u>Monitoring may not be reduced</u>	
<u>500--3,300</u>	<u>Annually</u>	<u>1 TTHM and 1 HAA5 sample: 1 at the location and during the quarter with the highest TTHM single measurement, 1 at the location and during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.</u>
<u>3,301--9,999</u>	<u>Annually</u>	<u>2 dual sample sets: 1 at the location and during the quarter with the highest TTHM single measurement, 1 at the location and during the quarter with the highest HAA5 single measurement.</u>
<u>10,000--49,999</u>	<u>Quarterly</u>	<u>2 dual sample sets at the locations with the highest TTHM and the highest HAA5 LRAAs.</u>
<u>50,000--249,999</u>	<u>Quarterly</u>	<u>4 dual sample sets at the locations with two highest TTHM and two highest HAA5 LRAAs.</u>
<u>250,000--999,999</u>	<u>Quarterly</u>	<u>6 dual sample sets at the locations with the three highest TTHM and the three highest HAA5 LRAAs.</u>
<u>1,000,000--4,999,999</u>	<u>Quarterly</u>	<u>8 dual sample sets at the locations with the 4 highest TTHM and 4 highest HAA5 LRAAs.</u>
<u>&gt;= 5,000,000</u>	<u>Quarterly</u>	<u>10 dual sample sets at the locations with the five highest TTHM and five highest HAA5 LRAAs.</u>

(III) Community water systems and nontransient noncommunity water systems using groundwater sources may reduce monitoring as follows:

<u>Population size</u>	<u>Monitoring frequencies</u>	<u>Distribution system monitoring location total per monitoring period</u>

<u>&lt;500</u>	<u>Every third year</u>	<u>1 TTHM and 1 HAA5 sample: 1 at the location and during the quarter with the highest TTHM single measurement; 1 at the location and during quarter with highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.</u>
<u>500--9,999</u>	<u>Annually</u>	<u>1 TTHM and 1 HAA5 sample: 1 at the location and during the quarter with highest TTHM single measurement; 1 at the location during the quarter with the highest HAA5 single measurement; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.</u>
<u>10,000--99,999</u>	<u>Annually</u>	<u>2 dual sample sets: 1 at the location and during the quarter with the highest TTHM single measurement; 1 at the location and during the quarter with the highest HAA5 single measurement.</u>
<u>100,000--499,999</u>	<u>Quarterly</u>	<u>2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs.</u>
<u>&gt;= 500,000</u>	<u>Quarterly</u>	<u>4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs.</u>

(IV) Systems on reduced quarterly monitoring may remain on reduced monitoring as long as the TTHM LRAA is equal to or less than 0.040 mg/L and the HAA5 LRAA is equal to or less than 0.030 mg/L at each monitoring location. Systems on reduced annual or less frequent monitoring may remain on reduced monitoring as long as each TTHM sample result is equal to or less than 0.060 mg/L and each HAA5 sample result is equal to or less than 0.045 mg/L. In addition, the source water TOC running annual average (based on the most recent 4 quarters of monitoring) from samples collected every 90 days at a location prior to any treatment must be equal to or less than 4.0 mg/L at each treatment plant treating surface water or GUDI sources.

(V) If the LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 or if the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level, before any treatment, is greater than 4.0 mg/L at any treatment plant treating surface water or GUDI sources, the system shall resume routine monitoring under clause (B) or begin increased monitoring if clause (D)(I) applies.

(VI) The Department retains the right to require a system that meets the requirements of this clause to resume routine monitoring.

(VII) A SYSTEM MAY REMAIN ON REDUCED MONITORING AFTER THE DATES IDENTIFIED IN CLAUSE (A) FOR COMPLIANCE WITH THIS SUBPARAGRAPH ONLY IF THE CRITERIA SPECIFIED IN ITEMS (-a)--(-c-) ARE MET. IF ANY CONDITION IS NOT MET, THE SYSTEM SHALL

**RESUME ROUTINE MONITORING AS SPECIFIED IN CLAUSE (B) BY THE DATES SPECIFIED IN CLAUSE (A).**

**(-a-) THE SYSTEM QUALIFIED FOR A 40/30 CERTIFICATION UNDER 40 CFR 141.603 (RELATING TO 40/30 CERTIFICATION) AS INCORPORATED BY REFERENCE OR HAS RECEIVED A VERY SMALL SYSTEM WAIVER UNDER 40 CFR 141.604 (RELATING TO VERY SMALL SYSTEM WAIVERS) AS INCORPORATED BY REFERENCE.**

**(-b-) THE SYSTEM MEETS THE REDUCED MONITORING CRITERIA IN THIS CLAUSE.**

**(-c-) THE SYSTEM HAS NOT CHANGED OR ADDED MONITORING LOCATIONS FROM THOSE USED FOR COMPLIANCE MONITORING IN SUBPARAGRAPH (i).**

**(D) Increased monitoring.**

**(I) Systems that are required to monitor at a particular location annually or less frequently than annually under clause (B) or (C) shall increase monitoring to dual sample sets once per quarter (taken every 90 days) at all locations if any single TTHM sample result is greater than 0.080 mg/L or any single HAA5 sample result is greater than 0.060 mg/L at any location.**

**(II) A system may return to routine monitoring once it has conducted increased monitoring for at least 4 consecutive quarters and the LRAA for every monitoring location is equal to or less than 0.060 mg/L for TTHM and is equal to or less than 0.045 mg/L for HAA5.**

**(III) Systems on increased monitoring under subparagraph (i) shall remain on increased monitoring until they qualify for a return to routine monitoring under subclause (II). Systems shall conduct increased monitoring under subclause (I) at the monitoring locations in the monitoring plan developed under § 109.701(g)(2)(ii) beginning at the date identified in clause (A) for compliance with this subparagraph and remain on increased monitoring until they qualify for a return to routine monitoring under subclause (II).**

**{(IV) A system may remain on reduced monitoring after the dates identified in clause (A) for compliance with this subparagraph only if it qualified for a 40/30 certification under 40 CFR 141.603 (relating to 40/30 certification) as incorporated by reference or has received a very small system waiver under 40 CFR 141.603 as incorporated by reference, plus meets the reduced monitoring criteria in clause (C), and has not changed or added monitoring locations from those used for compliance monitoring in subparagraph (i). If a system's monitoring locations under this subparagraph differ from monitoring locations under subparagraph (i), the system may not remain on reduced monitoring after the dates identified in clause (A) for compliance with this subparagraph.}**

**(E) General monitoring and compliance requirements.**

(I) A system required to monitor quarterly shall calculate LRAAs for TTHM and HAA5 using monitoring results collected under this subparagraph and determine that each LRAA does not exceed the MCL. A system that fails to complete 4 consecutive quarters of monitoring, shall calculate compliance with the MCL based on the average of the available data from the most recent 4 quarters. A system that takes more than one sample per quarter at a monitoring location shall average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.

(II) A system required to monitor yearly or less frequently shall determine that each sample result is less than the MCL. If any single sample result exceeds the MCL, the system shall comply with the requirements of clause (D). If no sample result exceeds the MCL, the sample result for each monitoring location is considered the LRAA for that monitoring location.

(III) A system required to conduct quarterly monitoring, shall make compliance calculations at the end of the 4<sup>th</sup> calendar quarter that follows the compliance date [and at the end of each subsequent quarter,] (or earlier if the LRAA calculated based on fewer than 4 quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters) AND AT THE END OF EACH SUBSEQUENT CALENDAR QUARTER. A system required to conduct monitoring at a frequency that is less than quarterly shall make compliance calculations beginning with the first compliance sample taken after the compliance date.

*(Editors Note: Please leave the parentheses in the above text as parentheses: do not change to dashes.)*

(IV) A system is in violation of the MCL when the LRAA at any location exceeds the MCL for TTHM or HAA5, calculated [based on 4 consecutive quarters of monitoring] AS SPECIFIED IN SUBCLAUSE (I), or the LRAA calculated based on fewer than 4 quarters of data if the MCL would be exceeded regardless of the monitoring results of subsequent quarters. A system is in violation of the monitoring requirements for each quarter that a monitoring result would be used in calculating an LRAA if it fails to monitor.

(iii) Chlorite.\* \* \*

\* \* \* \* \*

[**(iii)**] **(iv)** Bromate. Community water systems and nontransient noncommunity water systems that use ozone for disinfection or oxidation shall monitor for bromate.

\* \* \* \* \*

**(B) Reduced monitoring.**

**(I) [For] Until March 31, 2009,** systems that have an average source water bromide concentration that is less than 0.05 mg/L based upon representative monthly bromide measurements for 1 year, the required monitoring is reduced from monthly to quarterly. Systems on reduced monitoring shall continue to take monthly samples for

source water bromide. If the running annual average source water bromide concentration, computed quarterly, equals or exceeds 0.05 mg/L based upon representative monthly measurements, the system shall revert to routine monitoring as prescribed by clause (A).

**(II) Beginning April 1, 2009, a system required to analyze for bromate may reduce monitoring from monthly to quarterly, if the system's running annual average bromate concentration computed quarterly is less than or equal to 0.0025 mg/L based on monthly measurements as prescribed in clause (A) for the most recent 4 quarters. Systems qualifying for reduced bromate monitoring under subclause (I) may remain on reduced monitoring as long as the running annual average of quarterly bromate samples is less than or equal to 0.0025 mg/L. If the running annual average bromate concentration is greater than 0.0025 mg/L, the system shall resume routine monitoring as prescribed under clause (A).**

**[(iv)] [(v) *[Disinfection byproducts] DBP precursors.* \* \* \***

**§ 109.304. Analytical requirements.**

(a) Sampling and analysis shall be performed in accordance with analytical techniques adopted by the EPA under the Federal act or methods approved by the Department.

\* \* \* \* \*

(c) For the purpose of determining compliance with the monitoring and analytical requirements established under this subchapter ~~{and}~~, ~~[Subchapter]~~ **SUBCHAPTERS K, L and [Subchapter] M** (relating to lead and copper; **LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE; and additional requirements for groundwater sources**), the Department will consider only samples analyzed by a laboratory accredited by the Department, except that measurements for turbidity, fluoridation operation, residual disinfectant concentration, temperature, pH, alkalinity, orthophosphates, silica, calcium, conductivity, daily chlorite, and magnesium hardness may be performed by a person meeting one of the following requirements:

\* \* \* \* \*

**(d) ~~[*Cryptosporidium*.}~~ A system shall have *Cryptosporidium* samples analyzed by a laboratory that is approved under the EPA's Laboratory Quality Assurance Evaluation Program for Analysis of *Cryptosporidium* in Water or a laboratory that has been accredited for *Cryptosporidium* analysis by an equivalent Department laboratory accreditation program.**

## Subchapter D. PUBLIC NOTIFICATION

### § 109.407. General public notification requirements.

(a) *Violation categories and other situations requiring a public notice.* A public water supplier shall give public notice for the following circumstances:

\* \* \* \* \*

(2) Failure to comply with a prescribed treatment technique requirement in Subchapter B, G [or], K, L or M [(relating to MCLs, MRDLs or treatment technique requirements; system management requirements; and lead and copper)].

\* \* \* \* \*

### § 109.408. Tier 1 public notice--categories, timing and delivery of notice.

(a) *General violation categories and other situations requiring a Tier 1 public notice.* A public water supplier shall provide Tier 1 public notice for the following circumstances:

\* \* \* \* \*

(7) {Occurrence of a waterborne disease outbreak, as defined in § 109.1 (relating to definitions), or other emergency situation as defined in § 109.701(a)(3)(iii) (relating to reporting and recordkeeping) that adversely affects the quality or quantity of the finished water and has a significant potential to have serious adverse effects on human health as a result of short-term exposure.}

(Editor's Note: text moved to new #10)

**VIOLATION OF A TREATMENT TECHNIQUE REQUIREMENT FOR CRYPTOSPORIDIUM AS DEFINED IN § 109.1203 (RELATING TO BIN CLASSIFICATION AND TREATMENT TECHNIQUE REQUIREMENTS), RESULTING FROM A FAILURE TO PROVIDE THE LEVEL OF TREATMENT APPROPRIATE FOR THE SYSTEM'S BIN CLASSIFICATION.**

(8) {Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Department on a case-by-case basis.}

(Editor's Note: text moved to new #11)

**Detection of E. coli in source water samples as specified in §§ 109.1303 and 109.1304 (relating to triggered monitoring requirements for groundwater sources; and assessment source water monitoring).**

**(9) A breakdown in treatment for groundwater sources as specified in § 109.1307(a)(1)(ii) (RELATING TO SYSTEM MANAGEMENT RESPONSIBILITIES).**

**(10) Occurrence of a waterborne disease outbreak, as defined in § 109.1 (relating to definitions), or other emergency situation as defined in § 109.701(a)(3)(iii) (relating to reporting and recordkeeping) that adversely affects the quality or quantity of the**

**finished water and has a significant potential to have serious adverse effects on human health as a result of short-term exposure.**

(Editor's Note: text from existing #7)

**(11) Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Department on a case-by-case basis.**

(Editor's Note: text from existing #8)

\* \* \* \* \*

**§ 109.409. Tier 2 public notice--categories, timing and delivery of notice.**

(a) *General violation categories and other situations requiring a Tier 2 public notice.* A public water supplier shall provide Tier 2 public notice for the following circumstances:

- (1) All violations of the primary MCL, MRDL [and] treatment technique requirements and failure to take corrective action in Subchapter B, G [or], K, L or M [(relating to MCLs, MRDLs or treatment technique requirements; system management requirements; and lead and copper)], except [where] when a Tier 1 notice is required under § 109.408 (relating to Tier 1 public notice—categories, timing and delivery of notice) or when the Department determines that a Tier 1 notice is required. The tier assignment for fluoride is not incorporated by reference. Under § 109.202(d) (relating to MCLs, MRDLs or treatment technique requirements), a public water system shall comply with the primary MCL for fluoride of 2 mg/L. As such, a public water supplier shall provide Tier 2 public notice for violation of the primary MCL for fluoride.
- (2) Violations of the monitoring requirements in Subchapter C [(relating to monitoring requirements) or], {Subchapter} K or {Subchapter} M (relating to monitoring requirements; lead and copper; and additional requirements for groundwater sources), when the Department determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation.

\* \* \* \* \*

**§ 109.410. Tier 3 public notice--categories, timing and delivery of notice.**

(a) *General violation categories and other situations requiring a Tier 3 public notice.* A public water supplier shall provide Tier 3 public notice for the following circumstances:

- (1) Monitoring violations under Subchapter C [or], K, L or M [(relating to monitoring requirements; and lead and copper)], except when a Tier 1 notice is required under § 109.408 (relating to Tier 1 public notice--categories, timing and delivery of notice) or [where] when the Department determines that a Tier 2 notice is required.

\* \* \* \* \*

**§ 109.417. Special notice for significant deficiencies by noncommunity water systems.**

(a) In-addition to the applicable public notification requirements of this subchapter, a noncommunity water system that receives notice from the Department under § 109.1302(c)(2) (relating to groundwater systems with significant deficiencies or source water *E. coli* contamination) of a significant deficiency shall inform the public served by the water system in a manner approved by the Department of any significant deficiency that has not been corrected within 12 months of being notified by the Department, or earlier if directed by the Department. The system shall continue to inform the public annually until the significant deficiency is corrected.  
The information must include:

- (1) The nature of the significant deficiency and the date the significant deficiency was identified by the Department.
- (2) The Department-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed.
- (3) For systems with a large proportion of non-English speaking consumers specified in § 109.411(c)(2) (RELATING TO CONTENT OF A PUBLIC NOTICE), information in the appropriate languages regarding the importance of the notice or a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.

(b) If directed by the Department, a noncommunity water system with significant deficiencies that have been corrected in accordance with § 109.1302(c)(1) shall inform its customers of the significant deficiencies, how the deficiencies were corrected, and the dates of correction.

**§ 109.418. Special notice for failure to conduct source water *Cryptosporidium* monitoring or failure to determine bin classification.**

(a) Special notice for repeated failure to conduct monitoring of the source water for *Cryptosporidium* and for failure to determine bin classification or *Cryptosporidium* level. The owner or operator of a community or noncommunity water system that is required to monitor source water under § 109.1202 (relating to monitoring requirements) shall notify persons served by the water system that monitoring has not been completed as specified no later than 30 days after the system has failed to collect any 3 months of monitoring as specified in § 109.1202(c). The notice shall be repeated as specified in § 109.409(b)(3) (relating to Tier 2 public notice--form, manner and frequency of notice).

(b) Delivery of the special notice for failure to determine bin classification or *Cryptosporidium* level. The owner or operator of a community or noncommunity water system that is required to determine a bin classification under § 109.1203 (relating to bin classification and treatment technique requirements), or to determine *Cryptosporidium* level under § 109.1203(i) and (j), shall notify persons served by the water system that the determination has not been made as required no later than 30 days after the system has failed to report the determination as specified in [§ 109.1205(h)] § 109.1206(h) (relating to reporting and recordkeeping requirements) or

§ 109.1203(i) and (j), initial round and second round, respectively. The notice shall be repeated as specified in § 109.409(b)(3). The notice is not required if the system is complying with a Department-approved schedule to address the violation.

(c) Form and manner of the special notice.

(1) The form and manner of the public notice must follow the requirements for a Tier 2 public notice prescribed in § 109.409(c). The public notice shall be presented as required in § 109.411(c) (relating to content of a public notice).

(2) The notice must contain the following language, including the language necessary to fill in the blanks.

(i) The special notice for repeated failure to conduct monitoring must contain the following language:

"We are required to monitor the source of your drinking water for Cryptosporidium. Results of the monitoring are to be used to determine whether water treatment at the (treatment plant name) is sufficient to adequately remove Cryptosporidium from your drinking water. We are required to complete this monitoring and make this determination by (required bin determination date). We "did not monitor or test" or "did not complete all monitoring or testing" on schedule and, therefore, we may not be able to determine by the required date what treatment modifications, if any, must be made to ensure adequate Cryptosporidium removal. Missing this deadline may, in turn, jeopardize our ability to have the required treatment modifications, if any, completed by the deadline required, (date). For more information, please call (name of water system contact) of (name of water system) at (phone number)."

(ii) The special notice for failure to determine bin classification or Cryptosporidium level must contain the following language:

"We are required to monitor the source of your drinking water for Cryptosporidium to determine by (date) whether water treatment at the (treatment plant name) is sufficient to adequately remove Cryptosporidium from your drinking water. We have not made this determination by the required date. Our failure to do this may jeopardize our ability to have the required treatment modifications, if any, completed by the required deadline of (date). For more information, please call (name of water system contact) of (name of water system) at (phone number)."

(3) Each special notice must also include a description of what the system is doing to correct the violation and when the system expects to return to compliance or resolve the situation.

## Subchapter E. PERMIT REQUIREMENTS

### § 109.503. Public water system construction permits.

(a) *Permit application requirements.* An application for a public water system construction permit shall be submitted in writing on forms provided by the Department and shall be accompanied by plans, specifications, engineer's report, water quality analyses and other data, information or documentation reasonably necessary to enable the Department to determine compliance with the act and this chapter. The Department will make available to the applicant the Public Water Supply Manual, available from the Bureau of Water Standards and Facility Regulation, Post Office Box [8467] 8774, Harrisburg, Pennsylvania 17105 which contains acceptable design standards and technical guidance. Water quality analyses shall be conducted by a laboratory accredited under this chapter.

(1) *General requirements.* An application must include:

\* \* \* \* \*

(iii) *Information describing new sources.* The Department may accept approval of an out-of-State source by the agency having jurisdiction over drinking water in that state if the supplier submits adequate proof of the approval and the agency's standards are at least as stringent as this chapter. Information describing sources must include:

\* \* \* \* \*

(B) An evaluation of the quality of the raw water from each new source. This clause does not apply when the new source is finished water obtained from an existing permitted community water system unless the Department provides written notice that an evaluation is required. The evaluation must include analysis of the following:

\* \* \* \* \*

(V) Total coliform concentration and, if total coliform-positive, analyze for [fecal coliform concentration] the presence of *E. coli*.

\* \* \* \* \*

(XII) FOR SURFACE WATER OR GUDI SOURCES, *E. COLI* OR  
CRYPTOSPORIDIUM, OR BOTH, AS SPECIFIED IN § 109.1202  
(RELATING TO MONITORING REQUIREMENTS).

{(XII)} (XIII) Other contaminants that the Department determines necessary to evaluate the potability of the source.

\* \* \* \* \*

**§ 109.505. Requirements for noncommunity water systems.**

**(a)** A noncommunity water system shall obtain a construction permit under § 109.503 (relating to public water system construction permits) and an operation permit under § 109.504 (relating to public water system operation permits), unless the noncommunity water system satisfies paragraph (1) or (2). The Department retains the right to require a noncommunity water system that meets the requirements of paragraph (1) or (2) to obtain a construction and an operation permit, if, in the judgment of the Department, the noncommunity water system cannot be adequately regulated through standardized specifications and conditions. A noncommunity water system which is released from the obligation to obtain a construction and an operation permit shall comply with the other requirements of this chapter, including design, construction and operation requirements described in Subchapters F and G (relating to design and construction standards; and system management responsibilities).

\* \* \* \* \*

(2) A noncommunity water system not covered under paragraph (1) is not required to obtain a construction and an operation permit if it satisfies the following specifications and conditions:

(i) The sources of supply for the system are groundwater sources [requiring treatment no greater than disinfection to provide water of a quality that meets the primary MCLs established under Subchapter B (relating to MCLs, MRDLs or treatment technique requirements).] Hand:

**(A) Require treatment no greater than disinfection to provide water of a quality that meets the primary MCLs established under Subchapter B (relating to MCLs, MRDLs or treatment technique requirements).**

**(B) The treatment provided is not required under § 109.1302 (relating to treatment technique requirements) to meet at least 4 log treatment of viruses.]**

\* \* \* \* \*

(3) A noncommunity water system which satisfies the requirements of paragraphs (1) and (2) shall provide the Department with the following information describing new sources, including an evaluation of the quality of the raw water from each new source. Water quality analyses shall be conducted by a laboratory certified under this chapter. This paragraph does not apply when the new source is finished water obtained from an existing permitted community water system or an existing permitted or approved noncommunity water system unless the Department provides written notice that one or more of the provisions of this paragraph apply.

(i) For transient noncommunity water systems, the evaluation [shall] must include analysis of the following:

\* \* \* \* \*

(B) Total coliform concentration and, if total coliform-positive, analyze for [fecal coliform concentration] the presence of *E. coli*.

\* \* \* \* \*

**(b) A NONCOMMUNITY WATER SYSTEM PROVIDING 4-LOG TREATMENT OF A GROUNDWATER SOURCE UNDER § 109.1302(B) (RELATING TO TREATMENT TECHNIQUE REQUIREMENTS) THAT HAS NOT OBTAINED A CONSTRUCTION PERMIT UNDER § 109.503 (RELATING TO PUBLIC WATER SYSTEM CONSTRUCTION PERMITS) AND AN OPERATIONS PERMIT UNDER § 109.504 (RELATING TO PUBLIC WATER SYSTEM OPERATION PERMITS) SHALL OBTAIN A NONCOMMUNITY WATER SYSTEM 4-LOG TREATMENT OF GROUNDWATER PERMIT UNDER § 109.1306 (RELATING TO INFORMATION DESCRIBING 4-LOG TREATMENT AND COMPLIANCE MONITORING) AND COMPLY WITH SUBSECTION (a)(2)(ii).**

#### **§ 109.507. Permits for Innovative Technology.**

The Department may consider proposals for innovative water treatment processes, methods or equipment and may issue an innovative technology construction or operation permit if the applicant demonstrates to the Department's satisfaction that the proposal will provide drinking water that complies with [Subchapter] Subchapters B, L and M (relating to MCLs, MRDLs or treatment technique requirements; LONG TERM 2 ENHANCED SURFACE WATER TREATMENT REQUIREMENTS; and additional requirements for groundwater sources). Applications for innovative technology construction permits [shall] must satisfy the requirements of § 109.503 (relating to public water system construction permits). The Department may condition innovative technology operation permits on duration, additional monitoring, reporting or other requirements as it deems necessary to protect the public health. The Department may revoke an innovative technology construction or operation permit if it finds the public water system is not complying with drinking water standards or the terms or conditions of the permit or if there is a significant change in the source water quality which could affect the reliability and operability of the treatment facility. Authorization for construction, operation or modifications obtained under an innovative technology permit will not extend beyond the expiration date of the permit.

### **Subchapter F. DESIGN AND CONSTRUCTION STANDARDS**

#### **§ 109.602. Acceptable design.**

(a) A public water system shall be designed to provide an adequate and reliable quantity and quality of water to the public. The design [shall] must ensure that the system will, upon completion, be capable of providing water that complies with the primary and secondary MCLs, MRDLs and treatment techniques established in [Subchapter] Subchapters B, L and M (relating to MCLs, MRDLs or treatment technique requirements; LONG TERM 2 ENHANCED SURFACE WATER TREATMENT REQUIREMENTS; and additional requirements for groundwater sources) except as further provided in this section.

#### **§ 109.605. Minimum treatment design standards.**

The level of treatment required for raw water depends upon the characteristics of the raw water, the nature of the public water system and the likelihood of contamination. The following minimum treatment design standards apply to new facilities and major changes to existing facilities:

\* \* \* \* \*

**(3) FOR SURFACE WATER AND GUDI SOURCES PERMITTED AFTER  
(EDITOR'S NOTE: THE BLANK REFERS TO THE EFFECTIVE DATE OF ADOPTION  
OF THIS FINAL RULEMAKING) THAT ARE DETERMINED TO BE BIN 2 OR  
HIGHER, THE MINIMUM TREATMENT DESIGN FOR FILTRATION AND  
DISINFECTION MUST ALSO MEET THE REQUIREMENTS OF §§ 109.1203 AND  
109.1204 (RELATING TO BIN CLASSIFICATION AND TREATMENT TECHNIQUE  
REQUIREMENTS; AND REQUIREMENTS FOR MICROBIAL TOOLBOX  
COMPONENTS).**

**{(3)} (4) For community water systems using groundwater, the minimum treatment design standard for disinfection technologies utilized at the entry point is a total of 99.99% treatment of viruses.**

**(5) FOR NONCOMMUNITY WATER SYSTEMS USING GROUNDWATER WITH AN  
*E. COLI*-POSITIVE GROUNDWATER SOURCE SAMPLE COLLECTED UNDER  
§ 109.505(3) (RELATING TO REQUIREMENTS FOR NONCOMMUNITY WATER  
SYSTEMS), THE MINIMUM TREATMENT DESIGN STANDARD FOR  
DISINFECTION TECHNOLOGIES UTILIZED AT THE ENTRY POINT IS A TOTAL  
OF 99.99% TREATMENT OF VIRUSES.**

**§ 109.611. Disinfection.**

Disinfection facilities shall be designed to provide the dosage rate and contact time prior to the first customer sufficient to provide a quality of water that complies with the microbiological MCL and the appropriate MRDL, specified in § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) and the treatment technique requirements in § 109.1302 (relating to treatment technique requirements).

**Subchapter G. SYSTEM MANAGEMENT RESPONSIBILITIES**

**§ 109.701. Reporting and recordkeeping.**

(a) *Reporting requirements for public water systems.* Public water systems shall comply with the following requirements:

\* \* \* \* \*

(8) *Reporting requirements for disinfectant residuals.* [Public] In addition to the reporting requirements specified in paragraph (1), public water systems shall report MRDL monitoring data as follows:

(i) [For systems] Systems monitoring for chlorine dioxide under § 109.301(13)[:]

(A) The dates, results, and locations of the samples that were taken during the previous month.

(B) Whether the MRDL was exceeded.

(C) Whether the MRDL was exceeded during any 2-consecutive daily samples and whether the resulting violation was acute or nonacute] shall report the number of days chlorine dioxide was used at each entry point during the last month.

(ii) [For systems] Systems monitoring for either chlorine or chloramines under § 109.301(13) [:] SHALL REPORT THE FOLLOWING: [the arithmetic average of all distribution samples taken in the last month.]

(A) The number of samples taken during {each} THE month {of the previous quarter}.

(B) [The monthly arithmetic average of all samples taken in each month for the last 12 months.

(C) The arithmetic average of all monthly averages for the last 12 months.

(D) Whether the MRDL was exceeded.] shall report the] THE arithmetic average of all distribution samples taken in the last month.

{(9) *Reporting requirements for disinfection byproducts.*

(i) ~~Systems monitoring for TTHMs and HAA5 under § 109.301(12)~~ shall report the following:

(A) ~~Systems monitoring on a quarterly or more frequent basis~~ shall report the following:

(I) ~~The number of samples taken during the last quarter.~~

(II) ~~The date, location and result of each sample taken during the last quarter.~~

(III) ~~The arithmetic average of all samples taken in the last quarter.~~

(IV) ~~The annual arithmetic average of the quarterly arithmetic averages for the last 4 quarters.~~

(V) ~~Whether the annual arithmetic average exceeds the MCL for either TTHM or HAA5.~~

(B) ~~Systems monitoring less than quarterly, but no less than annually~~ shall report the following:

(I) ~~The number of samples taken during the last year.~~

(II) ~~The date, location and result of each sample taken during the last monitoring period.~~

(III) ~~The arithmetic average of all samples taken in the last year.~~

(IV) ~~Whether the annual arithmetic average exceeds the MCL for either TTHM or HAA5.~~

**(C) Systems monitoring less than annually shall report the following:**

- (I) The date, location and result of the last sample taken.**
- (II) Whether the sample exceeds the MCL for either TTHM or HAA5.**
- (ii) Systems monitoring for chlorite under § 109.301(12) shall report the following:**
  - (A) The number of samples taken during the last month.**
  - (B) The date, location and result of each entry point and distribution sample taken during the last month.**
  - (C) The arithmetic average of each three-sample set of distribution samples taken during the last month.**
  - (D) Whether the monthly arithmetic average exceeds the MCL.**
- (iii) Systems monitoring for bromate under § 109.301(12) shall report the following:**
  - (A) The number of samples taken during the last quarter.**
  - (B) The date, location and result of each sample taken during the last quarter.**
  - (C) The arithmetic average of the monthly arithmetic averages of all samples taken in the last year.**
  - (D) Whether the annual arithmetic average exceeds the MCL.}**

**[(10)] Reporting requirements for [disinfection byproducts] DBP precursors.]**

**[Systems monitoring for TOC under 109.301(12) shall report in accordance with 40 CFR 141.134(d) (relating to reporting and recordkeeping requirements for disinfection byproduct precursors and enhanced coagulation or enhanced softening).]**

**[(11)] (9) Noncompliance report.** Except where a different reporting period is specified in this chapter, the water supplier shall report to the Department within 48 hours the failure to comply with any National Primary Drinking Water Regulation, including the failure to comply with any monitoring requirement set forth in this chapter.

*(Editors Note: The original proposed language approved by EQB was to have deleted the text for the existing paragraph 9 and renumber paragraph 10, but the opening bracket was erroneously dropped when the proposed rulemaking was published. But now, based on comments received, all of paragraphs 9 and 10 will be deleted from final rulemaking and paragraph 11 has been renumbered as paragraph 9.)*

\* \* \* \* \*

**(d) Record maintenance.** The public water supplier shall retain on the premises of the public water system or at a convenient location near the premises the following:

- (1) Records of bacteriological AND TURBIDITY analyses [and turbidity analysis] which shall be kept for at least 5 years, and records of chemical analyses which shall be kept for at least 12 years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, if the following information is included:**

\* \* \* \* \*

(2) Records of performance monitoring required under § 109.301, **EXCEPT FOR TURBIDITY**, which shall be kept for at least 3 years. **RECORDS OF TURBIDITY PERFORMANCE MONITORING REQUIRED UNDER § 109.301 SHALL BE KEPT FOR AT LEAST 5 YEARS.** At a minimum, these records ~~[shall]~~ **MUST** contain the reporting requirements under subsection (a).

\* \* \* \* \*

(g) *Monitoring plans for disinfectants, [disinfection byproducts] DBPs and [disinfection byproduct] DBP precursors.*

**(1) Stage 1 DBP Rule.** Systems required to monitor for disinfection byproducts **under § 109.301(12)(i), [or]** disinfection byproduct precursors under § 109.301(12)(v) or disinfectant residuals under § 109.301(13) shall develop and implement a monitoring plan. The system shall maintain the plan and make it available for inspection by the Department and the general public no later than 30 days following the applicable compliance dates. ~~[All systems]~~ **SYSTEMS** that use either surface water or GUDI sources shall submit a copy of the monitoring plan to the Department no later than 30 days prior to the date of the first report required under this subchapter. The Department may also require the plan to be submitted by any other system, regardless of size or source water type. After review, the Department may require changes in any of the plan components.

**[(1)] (i)** The plan ~~[shall]~~ **must** include the following components:

**[(i)] (A)** \* \* \*

**[(ii)] (B)** \* \* \*

**[(iii)] (C)** \* \* \*

**[(iv)] (D)** \* \* \*

**[(2)] (ii)** \* \* \*

**(iii) Copies of Stage 1 DBP Rule monitoring plans developed under this paragraph shall be kept for the same period of time as the Stage 1 DBP Rule records of analyses are required to be kept under subsection (d)(1).**

**(2) Stage 2 DBP Rule.** Systems required to monitor for disinfection byproducts under § 109.301(12)(ii) shall comply with the following:

**(i) IDSE requirements.** The IDSE requirements established by the EPA under the National Primary Drinking Water Regulations in 40 CFR 141.600--141.605 (relating to initial distribution system evaluations) are incorporated by reference except as otherwise established by this chapter.

**(ii) Stage 2 DBP Rule[s compliances] monitoring plan.**

**(A) A public water system shall develop and implement a monitoring plan to be kept on file for Department and public review. The monitoring plan must contain the elements in subclauses (I)--[(IV)] (III) and be completed no later than the date systems conduct their initial monitoring under [this subpart] § 109.301(12)(ii)(A).**

**(I) Monitoring locations,**

- (II) Monitoring dates,
- (III) Compliance calculation procedures{,
- (IV) Monitoring plans for any other systems in the combined distribution system if the Department has reduced monitoring requirements under the Department authority}.
- (B) Public water systems not required to submit an IDSE report under either 40 CFR 141.601 or 141.602 (relating to standard monitoring; and system specific studies) as incorporated by reference, and do not have sufficient § 109.301(12)(i) monitoring locations to identify the required number of STAGE 2 DBP RULE compliance monitoring locations, shall identify additional locations by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of STAGE 2 DBP RULE compliance monitoring locations have been identified. The system shall also provide the rationale for identifying the locations as having high levels of TTHM or HAA5. Systems that have more STAGE 1 DBP RULE monitoring locations than required for STAGE 2 DBP RULE compliance monitoring shall identify which locations will be used for STAGE 2 DBP RULE compliance monitoring by alternating selection of STAGE 1 DBP RULE MONITORING locations representing high TTHM levels and high HAA5 levels until the required number of STAGE 2 DBP RULE compliance monitoring locations have been identified.
- (C) A public water system shall submit a copy of its monitoring plan to the Department prior to the date for initial monitoring specified in § 109.301(12)(ii), unless the system submits to the Department an IDSE report containing all the information required by clause (A).
- (D) A public water system may revise its monitoring plan to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for Department-approved reasons, after consultation with the Department regarding the need for changes and the appropriateness of changes. A system that changes monitoring locations, shall replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels. The Department may also require modifications in the system's monitoring plan. [A system using surface water or GUDI sources and serving more than 3,300 people,] SYSTEMS shall submit a copy of [its] THE modified monitoring plan to the Department prior to the date the system is required to comply with the revised monitoring plan.
- (iii) Operational evaluation levels.
- (A) The operational evaluation level for TTHM and HAA5 is the sum of the two previous quarterly results plus twice the current quarter's result, divided by [4] FOUR. [Each quarter, public] PUBLIC water systems THAT ARE MONITORING QUARTERLY shall calculate the TTHM and HAA5 operation

evaluation levels for each monitoring location AT THE END OF EACH CALENDAR QUARTER.

(B) If the TTHM operational evaluation level exceeds 0.080 mg/L, or the HAA5 operational evaluation level exceeds 0.060 mg/L at any monitoring location, the system shall conduct an operational evaluation to identify the cause of the exceedance and submit a written report of the evaluation to the Department no later than 90 days after being notified of the analytical result that causes the system to exceed the operational evaluation level. The written report must be made available to the public upon request.

(C) The operational evaluation must include an examination of system treatment and distribution operational practices, including storage tank operations, excess storage capacity, distribution system flushing, changes in sources or source water quality, and treatment changes or problems that may contribute to TTHM and HAA5 formation and what steps could be considered to minimize future exceedances.

(I) A system may request and the Department may allow a system to limit the scope of evaluation if the system is able to identify the cause of the operational evaluation level exceedance.

(II) The request to limit the scope of the evaluation does not extend the schedule in [subclause-(I)] CLAUSE (B) for submitting the written report. The Department must approve this limited scope of evaluation in writing and systems shall keep that approval with the completed report.

(iv) Reporting and recordkeeping requirements.

(A) For each monitoring location, public water systems shall report to the Department within 10 days of the end of any quarter in which monitoring is required any TTHM operational evaluation level that exceeded 0.080 mg/L and any HAA5 operational evaluation level that exceeded 0.060 mg/L during the quarter and the location, date, and the TTHM and HAA5 calculated operation evaluation level.

(B) Copies of Stage 2 DBP Rule monitoring plans developed under this subparagraph shall be kept for the same period of time as the Stage 2 DBP Rule records of analyses are required to be kept under subsection (d)(1).

\* \* \* \* \*

**[01] ADDITIONAL REPORTING AND RECORDKEEPING REQUIREMENTS FOR SYSTEMS USING SURFACE WATER OR GUDI SOURCES. IN ADDITION TO THE REPORTING AND RECORDKEEPING REQUIREMENTS OF THIS SUBCHAPTER, SYSTEMS USING SURFACE WATER OR GUDI SOURCES SHALL ALSO COMPLY WITH THE REPORTING AND RECORDKEEPING REQUIREMENTS OF § 109.1206 (RELATING TO REPORTING AND RECORDKEEPING REQUIREMENTS).**

**(b) In ADDITIONAL REPORTING AND RECORDKEEPING REQUIREMENTS FOR SYSTEMS USING GROUNDWATER SOURCES. IN ADDITION TO THE REPORTING AND RECORDKEEPING REQUIREMENTS OF THIS SUBCHAPTER, SYSTEMS USING GROUNDWATER SOURCES SHALL ALSO COMPLY WITH THE REPORTING AND RECORDKEEPING REQUIREMENTS OF § 109.1307 (RELATING TO SYSTEM MANAGEMENT RESPONSIBILITIES).**

*These subsections need to be renumbered because of the Gen Update revisions (published 5/23/09)*

**§ 109.705. Sanitary surveys.**

\* \* \* \* \*

(b) A community water system which does not collect five or more routine coliform samples per month shall do one of the following:

- (1) Undergo a sanitary survey conducted by the Department by June 29, 1994, and thereafter undergo a subsequent sanitary survey conducted by the Department at a minimum **frequency** of every 3 years [**after the initial sanitary survey depending on the type of source, treatment and population served**] [**for every 5 years if notified by the Department that the system has an outstanding performance record**].
- (2) Increase the number of routine coliform samples collected to at least five samples per month if the Department does not conduct a sanitary survey by June 29, 1994, or within 3 years [**the appropriate frequency as described in paragraph (1)**] following the initial or a subsequent sanitary survey. This increased sampling frequency shall be in place of the monitoring frequency requirements for coliforms in § 109.301(3)(i) (relating to general monitoring requirements) and [**shall**] remain in effect through the month in which the next sanitary survey is conducted by the Department.

(c) A noncommunity water system which does not collect five or more routine coliform samples per month shall do one of the following:

- (1) Undergo an initial sanitary survey conducted by the Department by June 29, 1999, and thereafter undergo a subsequent sanitary survey at a minimum of every 5 years after the initial sanitary survey [**except that noncommunity systems using only protected and disinfected groundwater shall undergo subsequent sanitary surveys at a minimum of every 10 years after the initial sanitary survey**].
- (2) Increase the number of routine coliform samples collected to at least five samples per month if the Department does not conduct a sanitary survey by June 29, 1999, or within 5 [**or 10 years using the criteria in paragraph (1)] years**] following the initial or a subsequent sanitary survey. This increased sampling frequency shall be in place of the monitoring frequency requirements for coliforms in § 109.301(3)(i) and shall remain in effect through the month in which the next sanitary survey is conducted by the Department.

**(d) The following apply to significant deficiencies identified at public water systems supplied by a surface water source and public water systems supplied by a groundwater source under the direct influence of surface water:**

**(1) For sanitary surveys performed by the Department, a system shall respond in writing to significant deficiencies identified in sanitary survey reports no later than 45 days after receipt of the report, indicating how and on what schedule the system will address significant deficiencies noted in the survey.**

**(2) A system shall correct significant deficiencies identified in sanitary survey reports according to the schedule approved by the Department, or if there is no approved schedule, according to the schedule reported under paragraph (1) if the deficiencies are within the control of the system.**

**(e) Significant deficiencies identified by the Department at public water systems using groundwater shall comply with § 109.1302(c) (relating to groundwater systems with significant deficiencies or source water *E. coli* contamination).**

## Subchapter H. LABORATORY CERTIFICATION

### § 109.801. Certification requirement.

A laboratory shall be accredited under Chapter 252 (relating to laboratory accreditation) to perform analyses acceptable to the Department for the purposes of ascertaining drinking water quality and demonstrating compliance with monitoring requirements established in **[Subchapter] SUBCHAPTERS C, K, L AND M [(relating to monitoring requirements)]**.

### § 109.810. Reporting and notification requirements.

\* \* \* \* \*

**(b) [A laboratory accredited under Chapter 252 shall whenever] Whenever an MCL, MRDL or a treatment technique performance requirement under § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) is violated, or a sample result requires the collection of check samples under § 109.301 (relating to general monitoring requirements) or a sample collected under Subchapter M (relating to additional requirements for groundwater sources) is *E. coli*-positive a laboratory accredited under Chapter 252 shall:**

A laboratory accredited under Chapter 252 shall whenever the results of test measurements or analyses performed by the laboratory under this chapter indicate an MCL, MRDL or a treatment technique performance requirement under § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) is exceeded, or an action level under § 109.1102(a) (relating to lead and copper) is exceeded, or a sample result requires the collection of check or confirmation samples under § 109.301 (relating to general monitoring requirements), **or a sample collected under Subchapter M (relating to additional requirements for groundwater sources) is *E. coli*-positive:**

*(Editor's Note: the proposed revisions were based on the existing Ch 109 language at that time. Since then, § 109.810(b) was revised as part of the General Update revisions, so these final revisions show the proposed changes based on the currently existing language.)*

\* \* \* \* \*

## **Subchapter I. VARIANCES AND EXEMPTIONS ISSUED BY THE DEPARTMENT**

### **§ 109.901. Requirements for a variance.**

(a) The Department may grant one or more variances to a public water system from a requirement respecting a MCL upon finding that:

(1) The public water system has installed and is using the best treatment technology, treatment methods or other means that the Department in concurrence with the Administrator finds are generally available to reduce the level of the contaminant, and has determined that alternative sources of water are not reasonably available.

\* \* \* \* \*

(b) **THE MCL FOR TOTAL COLIFORMS ESTABLISHED UNDER § 109.202(a) (RELATING TO STATE MCLs, MRDLs AND TREATMENT TECHNIQUE REQUIREMENTS) IS NOT ELIGIBLE FOR A VARIANCE.**

(c) The Department may grant one or more variances to a public water system from a treatment technique requirement upon a finding that the public water supplier applying for the variance has demonstrated that, because of the nature of the raw water source of the system the treatment technique is not necessary to protect the health of the persons served by the system. The treatment technique requirements established under § 109.202(c) [~~relating to State MCLs, MRDLs and treatment techniques requirements~~] and THE treatment technique requirements established under § 109.1102(b) (relating to action levels and treatment technique requirements), THE TREATMENT TECHNIQUE REQUIREMENTS ESTABLISHED UNDER §§ 109.1203 AND 109.1302 (RELATING TO BIN CLASSIFICATION AND TREATMENT TECHNIQUE REQUIREMENTS; AND TREATMENT TECHNIQUE REQUIREMENTS) are not eligible for a variance.

### **§ 109.903. Requirements for an exemption.**

(a) The Department may exempt a public water system from an MCL or treatment technique requirement upon finding that:

(1) Due to compelling factors, the public water system is unable to comply with the contaminant level or treatment technique requirement, or to implement measures to develop an alternative source of water supply.

\* \* \* \* \*

**(4) Management or restructuring changes or both as provided in 40 CFR 142.20(b)(1)(i) (relating to State-issued variances and exemptions) cannot**

reasonably be made that will result in compliance with the applicable MCL or treatment technique requirement or, if compliance cannot be achieved, improve the quality of the drinking water.

(b) THE MCL FOR TOTAL COLIFORMS ESTABLISHED UNDER § 109.202(a) (RELATING TO STATE MCLS, MRDLs AND TREATMENT TECHNIQUE REQUIREMENTS) IS NOT ELIGIBLE FOR AN EXEMPTION.

(c) The treatment technique requirements established under § 109.202(c) [~~relating to State MCLs, MRDLs and treatment technique requirements~~] and THE treatment technique requirements established under §§ 109.1102(b), 109.1203 AND 109.1302 (relating to action levels and treatment technique requirements; BIN CLASSIFICATION AND TREATMENT TECHNIQUE REQUIREMENTS; AND TREATMENT TECHNIQUE REQUIREMENTS) are not eligible for an exemption.

#### **§ 109.906. Consideration of a request for a variance or exemption.**

The Department will consider comments received during the comment period and testimony in the record of a public hearing held with respect to the request for a variance or exemption before making a determination. The Department will consider the availability of alternative water sources, risks to the public health from granting the relief requested and other relevant factors including the following considerations:

(1) In its consideration of whether the public water system satisfies the requirements for a variance from a maximum contaminant level under § 109.901(a) (relating to requirements for a variance), the Department will consider whether the public water system has installed and is effectively operating the best treatment technology, treatment methods, or other means that the Department finds in concurrence with the Administrator are generally available to reduce the level of the contaminant for which the variance is requested, and whether the system has evaluated that alternative sources of water are not reasonably available.

\* \* \* \* \*

(3) In its consideration of whether a public water system satisfies the requirements for an exemption under § 109.903 (relating to requirements for an exemption), the Department will consider factors such as:

\* \* \* \* \*

(iii) The availability of an alternative source of water, including the feasibility of partnerships with neighboring public water systems, as identified by the public water system or by the Department.

#### **§ 109.907. Disposition of a request for a variance or exemption.**

\* \* \* \* \*

(c) If the Department makes a determination to grant a variance or exemption request, it will document its findings as required under 40 CFR 142.20(a)(1) (RELATING TO

**STATE ISSUED VARIANCES AND EXEMPTIONS UNDER SECTION 1415(a) AND SECTION 1416 OF THE ACT) for granting a variance, and under 40 CFR 142.20(b)(1) for granting an exemption.**

**§ 109.908. Compliance schedules.**

\* \* \* \* \*

**(e) In accordance with 40 CFR 142.20(b)(2) (RELATING TO STATE ISSUED VARIANCES AND EXEMPTIONS UNDER SECTION 1415(a) AND SECTION 1416 OF THE ACT), the Department may renew an exemption for a public water system that serves fewer than 3,300 persons and which needs financial assistance for the necessary improvements under the initial compliance schedule, provided the Department establishes that the system is taking all practicable steps to meet the requirements of this subchapter and the established compliance schedule to achieve full compliance with the applicable MCL or treatment technique requirement. The Department must document its findings in granting an extension under this subsection.**

**Subchapter J. BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS**

**§ 109.1002. MCLs, MRDLs or treatment techniques.**

\* \* \* \* \*

**(c) BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS SHALL COMPLY WITH THE TREATMENT TECHNIQUE REQUIREMENTS UNDER SUBCHAPTER L (RELATING TO BIN CLASSIFICATION AND TREATMENT TECHNIQUE REQUIREMENTS)**

**{(e)} (d) Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with Subchapter M (relating to additional requirements for groundwater sources). FOR THE PURPOSE OF DETERMINING COMPLIANCE WITH SUBCHAPTER M, BOTTLED WATER AND VENDED SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS USING GROUNDWATER SOURCES SHALL COMPLY WITH STANDARDS PERTAINING TO NONCOMMUNITY GROUNDWATER SYSTEMS.**

**§ 109.1003. Monitoring requirements.**

**(a) General monitoring requirements.** Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall monitor for compliance with the MCLs and MRDLs in accordance with § 109.301 (relating to general monitoring requirements) and {shall} comply with § 109.302 (relating to special monitoring requirements) **{and § 109.1202 (relating to monitoring requirements)}**. The monitoring requirements shall be applied as

follows, except that systems which have installed treatment to comply with primary MCL shall conduct quarterly operational monitoring for the contaminant which the facility is designed to remove:

- (1) Bottled water systems, retail water facilities and bulk water hauling systems, for each entry point shall:

\* \* \* \*

(viii) **TTHM and HAA5 Stage 1 DBP Rule.** Beginning January 1, 2004, monitor annually for TTHM[s] and HAA5 if the system uses a chemical disinfectant or oxidant, or obtains finished water from another public water system that uses a chemical disinfectant or oxidant to treat the [finished] water. Bottled water systems are not required to monitor for TTHM[s] and HAA5 if the system does not use a chlorine-based disinfectant or oxidant and does not obtain finished water from another public water system that uses a chlorine-based disinfectant or oxidant to treat the [finished] water.

(A) *Routine monitoring.* Systems shall take at least one sample per year per entry point during the month of warmest water temperature. If the sample, or average of all samples, exceeds either a TTHM or HAA5 MCL, the system shall take at least one sample per quarter per entry point. The system shall return to the sampling frequency of one sample per year per entry point if, after at least 1 year of monitoring, the TTHM running annual average is no greater than 0.060 mg/L and the HAA5 running annual average is no greater than 0.045 mg/L.

(B) *Reduced monitoring.* Systems that use groundwater sources shall monitor for TTHM[s] and HAA5 for at least 1 year prior to qualifying for reduced monitoring. The Department retains the right to require a system that meets the requirements of this clause to resume routine monitoring.

(I) Systems that use groundwater sources shall reduce monitoring to [1] one sample per 3-year cycle per entry point if the annual TTHM average is no greater than 0.040 mg/L and the annual HAA5 average is no greater than 0.030 mg/L for 2 consecutive years or the annual TTHM average is no greater than 0.020 mg/L and the annual HAA5 average is no greater than 0.015 mg/L for 1 year. The sample shall be taken during the month of warmest water temperature. The 3-year cycle shall begin on January 1 following the quarter in which the system qualifies for reduced monitoring.

(II) Systems that use groundwater sources that qualify for reduced monitoring shall remain on reduced monitoring if the TTHM annual average is no greater than 0.060 mg/L and the HAA5 annual average is no greater than 0.045 mg/L. Systems that exceed these levels shall resume routine monitoring as prescribed in clause (A), except that systems that exceed either a TTHM or HAA5 MCL shall increase monitoring to at least [1] one sample per quarter per entry point beginning in the quarter immediately following the quarter in which the system exceeds the TTHM or HAA5 MCL.

(ix) **TTHM and HAA5 Stage 2 DBP Rule.** Beginning October 1, 2013, monitor annually for TTHM[s] and HAA5 if the system uses a chemical disinfectant or oxidant to treat the water, or obtains finished water from another public water system that uses a chemical disinfectant or oxidant to treat the water as follows:

(A) **Routine monitoring.** Systems shall take at least one dual sample set per year per entry point during the month of warmest water temperature.

(B) **Increased monitoring.** If any sample results exceed either a TTHM or HAA5 MCL, the system shall take at least one dual sample set per quarter per entry point. The system shall return to the sampling frequency of one dual sample set per year per entry point if, after at least 1 year of monitoring, each TTHM sample result is no greater than 0.060 mg/L and each HAA5 sample result is no greater than 0.045 mg/L.

(x) Beginning January 1, 2004, monitor daily for chlorite if the system uses chlorine dioxide for disinfection or oxidation. Systems shall take at least one daily sample at the entry point. If a daily sample exceeds the chlorite MCL, the system shall take three additional samples within 24 hours from the same lot, batch, machine, carrier vehicle or point of delivery. The chlorite MCL is based on the average of the required daily sample plus any additional samples.

[(x)] (xi) Beginning January 1, 2004, monitor monthly for bromate if the system uses ozone for disinfection or oxidation.

(A) **Routine monitoring.** Systems shall take one sample per month for each entry point that uses ozone while the ozonation system is operating under normal conditions.

(B) **Reduced monitoring.**

(I) **[Systems] Until March 31, 2009, systems** shall reduce monitoring for bromate from monthly to quarterly if the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for 1 year. Systems on reduced monitoring shall continue monthly source water bromide monitoring. If the running annual average source water bromide concentration, computed quarterly, is equal to or exceeds 0.05 mg/L, the system shall revert to routine monitoring as prescribed by clause (A).

(II) **Beginning April 1, 2009, a system required to analyze for bromate may reduce monitoring from monthly to quarterly, if each sample result is less than or equal to 0.0025 mg/L based on monthly measurements as prescribed in clause (A) for the most recent 12 months. Systems qualifying for reduced bromate monitoring under subclause (I) may remain on reduced monitoring as long as each sample result from the previous 12 months is less than or equal to 0.0025 mg/L. If any sample result exceeds 0.0025 mg/L, the system shall resume routine monitoring as prescribed under clause (A).**

\* \* \* \* \*

(b) *Sampling requirements.*

(1) For bottled water and vended water systems, retail water facilities and bulk water hauling systems, samples taken to determine compliance with [MCLs, MRDLs, monitoring requirements, including special monitoring requirements for unregulated contaminants, and treatment techniques] **SUBSECTION (a)** shall be taken from each entry point.

\* \* \* \* \*

(f) *Additional monitoring requirements for surface water and GUDI sources. BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS SHALL COMPLY WITH THE MONITORING REQUIREMENTS UNDER SUBCHAPTER L (RELATING TO LONG-TERM 2 ENHANCED SURFACE WATER TREATMENT REQUIREMENTS).*

(d) (g) *Additional monitoring requirements for groundwater sources. Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with the monitoring requirements under Subchapter M (relating to additional requirements for groundwater sources).*

§ 109.1008. System management responsibilities.

(a) *Reporting and recordkeeping requirements for bottled water and vended water systems, retail water facilities and bulk water hauling systems.* Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with the reporting requirements in § 109.701(a) and (d) (relating to reporting and recordkeeping).

\* \* \* \* \*

(4) *IN ADDITION TO THE REQUIREMENTS OF THIS SUBSECTION, BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS USING SURFACE WATER OR GUDI SOURCES SHALL ALSO COMPLY WITH THE REPORTING AND RECORDKEEPING REQUIREMENTS OF SUBCHAPTER L (RELATING TO LONG-TERM 2 ENHANCED SURFACE WATER TREATMENT REQUIREMENTS).*

(5) *IN ADDITION TO THE REQUIREMENTS OF THIS SUBSECTION, BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS USING GROUNDWATER SOURCES, INCLUDING PURCHASED GROUNDWATER, SHALL ALSO COMPLY WITH THE REPORTING AND RECORDKEEPING REQUIREMENTS OF SUBCHAPTER M (RELATING TO ADDITIONAL REQUIREMENTS FOR GROUNDWATER SOURCES).*

\* \* \* \* \*

(Editor Note: The following subchapter is new. It appears in regular text to enhance readability.)

**Subchapter L. LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE**  
Sec.

- 109.1201 Scope.
- 109.1202 Monitoring requirements.
- 109.1203 Bin classification and treatment technique requirements.
- 109.1204 Requirements for microbial toolbox components.
- 109.1205 **GRANDFATHERING PREVIOUSLY COLLECTED DATA.**
- 109.1206 Reporting and recordkeeping requirements.**

**§ 109.1201. Scope.**

- (a) *Scope.* This subchapter establishes or extends treatment technique requirements in lieu of maximum contaminant levels for *Cryptosporidium*. These requirements are in addition to requirements for filtration and disinfection.
- (b) *Applicability.* This subchapter applies to public water systems supplied by a surface water source and public water systems supplied by a groundwater source under the direct influence of surface water.

~~{(1) Wholesale systems} SYSTEMS THAT ARE PART OF A COMBINED DISTRIBUTION SYSTEM~~ shall comply with the requirements of this subchapter based on the population of the largest system in the combined distribution system.

~~{(2) The requirements of this subchapter for filtered systems apply to systems required by National Primary Drinking Water Regulations to provide filtration treatment, whether or not the system is currently operating a filtration system.}~~

**§ 109.1202. Monitoring requirements.**

- (a) *Initial round of source water monitoring.* A system shall conduct the following monitoring on the schedule in subsection (c) unless it meets the monitoring exemption criteria in subsection (d):
  - (1) Filtered systems serving at least 10,000 people shall sample their source water for *Cryptosporidium*, *E. coli* and turbidity at least monthly for 24 months.
  - (2) Unfiltered systems serving at least 10,000 people shall sample their source water for *Cryptosporidium* at least monthly for 24 months.
  - (3) Filtered systems serving less than 10,000 people shall sample its source water for *E. coli* at least once every 2 weeks for 12 months. A filtered system serving less than 10,000 people may avoid *E. coli* monitoring if the system notifies the Department that it will monitor for *Cryptosporidium* as described in paragraph (4). The system shall notify the Department no later than 3 months prior to the date the system is otherwise required to start *E. coli* monitoring under subsection (c).
  - (4) Filtered systems serving less than 10,000 people shall sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months if they meet one of the following subparagraphs, based on monitoring conducted under paragraph (3):

- (i) For systems using lake/reservoir sources, the annual mean *E. coli* concentration is greater than 10 *E. coli*/100 mL.
  - (ii) For systems using flowing stream sources, the annual mean *E. coli* concentration is greater than 50 *E. coli*/100 mL.
  - (iii) The system does not conduct *E. coli* monitoring as described in paragraph (3).
  - (iv) Systems using groundwater sources under the direct influence of surface water (GUDI) shall comply with this paragraph based on the *E. coli* level that applies to the nearest surface water body. If no surface water body is nearby, the system shall comply based on the requirements that apply to systems using lake/reservoir sources.
- (5) For filtered systems serving less than 10,000 people, the Department may approve monitoring for an indicator other than *E. coli* under paragraph (3). The Department also may approve an alternative to the *E. coli* concentration in paragraph (4)(i), (ii) or (iv) to trigger *Cryptosporidium* monitoring. This approval by the Department would be based on EPA-supported research indicating the validity of an alternative to *E. coli*. The Department will provide this approval to the system in writing and will include the basis for the Department's determination that the alternative indicator, trigger level, or both, will provide a more accurate identification of whether a system will exceed the Bin 1 *Cryptosporidium* level in § 109.1203(c) (relating to bin classification and treatment technique requirements).
- (6) Unfiltered systems serving less than 10,000 people shall sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months.
- (7) Systems may sample more frequently than required under this section if the sampling frequency is evenly spaced throughout the monitoring period.
- (b) *Second round of source water monitoring.* Systems shall conduct a second round of source water monitoring that meets the requirements for monitoring parameters, frequency, and duration described in subsection (a), unless they meet the monitoring exemption criteria in subsection (d). Systems shall conduct this monitoring on the schedule in subsection (c).
- (c) *Source water monitoring schedule.* Systems shall begin the monitoring required in subsections (a) and (b) as follows:
- (1) At least 100,000 people:
    - (i) Begin the first round of source water monitoring no later than the month beginning October 1, 2006.
    - (ii) Begin the second round of source water monitoring **AT LEAST 6 YEARS AFTER SUBMITTING THE INITIAL BIN CLASSIFICATION BUT** no later than the month beginning April 1, 2015.
  - (2) From 50,000 to 99,999 people:
    - (i) Begin the first round of source water monitoring no later than the month beginning April 1, 2007.

- (ii) Begin the second round of source water monitoring **AT LEAST 6 YEARS AFTER SUBMITTING THE INITIAL BIN CLASSIFICATION BUT** no later than the month beginning October 1, 2015.
- (3) From 10,000 to 49,999 people:
- (i) Begin the first round of source water monitoring no later than the month beginning April 1, 2008.
- (ii) Begin the second round of source water monitoring **AT LEAST 6 YEARS AFTER SUBMITTING THE INITIAL BIN CLASSIFICATION BUT** no later than the month beginning October 1, 2016.
- (4) Less than 10,000 people and monitor for *E coli*:
- (i) Begin the first round of source water monitoring no later than the month beginning October 1, 2008.
- (ii) Begin the second round of source water monitoring **AT LEAST 6 YEARS AFTER SUBMITTING THE INITIAL BIN CLASSIFICATION BUT** no later than the month beginning October 1, 2017.
- (5) Less than 10,000 and monitor for *Cryptosporidium*:
- (i) Begin the first round of source water monitoring no later than the month beginning April 1, 2010.
- (ii) Begin the second round of source water monitoring **AT LEAST 6 YEARS AFTER SUBMITTING THE INITIAL BIN CLASSIFICATION BUT** no later than the month beginning April 1, 2019.
- (d) *Source water monitoring avoidance.*
- (1) *5.5 log treatment.* A filtered system is not required to conduct source water monitoring under this subchapter if the system will provide a total of at least 5.5-log of treatment for *Cryptosporidium*, equivalent to meeting the treatment requirements of Bin 4 in § 109.1203.
- (2) *Notification.* If a system chooses to provide the level of treatment in paragraph (1), as applicable, rather than start source water monitoring, the system shall notify the Department in writing no later than the date the system is otherwise required to submit a sampling schedule for monitoring under subsections ~~(i)-(k)~~ **(h) -- (j)**. Alternatively, a system may choose to stop sampling at any point after it has initiated monitoring if it notifies the Department in writing that it will provide this level of treatment. Systems shall install and operate technologies to provide this level of treatment by the applicable treatment compliance date in § 109.1203(k)--(o).
- (e) *Plants operating only part of the year.* Public water systems supplied by a surface water source and public water systems supplied by a groundwater source under the direct influence of surface water that operate for only part of the year shall conduct source water monitoring in accordance with this subchapter, but with the following modifications:

- (1) Systems shall sample their source water only during the months that the plant operates unless the Department specifies another monitoring period based on plant operating practices.
- (2) Systems with plants that operate less than 6 months per year and that monitor for *Cryptosporidium* shall collect at least six *Cryptosporidium* samples per year during each of 2 years of monitoring. Samples must be evenly spaced throughout the period the plant operates or is anticipated to operate.

(f) *New sources.*

- (1) A system that intends to use a new source of surface water or GUDI after the system is required to begin monitoring under subsection (c) shall monitor the new source on a schedule the Department approves. Any source that has not been monitored according to the requirements of this subchapter will be considered to be a new source. Source water monitoring for new sources must meet the requirements of this subchapter. The system shall also meet the bin classification and *Cryptosporidium* treatment requirements of § 109.1203(a)–(j), as applicable, for the new source on a schedule approved by the Department. Sources that have not been monitored according to the requirements of this subchapter will be considered to be Bin 4 until monitoring is adequately completed. No later than the applicable *Cryptosporidium* compliance dates specified in § 109.1203(k), systems wishing to use sources that have not been monitored shall meet the Bin 4 treatment requirements of § 109.1203(a)–(j) unless otherwise indicated by the Department.
- (2) The requirements of this subsection apply to public water systems supplied by a surface water source or groundwater source under the direct influence of surface water that begin operation after the monitoring start date applicable to the system's size under subsection (c).
- (3) The system shall begin a second round of source water monitoring no later than 6 years following initial bin classification under § 109.1203 or determination of the *Cryptosporidium* level under § 109.1203(i) and (j), as applicable.

(g) *Monitoring violations.* Failure to collect any source water sample required under this section in accordance with the sampling schedule, sampling location, analytical method, approved laboratory and reporting requirements of this subsection, §§ 109.304 and ~~§ 109.1205(a)–(e)~~ § 109.1206(a)–(e) (relating to analytical requirements; and reporting and recordkeeping requirements) is a monitoring violation.

(h) ~~[Grandfathering monitoring data. Systems may use (grandfather) monitoring data collected prior to the applicable monitoring start date in subsection (c) to meet the initial source water monitoring requirements in subsection (a). Grandfathered data may substitute for an equivalent number of months at the end of the monitoring period. Data submitted under this subsection must meet the requirements in § 109.1205(f).]~~

~~{(i)} Source water sampling schedules.~~ Systems required to conduct source water monitoring under subsections (a)–~~{(h)}~~ (g) shall submit a sampling schedule that specifies the calendar dates when the system will collect each required sample.

- (1) Systems shall submit sampling schedules no later than 3 months prior to the applicable date listed in subsection (c) for each round of required monitoring.

- (2) A system must comply with the following:
- (i) A system serving at least 10,000 people shall submit its sampling schedule for the initial round of source water monitoring under subsection (a) to the EPA electronically at <https://intranet.epa.gov/lt2/>.
  - (ii) If a system is unable to submit the sampling schedule electronically, the system may use an alternative approach for submitting the sampling schedule that the EPA approves.
- (3) A system serving less than 10,000 people shall submit its sampling schedules for the initial round of source water monitoring under subsection (a) to the Department.
- (4) Systems shall submit sampling schedules for the second round of source water monitoring under subsection (b) to the Department.
- (5) If the EPA or the Department does not respond to a system regarding its sampling schedule, the system shall sample at the reported schedule.

~~{(j)}~~ (i) *Source water sample collection period.* Systems shall collect samples within 2 days before or 2 days after the dates indicated in their sampling schedule (that is, within a 5 day period around the schedule date) unless one of the conditions of ~~{paragraph}~~ **SUBSECTION** (b)(1) or (2) applies.

(1) *Extreme sample collection conditions.* If an extreme condition or situation exists that may pose danger to the sample collector, or that cannot be avoided and causes the system to be unable to sample in the scheduled 5-day period, the system shall sample as close to the scheduled date as is feasible unless the Department approves an alternative sampling date. The system shall submit an explanation for the delayed sampling date to the Department concurrent with the shipment of the sample to the laboratory.

(2) *Replacement samples.* The requirements for replacement samples are as follows:

- (i) If a system is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements in § 109.304, or the failure of an approved laboratory to analyze the sample, then the system shall collect a replacement sample.
- (ii) The system shall collect the replacement sample not later than 21 days after receiving information that an analytical result cannot be reported for the scheduled date unless the system demonstrates that collecting a replacement sample within this time frame is not feasible or the Department approves an alternative resampling date. The system shall submit an explanation for the delayed sampling date to the Department concurrent with the shipment of the sample to the laboratory.

~~{(k)}~~ (i) *Missed samples.* Systems that fail to meet the criteria of subsection ~~{(j)}~~ (i) for any source water sample required under subsections (a)--~~{(h)}~~ (g) shall revise their sampling schedules to add dates for collecting all missed samples. Systems shall submit the revised schedule to the Department for approval prior to when the system begins collecting the missed samples.

~~(f)~~ (k) *Source water sampling locations.* Systems required to conduct source water monitoring under subsections (a)--~~(h)~~ (g) shall collect samples for each plant that treats a surface water or GUDI source. When multiple plants draw water from the same influent, such as the same pipe or intake, the Department may approve one set of monitoring results to be used to satisfy the requirements of subsections (a)--~~(h)~~ (g) for all plants.

~~(f)~~ (l) *Chemical treatment prior to sampling location.* Systems shall collect source water samples prior to chemical treatment, such as coagulants, oxidants and disinfectants.

~~(f)~~ (m) *Source water sample location for plants that recycle.* Systems that recycle filter backwash water shall collect source water samples prior to the point of filter backwash water addition.

~~(f)~~ (n) *Bank filtration.*

(1) Systems that receive *Cryptosporidium* treatment credit for bank filtration to meet existing treatment technique requirements of § 109.202(c) (relating to State MCLs, MRDLs and treatment technique requirements), as applicable, shall collect source water samples in the surface water prior to bank filtration.

(2) Systems that use bank filtration as pretreatment to a filtration plant shall collect source water samples from the well (that is, after bank filtration). Use of bank filtration during monitoring must be consistent with routine operational practice. Systems collecting samples after a bank filtration process may not receive treatment credit for the bank filtration under § 109.1204(f) (relating to requirements for microbial toolbox components).

~~(f)~~ (o) *Multiple sources.* Systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and groundwater sources, shall collect samples as specified in paragraph (1) or (2). The use of multiple sources during monitoring must be consistent with routine operational practice. Sources not adequately evaluated during the monitoring period will be considered new sources and the requirements under subsection (f) will apply. Systems may begin monitoring a new source as soon as a sampling schedule and plan have been approved by the Department.

(1) If a sampling tap is available where the sources are combined prior to treatment, systems shall collect samples from the tap.

(2) If a sampling tap where the sources are combined prior to treatment is not available, systems shall collect samples at each source near the intake on the same day and shall follow either subparagraph (i) or (ii) for sample analysis.

(i) Systems may composite samples from each source into one sample prior to analysis. The volume of sample from each source must be weighted according to the proportion of the source in the total plant flow at the time the sample is collected.

(ii) Systems may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average must be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

~~[(q)] (p)~~ *Additional requirements.* A system shall submit a description of its sampling locations to the Department at the same time as the sampling schedule required under subsections ~~[(i)]~~--~~(k)~~ ~~(h)~~--~~(j)~~. This description must address the position of the sampling location in relation to the system's water sources and treatment processes, including pretreatment, points of chemical treatment and filter backwash recycle. If the Department does not respond to a system regarding sampling locations, the system shall sample at the reported locations.

**§ 109.1203. Bin classification and treatment technique requirements.**

(a) *Bin classification.* Following completion of the initial round of source water monitoring required under § 109.1202(a) (relating to monitoring requirements), filtered systems shall calculate an initial *Cryptosporidium* bin concentration for each plant for which monitoring was required. Calculation of the bin concentration must use the *Cryptosporidium* results reported under § 109.1202(a) and must follow the procedures in subsection (b)(1)--(5).

(b) *Procedures for calculating bin classifications.*

- (1) For systems that collect a total of at least 48 samples, the bin concentration is equal to the arithmetic mean of all sample concentrations.
- (2) For systems that collect a total of at least 24 samples, but not more than 47 samples, the bin concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which *Cryptosporidium* samples were collected.
- (3) For systems that serve less than 10,000 people and monitor for *Cryptosporidium* for only 1 year (that is, collect 24 samples in 12 months), the bin concentration is equal to the arithmetic mean of all sample concentrations.
- (4) For systems with plants operating only part of the year that monitor less than 12 months per year under § 109.1202(e), the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of *Cryptosporidium* monitoring.
- (5) If the monthly *Cryptosporidium* sampling frequency varies, systems shall first calculate a monthly average for each month of monitoring. Systems shall then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in paragraphs (1)--(4).

(c) *Cryptosporidium bin concentration thresholds.* Systems required to monitor for *Cryptosporidium* under § 109.1202 shall use *Cryptosporidium* bin concentration calculated under subsections (a)[--] AND (b) to determine their initial bin classification as follows:

- (1) With a *Cryptosporidium* bin concentration of less than 0.075 oocysts/L, the bin classification is Bin 1.
- (2) With a *Cryptosporidium* bin concentration of 0.075 oocysts/L or higher, but less than 1.0 oocysts/L, the bin classification is Bin 2
- (3) With a *Cryptosporidium* bin concentration of 1.0 oocysts/L or higher but less than 3.0 oocysts/L, the bin classification is Bin 3

- (4) With a *Cryptosporidium* bin concentration of 3.0 oocysts/L or higher, the bin classification is Bin 4
- (5) If serving less than 10,000 people and not required to monitor for *Cryptosporidium* under § 109.1202(a)(4), the bin classification is Bin 1.
- (d) *Cryptosporidium bin concentration recalculation requirements.* Following completion of the second round of source water monitoring required under § 109.1202(b), filtered systems shall recalculate their *Cryptosporidium* bin concentration using the *Cryptosporidium* results reported under § 109.1202(b) and following the procedures in subsection (b){(1)-(4)}. Systems shall then redetermine their bin classification using the bin concentrations subsection (c).
- (e) *Filtered system additional Cryptosporidium treatment requirements.* Filtered systems shall provide the level of additional treatment for *Cryptosporidium* specified in this subsection based on their bin classification as determined under subsections (a)--(c) and according to the schedule in subsections (k)--(o). The treatments required under paragraphs (1)--(4) are in addition to existing treatment technique requirements contained in § 109.202(c) (**RELATING TO STATE MCLS, MRDLS AND TREATMENT TECHNIQUE REQUIREMENTS**), which still apply. Systems using multiple sources shall establish their bin classification based on the highest bin source in use by the facility.
- (1) *Bin 1.* If the system bin classification is Bin 1 [~~and the system is in full compliance with applicable treatment technique requirements under § 109.202(e)}~~], the system shall provide additional *Cryptosporidium* treatment as follows:
- (i) Conventional filtration treatment (including softening), slow sand or diatomaceous earth filtration must provide no additional treatment.
  - (ii) Direct filtration treatment must provide no additional treatment.
  - (iii) Alternative filtration technologies must provide no additional treatment.
- (2) *Bin 2.* If the system bin classification is Bin 2 [~~and the system is in full compliance with applicable treatment technique requirements under § 109.202(e) (relating to State MDLs, MRDLs and technique requirements)}~~], the system shall provide additional *Cryptosporidium* treatment as follows:
- (i) Conventional filtration treatment (including softening), slow sand or diatomaceous earth filtration must provide 1-log additional treatment.
  - (ii) Direct filtration treatment must provide 1.5 log additional treatment.
  - (iii) Alternative filtration technologies must provide additional treatment as determined by the Department such that the total *Cryptosporidium* removal and inactivation is at least 4.0 log.
- (3) *Bin 3.* If the system bin classification is Bin 3 [~~and the system is in full compliance with applicable treatment technique requirements under § 109.202(e)}~~], the system shall provide additional *Cryptosporidium* treatment as follows:
- (i) Conventional filtration treatment (including softening), slow sand or diatomaceous earth filtration must provide 2-log additional treatment.

(ii) Direct filtration treatment must provide 2.5 log additional treatment.

(iii) Alternative filtration technologies must provide additional treatment as determined by the Department so that the total *Cryptosporidium* removal and inactivation is at least 5.0 log.

(4) *Bin 4.* If the system bin classification is Bin 4 ~~[and the system is in full compliance with applicable treatment technique requirements under § 109.202(e)]~~, the system shall provide additional *Cryptosporidium* treatment as follows:

(i) Conventional filtration treatment (including softening), slow sand or diatomaceous earth filtration must provide 2.5-log additional treatment.

(ii) Direct filtration treatment must provide 3 log additional treatment.

(iii) Alternative filtration technologies must provide additional treatment as determined by the Department so that the total *Cryptosporidium* removal and inactivation is at least 5.5 log.

(f) *Treatment and management options for filtered systems, microbial toolbox.*

(1) Filtered systems shall use one or more of the treatment and management options listed in § 109.1204 (relating to requirements for microbial toolbox components), termed the microbial toolbox, to comply with the additional *Cryptosporidium* treatment required in subsection (e).

(2) Systems using sources classified in Bin 3 and Bin 4 shall achieve at least 1-log of the additional *Cryptosporidium* treatment required under § 109.1204(a) using either one or a combination of the following: bag filters, bank filtration, cartridge filters, chlorine dioxide, membranes, ozone or UV, as described in § 109.1204(b), (c) and (n)--(q) (relating to requirements for microbial toolbox components).

(g) *Failure to meet treatment credit.* Failure by a system in any month to achieve treatment credit by meeting criteria in § 109.1204(b), (c) and (n)--(q) for microbial toolbox options that is at least equal to the level of treatment required in subsection (e) is a violation of the treatment technique requirement.

(h) *Increased watershed contamination.* If the Department determines during a sanitary survey or an equivalent source water assessment that after a system completed the monitoring conducted under § 109.1202(a) or (b), significant changes occurred in the system's watershed that could lead to increased contamination of the source water by *Cryptosporidium*, the system shall take actions specified by the Department to address the contamination. These actions may include additional source water monitoring or implementing microbial toolbox options listed in § 109.1204, or both.

(i) *Unfiltered systems determination of Cryptosporidium bin level, initial round.* Following completion of the initial source water monitoring required under § 109.1202(a), unfiltered systems shall calculate their bin classification using the methods listed in subsections (b) and (c).

(j) *Unfiltered systems determination of Cryptosporidium bin level, second round.* Following completion of the second round of source water monitoring required under subsection (b),

unfiltered systems shall calculate their bin classification using the methods listed in subsections (b) and (c).

(k) *Schedule for compliance with Cryptosporidium treatment requirements.* Following initial bin classification under subsection (c), filtered systems shall provide the level of additional treatment for *Cryptosporidium* required under subsections (e)--(h) according to the schedule in subsection (m). The treatments required under subsections (e)--(h) are in addition to existing treatment technique requirements contained in § 109.202(c), which still apply.

(l) *Treatment technique requirements for unfiltered systems.* Following initial determination of the *Cryptosporidium* level under subsection (i), unfiltered systems shall meet all applicable treatment technique requirements of § 109.202(c) and provide the additional level of treatment for *Cryptosporidium* required under subsections (e)--(h) on a schedule approved by the Department but no later than the schedule in subsection (m).

(m) *Cryptosporidium treatment compliance dates.* *Cryptosporidium* treatment compliance dates are as follows:

- (1) Systems that serve at least 100,000 people shall comply with *Cryptosporidium* treatment requirements by April 1, 2012.
- (2) Systems that serve from 50,000 to 99,999 people shall comply with *Cryptosporidium* treatment requirements by October 1, 2012.
- (3) Systems that serve from 10,000 to 49,999 people shall comply with *Cryptosporidium* treatment requirements by October 1, 2013.
- (4) Systems that serve less than 10,000 people shall comply with *Cryptosporidium* treatment requirements by October 1, 2014.
- (5) On a case by case basis within an agreed upon time frame, the Department may allow up to an additional 2 years for complying with the treatment requirement for systems making capital improvements.

(n) *Change in Cryptosporidium level for filtered system.* If the bin classification for a filtered system ~~[changes]~~ **INCREASES** following the second round of source water monitoring, as determined under subsection (d), the system shall provide the level of treatment for *Cryptosporidium* required under subsections (e)--(h) on a schedule the Department approves.

(o) *Change in Cryptosporidium level for unfiltered system.* If the *Cryptosporidium* **BIN** level for an unfiltered system ~~[changes]~~ **INCREASES** following the second round of monitoring, as determined under subsection (j), ~~[and if]~~ the system shall provide ~~[a different]~~ **THE ADDITIONAL** level of *Cryptosporidium* treatment under ~~[subsections (i) and (j) due to this change, the system shall meet this treatment requirement]~~ **SUBSECTIONS (e)--(h)** on a schedule the Department approves.

#### **§ 109.1204. Requirements for microbial toolbox components.**

- (a) A system will receive the treatment credits listed Appendix B to Subchapter L Microbial Toolbox Summary Table: Options, Treatment Credits and Criteria ~~[which is available from the Department at www.depweb.state.pa.us (DEP Keyword: ]~~

~~Participation; select "Proposals Currently Open for Comment" or through the Contact Persons listed in the Preamble}, by meeting the conditions for microbial toolbox components described in subsections (b)--(q). A system shall apply these treatment credits to meet the treatment technique requirements listed in section § 109.1203 (relating to bin classification and treatment technique requirements).~~

(b) *Watershed control program.* ~~Systems~~ **FILTERED SYSTEMS** receive 0.5-log *Cryptosporidium* treatment credit for implementing a watershed control program that meets the requirements of this subsection. This credit may not be used to maintain the additional log removal credits specified in § 109.1203. This credit may only be applied in addition to the toolbox options used to meet the minimum log removal and may apply in lieu of a toolbox option for which credit has been temporarily revoked. **UNFILTERED SYSTEMS ARE NOT ELIGIBLE FOR THIS CREDIT.**

(1) Systems that intend to apply for the watershed control program credit shall notify the Department of this intent at least 2 years prior to the treatment compliance date applicable to the system in § 109.1203(k)--(o).

(2) Systems shall submit to the Department a proposed watershed control plan at least 1 year before the applicable treatment compliance date in § 109.1203(k)--(o). The Department will approve the watershed control plan for the system to receive watershed control program treatment credit. The watershed control plan must include the following elements:

- (i) Identification of an "area of influence" outside of which the likelihood of *Cryptosporidium* or fecal contamination affecting the treatment plant intake is not significant. This is the area to be evaluated in future watershed surveys under paragraph (4)(ii).
- (ii) Identification of both potential and actual sources of *Cryptosporidium* contamination and an assessment of the relative impact of these sources on the system's source water quality.
- (iii) An analysis of the effectiveness and feasibility of control measures that could reduce *Cryptosporidium* loading from sources of contamination to the system's source water.
- (iv) A statement of goals and specific actions the system will undertake to reduce source water *Cryptosporidium* levels. The plan must explain how the actions are expected to contribute to specific goals, identify watershed partners and their roles, identify resource requirements and commitments, and include a schedule for plan implementation with deadlines for completing specific actions identified in the plan.

(3) Systems with existing watershed control programs (that is, programs in place on January 5, 2006) are eligible to seek this credit. Their watershed control plans must meet the criteria in paragraph (2) and must specify ongoing and future actions that will reduce source water *Cryptosporidium* levels.

(4) *Systems shall complete the following actions to maintain the 0.5-log credit:*

- (i) Submit an annual watershed control program status report to the Department. The annual watershed control program status report must describe the system's

implementation of the approved plan and assess the adequacy of the plan to meet its goals. The report must explain how the system is addressing any shortcomings in plan implementation, including those previously identified by the Department or as the result of the watershed survey conducted under subparagraph (ii). The report must also describe significant changes that have occurred in the watershed since the last watershed sanitary survey. If a system determines during implementation that making a significant change to its approved watershed control program is necessary, the system shall notify the Department prior to making any changes. If a change is likely to reduce the level of source water protection, the system shall also list in its notification the actions the system will take to mitigate this effect.

(ii) Undergo a watershed sanitary survey every 3 years for community water systems and every 5 years for noncommunity water systems and submit the survey report to the Department. The survey must be conducted according to Department guidelines and by persons the Department approves.

(A) The watershed sanitary survey must meet the following criteria:

- (I) Encompass the region identified in the Department-approved watershed control plan as the area of influence.
- (II) Assess the implementation of actions to reduce source water *Cryptosporidium* levels.
- (III) Identify any significant new sources of *Cryptosporidium*.

(B) If the Department determines that significant changes may have occurred in the watershed since the previous watershed sanitary survey, systems shall undergo another watershed sanitary survey by a date the Department requires, which may be earlier than the regular date in this subparagraph.

(iii) The system shall make the watershed control plan, annual status reports, and watershed sanitary survey reports available to the public upon request. These documents must be in a plain language style and include criteria by which to evaluate the success of the program in achieving plan goals. The Department may approve systems to withhold from the public portions of the annual status report, watershed control plan, and watershed sanitary survey based on water supply security considerations.

(5) If the Department determines that a system is not carrying out the approved watershed control plan, the Department may withdraw the watershed control program treatment credit.

(c) *Alternative source.*

(1) A system may conduct source water monitoring that reflects a different intake location (either in the same source or for an alternate source) or a different procedure for the timing or level of withdrawal from the source (alternative source monitoring). If the Department approves, a system may determine its bin classification under § 109.1203 based on the alternative source monitoring results.

- (2) If systems conduct alternative source monitoring under paragraph (1), systems shall also monitor their current plant intake concurrently as described in § 109.1202 (relating to monitoring requirements).
- (3) Alternative source monitoring under paragraph (1) must meet the requirements for source monitoring to determine bin classification, as described in § 109.1202 and ~~§ 109.1205~~ **§ 109.1206 (RELATING TO REPORTING AND RECORDKEEPING REQUIREMENTS)**. Systems shall report the alternative source monitoring results to the Department, along with supporting information documenting the operating conditions under which the samples were collected.
- (4) If a system determines its bin classification under § 109.1203 using alternative source monitoring results that reflect a different intake location or a different procedure for managing the timing or level of withdrawal from the source, the system shall relocate the intake or permanently adopt the withdrawal procedure, as applicable, no later than the applicable treatment compliance date in § 109.1203(k)--(o).

(d) *Presedimentation*. Systems will receive 0.5-log *Cryptosporidium* treatment credit for a presedimentation basin during any month the process meets the criteria in this subsection.

- (1) The presedimentation basin must be in continuous operation and must treat the entire plant flow taken from a surface water or GUDI source.
- (2) The system shall continuously add a coagulant to the presedimentation basin.
- (3) The presedimentation basin must achieve the performance criteria as follows:
  - (i) Demonstrates at least 0.5-log mean reduction of influent turbidity. This reduction must be determined using daily turbidity measurements in the presedimentation process influent and effluent and must be calculated as follows:  $\log_{10}(\text{monthly mean of daily influent turbidity}) - \log_{10}(\text{monthly mean of daily effluent turbidity})$ .
  - (ii) Comply with Department-approved performance criteria that demonstrate at least 0.5-log mean removal of micron-sized particulate material through the presedimentation process.

(e) *2-stage lime softening*. Systems receive an additional 0.5-log *Cryptosporidium* treatment credit for a 2-stage lime softening plant if chemical addition and hardness precipitation occur in two separate and sequential softening stages prior to filtration. Both softening stages must treat the entire plant flow taken from a surface water or GUDI source.

(f) *Bank filtration*. Systems receive *Cryptosporidium* treatment credit for bank filtration that serves as pretreatment to a filtration plant by meeting the criteria in this subsection. Systems using bank filtration when they begin source water monitoring under § 109.1202(a) shall collect samples as described in ~~§ 109.1202(e)~~ **§ 109.1202(n)** and are not eligible for this credit.

- (1) Wells with a groundwater flow path of at least 25 feet receive 0.5-log treatment credit. Wells with a groundwater flow path of at least 50 feet receive 1.0-log treatment credit. The groundwater flow path must be determined as specified in paragraph (4).
- (2) Only wells in granular aquifers are eligible for treatment credit. Granular aquifers are those comprised of sand, clay, silt, rock fragments, pebbles or larger particles and

minor cement. A system shall characterize the aquifer at the well site to determine aquifer properties. Systems shall extract a core from the aquifer and demonstrate that in at least 90% of the core length, grains less than 1.0 mm in diameter constitute at least 10% of the core material.

- (3) Only horizontal and vertical wells are eligible for treatment credit.
  - (4) For vertical wells, the groundwater flow path is the measured distance from the edge of the surface water body under high flow conditions (determined by the 100 year floodplain elevation boundary or by the floodway, as defined in Federal Emergency Management Agency flood hazard maps) to the well screen. For horizontal wells, the groundwater flow path is the measured distance from the bed of the river under normal flow conditions to the closest horizontal well lateral screen.
  - (5) Systems shall monitor each wellhead for turbidity at least once every 4 hours while the bank filtration process is in operation. If monthly average turbidity levels, based on daily maximum values in the well, exceed 1 NTU, the system shall report this result to the Department and conduct an assessment within 30 days to determine the cause of the high turbidity levels in the well. If the Department determines that microbial removal has been compromised, the Department may revoke treatment credit until the system implements corrective actions approved by the Department to remediate the problem.
  - (6) Springs and infiltration galleries are not eligible for treatment credit under this section, but are eligible for credit under subsection (i).
  - (7) The Department may approve *Cryptosporidium* treatment credit for bank filtration based on a demonstration of performance study that meets the criteria in this paragraph. This treatment credit may be greater than 1.0-log and may be awarded to bank filtration that does not meet the criteria in paragraphs (1)-(5).
    - (i) The study must follow a Department-approved protocol and must involve the collection of data on the removal of *Cryptosporidium* or a surrogate for *Cryptosporidium* and related hydrogeologic and water quality parameters during the full range of operating conditions.
    - (ii) The study must include sampling both from the production well and from monitoring wells that are screened and located along the shortest flow path between the surface water source and the production well.
- (g) *Combined filter performance.* Systems using conventional filtration treatment or direct filtration treatment receive an additional 0.5-log *Cryptosporidium* treatment credit during any month the system meets the criteria in this subsection. Combined filter effluent (CFE) turbidity must be less than or equal to 0.15 NTU in at least 95% of the measurements. Turbidity must be measured as described in § 109.304(c) (relating to analytical requirements).
- (h) *Individual filter performance.* Systems using conventional filtration treatment or direct filtration treatment will receive 0.5-log *Cryptosporidium* treatment credit, which can be in addition to the 0.5-log credit under subsection (g), during any month the system meets the criteria in this subsection. Compliance with these criteria must be based on individual filter turbidity monitoring as described in § 109.301(1)(iv) (relating to general monitoring requirements), as applicable.

- (1) The filtered water turbidity for each individual filter must be less than or equal to 0.15 NTU in at least 95% of the measurements recorded each month.
  - (2) An individual filter may not have a measured turbidity greater than 0.3 NTU in two consecutive measurements taken 15 minutes apart.
  - (3) A system that has received treatment credit for individual filter performance and fails to meet the requirements of paragraph (1) or (2) during any month does not receive a treatment technique violation under § 109.1203(g) if the Department determines the following:
    - (i) The failure was due to unusual and short-term circumstances that could not reasonably be prevented through optimizing treatment plant design, operation, and maintenance.
    - (ii) The system has experienced no more than two of these failures in any calendar year.
- (i) *Demonstration of performance.* The Department may approve *Cryptosporidium* treatment credit for drinking water treatment processes based on a demonstration of performance study that meets the criteria in this subsection. This treatment credit may be greater than or less than the prescribed treatment credits in § 109.1203(e)--(h) or subsection (d)--(f) and subsections (n)--(q) and may be awarded to treatment processes that do not meet the criteria for the prescribed credits.
- (1) Systems cannot receive the prescribed treatment credit for any toolbox option in subsections (d)--(f) or (n)--(q) if that toolbox option is included in a demonstration of performance study for which treatment credit is awarded under this paragraph.
  - (2) The demonstration of performance study must follow a Department-approved protocol and must demonstrate the level of *Cryptosporidium* reduction the treatment process will achieve under the full range of expected operating conditions for the system.
  - (3) Approval by the Department will be in writing and may include monitoring and treatment performance criteria that the system shall demonstrate and report on an ongoing basis to remain eligible for the treatment credit. The Department may designate the criteria when necessary to verify that the conditions under which the demonstration of performance credit was approved are maintained during routine operation.
- (j) *Bag and cartridge filters.* Systems receive *Cryptosporidium* treatment credit of up to 2.0-log for individual bag or cartridge filters and up to 2.5-log for bag or cartridge filters operated in series by meeting the criteria in paragraphs (1)--(10). To be eligible for this credit, systems shall report the results of challenge testing that meet the requirements of paragraphs (2)--(9) to the Department. The filters must treat the entire plant flow taken from a surface water or groundwater source under the direct influence of surface water source.
- (1) The *Cryptosporidium* treatment credit awarded to bag or cartridge filters will be based on the removal efficiency demonstrated during challenge testing that is conducted according to the criteria in paragraphs (2)--(9). A factor of safety equal to 1-log for individual bag or cartridge filters and 0.5-log for bag or cartridge filters in series must be applied to challenge testing results to determine removal credit. Systems may use results

from challenge testing conducted prior to January 5, 2006, if the prior testing was consistent with the criteria specified in paragraphs (2)–(9).

(2) Challenge testing must be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the system will use for removal of *Cryptosporidium*. Bag or cartridge filters must be challenge tested in the same configuration that the system will use, either as individual filters or as a series configuration of filters.

(3) Challenge testing must be conducted using *Cryptosporidium* or a surrogate that is removed no more efficiently than *Cryptosporidium*. The microorganism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate must be determined using a method capable of ~~discreetly~~ **DISCRETELY** quantifying the specific microorganism or surrogate used in the test; gross measurements such as turbidity may not be used.

(4) The maximum feed water concentration that can be used during a challenge test must be based on the detection limit of the challenge particulate in the filtrate (that is, filtrate detection limit) and must be calculated using the following equation:

$$\text{Maximum Feed Concentration} = 1 \times 10^4 \times (\text{Filtrate Detection Limit})$$

(5) Challenge testing must be conducted at the maximum design flow rate for the filter as specified by the manufacturer.

(6) Each filter evaluated must be tested for a duration sufficient to reach 100% of the terminal pressure drop, which establishes the maximum pressure drop under which the filter may be used to comply with this subchapter.

(7) Removal efficiency of a filter must be determined from the results of the challenge test and expressed in terms of log removal values using the following equation:

$$\text{LRV} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where: LRV = log removal value demonstrated during challenge testing;  $C_f$  = the feed concentration measured during the challenge test; and  $C_p$  = the filtrate concentration measured during the challenge test. In applying this equation, the same units must be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, then the term  $C_p$  must be set equal to the detection limit.

(8) Each filter tested must be challenged with the challenge particulate during three periods over the filtration cycle: within 2 hours of start-up of a new filter; when the pressure drop is between 45 and 55% of the terminal pressure drop; and at the end of the cycle after the pressure drop has reached 100% of the terminal pressure drop. An LRV must be calculated for each of these challenge periods for each filter tested. The LRV for the filter ( $\text{LRV}_{\text{filter}}$ ) must be assigned the value of the minimum LRV observed during the three challenge periods for that filter.

(9) If less than 20 filters are tested, the overall removal efficiency for the filter product line must be set equal to the lowest  $\text{LRV}_{\text{filter}}$  among the filters tested. If 20 or more filters are tested, the overall removal efficiency for the filter product line must be set equal to the 10th percentile of the set of  $\text{LRV}_{\text{filter}}$  values for the various filters tested. The percentile is defined by  $(i/(n+1))$  where  $i$  is the rank of  $n$  individual data points ordered

lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

(10) If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, challenge testing to demonstrate the removal efficiency of the modified filter must be conducted and submitted to the Department.

(k) *Membrane filtration.*

(1) *Cryptosporidium treatment credit.* Systems receive *Cryptosporidium* treatment credit for membrane filtration that meets the criteria of this paragraph. Membrane cartridge filters that meet the definition of membrane filtration in § 109.1 (relating to definitions) are eligible for this credit. The level of treatment credit a system receives is equal to the lower of the values determined under the following:

- (i) The removal efficiency demonstrated during challenge testing conducted under the conditions in paragraph (2).
- (ii) The maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in paragraph (3).

(2) *Challenge testing.* The membrane used by the system shall undergo challenge testing to evaluate removal efficiency, and the system shall report the results of challenge testing to the Department. Challenge testing must be conducted according to the criteria in subparagraphs (i)--(vii). Systems may use data from challenge testing conducted prior to January 5, 2006, if the prior testing was consistent with the criteria in subparagraphs (i)--(vii).

(i) Challenge testing must be conducted on either a full-scale membrane module, identical in material and construction to the membrane modules used in the system's treatment facility, or a smaller-scale membrane module, identical in material and similar in construction to the full-scale module. A module is defined as the smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

(ii) Challenge testing must be conducted using *Cryptosporidium* oocysts or a surrogate that is removed no more efficiently than *Cryptosporidium* oocysts. The organism or surrogate used during challenge testing is referred to as the challenge particulate. The concentration of the challenge particulate, in both the feed and filtrate water, must be determined using a method capable of discretely quantifying the specific challenge particulate used in the test; gross measurements such as turbidity may not be used.

(iii) The maximum feed water concentration that can be used during a challenge test is based on the detection limit of the challenge particulate in the filtrate and must be determined according to the following equation:

$$\text{Maximum Feed Concentration} = 3.16 \times 10^6 \times (\text{Filtrate Detection Limit})$$

(iv) Challenge testing must be conducted under representative hydraulic conditions at the maximum design flux and maximum design process recovery specified by the manufacturer for the membrane module. Flux is defined as the throughput of a

pressure driven membrane process expressed as flow per unit of membrane area. Recovery is defined as the volumetric % of feed water that is converted to filtrate over the course of an operating cycle uninterrupted by events such as chemical cleaning or a solids removal process (that is, backwashing).

- (v) Removal efficiency of a membrane module must be calculated from the challenge test results and expressed as a log removal value according to the following equation:

$$\text{LRV} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where: LRV = log removal value demonstrated during the challenge test;  $C_f$  = the feed concentration measured during the challenge test; and  $C_p$  = the filtrate concentration measured during the challenge test. Equivalent units must be used for the feed and filtrate concentrations. If the challenge particulate is not detected in the filtrate, the term  $C_p$  is set equal to the detection limit for the purpose of calculating the LRV. An LRV must be calculated for each membrane module evaluated during the challenge test.

- (vi) The removal efficiency of a membrane filtration process demonstrated during challenge testing must be expressed as a log removal value ( $\text{LRV}_{\text{C-Test}}$ ). If less than 20 modules are tested, then  $\text{LRV}_{\text{C-Test}}$  is equal to the lowest of the representative LRVs among the modules tested. If 20 or more modules are tested, then  $\text{LRV}_{\text{C-Test}}$  is equal to the 10th percentile of the representative LRVs among the modules tested. The percentile is defined by  $i/(n+1)$  where  $i$  is the rank of  $n$  individual data points ordered lowest to highest. If necessary, the 10th percentile may be calculated using linear interpolation.

- (vii) The challenge test must establish a quality control release value (QCRV) for a nondestructive performance test that demonstrates the *Cryptosporidium* removal capability of the membrane filtration module. This performance test must be applied to each production membrane module used by the system that was not directly challenge tested in order to verify *Cryptosporidium* removal capability. Production modules that do not meet the established QCRV are not eligible for the treatment credit demonstrated during the challenge test.

- (viii) If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane or the applicability of the nondestructive performance test and associated QCRV, additional challenge testing to demonstrate the removal efficiency of, and determine a new QCRV for, the modified membrane must be conducted and submitted to the Department.

- (3) *Direct integrity testing.* Systems shall conduct direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process and meets the requirements described in subparagraphs (i)–(vi). A direct integrity test is defined as a physical test applied to a membrane unit to identify and isolate integrity breaches (that is, one or more leaks that could result in contamination of the filtrate).

- (i) The direct integrity test must be independently applied to each membrane unit in service. A membrane unit is defined as a group of membrane modules that share

common valving that allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

(ii) The direct integrity method must have a resolution of 3 micrometers or less, where resolution is defined as the size of the smallest integrity breach that contributes to a response from the direct integrity test.

(iii) The direct integrity test must have a sensitivity sufficient to verify the log treatment credit awarded to the membrane filtration process by the Department, where sensitivity is defined as the maximum log removal value that can be reliably verified by a direct integrity test. Sensitivity must be determined using the approach in either clause (A) or (B) as applicable to the type of direct integrity test the system uses.

(A) For direct integrity tests that use an applied pressure or vacuum, the direct integrity test sensitivity must be calculated according to the following equation:

$$LRV_{DIT} = \text{LOG}_{10} (Q_p / (VCF \times Q_{breach}))$$

Where:  $LRV_{DIT}$  = the sensitivity of the direct integrity test;  $Q_p$  = total design filtrate flow from the membrane unit;  $Q_{breach}$  = flow of water from an integrity breach associated with the smallest integrity test response that can be reliably measured, and VCF = volumetric concentration factor. The volumetric concentration factor is the ratio of the suspended solids concentration on the high pressure side of the membrane relative to that in the feed water.

(B) For direct integrity tests that use a particulate or molecular marker, the direct integrity test sensitivity must be calculated according to the following equation:

$$LRV_{DIT} = \text{LOG}_{10}(C_f) - \text{LOG}_{10}(C_p)$$

Where:  $LRV_{DIT}$  = the sensitivity of the direct integrity test;  $C_f$  = the typical feed concentration of the marker used in the test; and  $C_p$  = the filtrate concentration of the marker from an integral membrane unit.

(iv) Systems shall establish a control limit within the sensitivity limits of the direct integrity test that is indicative of an integral membrane unit capable of meeting the removal credit awarded by the Department.

(v) If the result of a direct integrity test exceeds the control limit established under subparagraph (iv), the system shall remove the membrane unit from service. Systems shall conduct a direct integrity test to verify any repairs, and may return the membrane unit to service only if the direct integrity test is within the established control limit.

(vi) Systems shall conduct direct integrity testing on each membrane unit at a frequency of at least once each day that the membrane unit is in operation. The Department may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for *Cryptosporidium*, or reliable process safeguards.

(4) *Indirect integrity monitoring.* Systems shall conduct continuous indirect integrity monitoring on each membrane unit according to the criteria in subparagraphs (i)-(v).

Indirect integrity monitoring is defined as monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. A system that implements continuous direct integrity testing of membrane units in accordance with the criteria in subparagraphs (i)--(v) is not subject to the requirements for continuous indirect integrity monitoring. Systems shall submit a monthly report to the Department summarizing all continuous indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken in each case.

- (i) Unless the Department approves an alternative parameter, continuous indirect integrity monitoring must include continuous filtrate turbidity monitoring.
- (ii) Continuous monitoring must be conducted at least once every 15 minutes.
- (iii) Continuous monitoring must be separately conducted on each membrane unit.
- (iv) If indirect integrity monitoring includes turbidity and if the filtrate turbidity readings are above 0.15 NTU for a period greater than 15 minutes (that is, two consecutive 15-minute readings above 0.15 NTU), direct integrity testing must immediately be performed on the associated membrane unit as specified in paragraph (3)(i)--(v).
- (v) If indirect integrity monitoring includes a Department-approved alternative parameter and if the alternative parameter exceeds a Department-approved control limit for a period greater than 15 minutes, direct integrity testing shall immediately be performed on the associated membrane units as specified in paragraph (3)(i)--(v).

(l) *Second stage filtration*. Systems receive 0.5-log *Cryptosporidium* treatment credit for a separate second stage of filtration that consists of sand, dual media, GAC or other fine grain media following granular media filtration if approved by the Department. To be eligible for this credit, the first stage of filtration must be preceded by a coagulation step and both filtration stages must treat the entire plant flow taken from a surface water or GUDI source. A cap, such as GAC, on a single stage of filtration is not eligible for this credit. The Department will approve the treatment credit based on an assessment of the design characteristics of the filtration process.

(m) *Slow sand filtration (as secondary filter)*. Systems are eligible to receive 2.5-log *Cryptosporidium* treatment credit for a slow sand filtration process that follows a separate stage of filtration if both filtration stages treat entire plant flow taken from a surface water or GUDI source and no disinfectant residual is present in the influent water to the slow sand filtration process. The Department will approve the treatment credit based on an assessment of the design characteristics of the filtration process. This subsection does not apply to treatment credit awarded to slow sand filtration used as a primary filtration process.

(n) *Inactivation toolbox components*. Calculation of CT values.

(1) Systems with treatment credit for chlorine dioxide or ozone under subsection (o) or (p) must calculate CT at least once each day, with both C and T measured during peak hourly flow as specified in § 109.304(c) and 40 CFR 141.74(b)(3) (relating to analytical and monitoring requirements).

(2) Systems with several disinfection segments in sequence may calculate CT for each segment, where a disinfection segment is defined as a treatment unit process with a

measurable disinfectant residual level and a liquid volume. Under this approach, systems shall add the *Cryptosporidium* CT values in each segment to determine the total CT for the treatment plant.

(o) *Chlorine dioxide*. Systems are eligible to receive the *Cryptosporidium* treatment credit listed in Table 1, CT Values (mg \* min/L) for *Cryptosporidium* Inactivation by Chlorine Dioxide, contained in Appendix A to Subchapter L ~~{which is available from the Department at [www.depweb.state.pa.us](http://www.depweb.state.pa.us) (DEP Keyword: Participation; select "Proposals Currently Open for Comment" or through the Contact Persons listed in the Preamble)}~~, by meeting the corresponding chlorine dioxide CT value for the applicable water temperature, as described in subsection (n).

(p) *Ozone*. Systems receive the *Cryptosporidium* treatment credit listed in Table 2, CT Values (mg \* min/L) for *Cryptosporidium* Inactivation by Ozone, contained in Appendix A to Subchapter L ~~{which is available from the Department at [www.depweb.state.pa.us](http://www.depweb.state.pa.us) (DEP Keyword: Participation; select "Proposals Currently Open for Comment" or through the Contact Persons listed in the Preamble)}~~, by meeting the corresponding ozone CT values for the applicable water temperature, as described in subsection (n).

(q) *Ultraviolet light*. Systems receive *Cryptosporidium*, *Giardia lamblia* and virus treatment credits for ultraviolet (UV) light reactors by achieving the corresponding UV dose values shown in Table 3, UV Dose for *Cryptosporidium*, *Giardia lamblia* and Virus Inactivation, contained in Appendix A to Subchapter L ~~{which is available from the Department at [www.depweb.state.pa.us](http://www.depweb.state.pa.us) (DEP Keyword: Participation; select "Proposals Currently Open for Comment" or through the Contact Persons listed in the Preamble)}~~, as described in paragraph (1). Systems shall validate and monitor UV reactors as described in paragraphs (2) and (3) to demonstrate that they are achieving a particular UV dose value for treatment credit.

(1) *UV dose table*. The treatment credits listed in Table 3 are for UV light at a wavelength of 254 nm as produced by a low pressure mercury vapor lamp. To receive treatment credit for other lamp types, systems shall demonstrate an equivalent germicidal dose through reactor validation testing, as described in paragraph (2). The UV dose values in this table are applicable only to post-filter applications of UV in filtered systems.

(2) *Reactor validation testing*. Systems shall use UV reactors that have undergone validation testing, conducted by a party acceptable to the Department, to determine the operating conditions under which the reactor delivers the UV dose required in paragraph (1) (that is, validated operating conditions). These operating conditions must include flow rate, UV intensity as measured by a UV sensor and UV lamp status.

(i) When determining validated operating conditions, systems shall account for the following factors:

- (A) UV absorbance of the water.
- (B) Lamp fouling and aging.
- (C) Measurement uncertainty of on-line sensors.
- (D) UV dose distributions arising from the velocity profiles through the reactor.

- (E) Failure of UV lamps or other critical system components.
  - (F) Inlet and outlet piping or channel configurations of the UV reactor.
- (ii) Validation testing must include the following: Full scale testing of a reactor that conforms uniformly to the UV reactors used by the system and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp.
- (iii) The Department may accept alternative validation testing approaches, if these approaches are first approved by the EPA.
- (3) *Reactor monitoring.*
- (i) Systems shall monitor their UV reactors to determine if the reactors are operating within validated conditions, as determined under paragraph (2). This monitoring must include UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters the Department designates based on UV reactor operation. Systems shall verify the calibration of UV sensors and shall recalibrate sensors in accordance with a protocol the Department approves.
  - (ii) To receive treatment credit for UV light, systems shall treat at least 95% of the water delivered to the public during each month by UV reactors operating within validated conditions for the required UV dose, as described in paragraphs (1) and (2). Systems shall demonstrate compliance with this condition by the monitoring required under subparagraph (i).

#### **§ 109.1205. GRANDFATHERING PREVIOUSLY COLLECTED DATA.**

**A SYSTEM MAY COMPLY WITH THE INITIAL SOURCE WATER MONITORING REQUIREMENTS OF § 109.1202 (RELATING TO MONITORING REQUIREMENTS) BY GRANDFATHERING PREVIOUSLY COLLECTED DATA. THE SYSTEM SHALL MEET THE GRANDFATHERING REQUIREMENTS ESTABLISHED BY EPA UNDER THE NATIONAL PRIMARY DRINKING WATER REGULATIONS IN 40 CFR 141.707 (RELATING TO GRANDFATHERING PREVIOUSLY COLLECTED DATA) WHICH ARE INCORPORATED BY REFERENCE.**

#### **§ [109.1205] 109.1206. Reporting and recordkeeping requirements.**

- (a) *Source water reporting time frame.* Systems shall report results from the source water monitoring required under § 109.1202 (relating to monitoring requirements) no later than 10 days after the end of the first month following the month when the sample is collected.
- (b) *Methods for reporting initial source water monitoring results to EPA.* Systems serving at least 10,000 people shall report as follows:
  - (1) All systems serving at least 10,000 people shall report the results from the initial source water monitoring required under § 109.1202(a) to the EPA electronically at <https://intranet.epa.gov/lt2/>.
  - (2) If a system is unable to report monitoring results electronically, the system may use an alternative approach for reporting monitoring results the EPA approves.

- (c) *Methods for reporting initial source water monitoring results to the Department.* Systems serving less than 10,000 people shall report results from the initial source water monitoring required under § 109.1202(a) to the Department using a method approved by the Department.
- (d) *Methods for reporting second round of source water monitoring results to the Department.* All systems shall report results from the second round of source water monitoring required under § 109.1202(b) to the Department using a method approved by the Department.
- (e) *Source water reporting data elements.* Systems shall report the applicable information in paragraphs (1) and (2) for the source water monitoring required under § 109.1202.
- (1) *Cryptosporidium data elements.* Systems shall report data elements in subparagraphs (i)--(vii) for each *Cryptosporidium* analysis. Systems shall report, **IN A FORM ACCEPTABLE TO THE DEPARTMENT,** data elements in subparagraphs (viii)--(x) as applicable.
- (i) PWS ID.
  - (ii) **{Facility} SOURCE ID.**
  - (iii) Sample collection date.
  - (iv) Sample type (field or matrix spike).
  - (v) Sample volume filtered (L), to nearest ~~1/4~~L.
  - (vi) Indicate whether 100% of filtered volume was examined.
  - (vii) Number of oocysts counted.
  - (viii) For matrix spike samples, systems shall also report the sample volume spiked and estimated number of oocysts spiked. These data are not required for field samples.
  - (ix) For samples in which less than 10 L is filtered or less than 100% of the sample volume is examined, systems shall also report the number of filters used and the packed pellet volume.
  - (x) For samples in which less than 100% of sample volume is examined, systems shall also report the volume of resuspended concentrate and volume of this resuspension processed through immunomagnetic separation.
- (2) *E. coli data elements.* Systems shall report, **IN A FORM ACCEPTABLE TO THE DEPARTMENT,** the following data elements for each E. coli analysis:
- (i) PWS ID.
  - (ii) **{Facility} SOURCE ID.**
  - (iii) Sample collection date.
  - (iv) Analytical method number.
  - (v) Method type.
  - (vi) Source type (flowing stream, lake/reservoir, GUDI).

(vii) *E. coli*/100 mL.

(viii) Turbidity, **IF MONITORING IS REQUIRED UNDER § 109.1202.**

(f) ~~{Grandfathering data. Grandfathering previously collected data requirements, established by the EPA under the National Primary Drinking Water regulations in 40 CFR 141.707 (relating to grandfathering previously collected data) are incorporated by reference except as otherwise established by this chapter.}~~

(g) *Sampling schedule reporting.* Systems shall report sampling schedules under § 109.1202{(i)-(k)} ~~(h)-(j)~~ and source water monitoring results under subsections (a)-(e) unless they notify the Department that they will not conduct source water monitoring due to meeting the criteria of § 109.1202(d).

(h) ~~(g)~~ *Bin classification reporting.* Systems shall report their *Cryptosporidium* bin classification as follows:

- (1) Systems shall report their initial bin classification under § 109.1203(c) (relating to bin classification and treatment technique requirements) to the Department for approval no later than 6 months after the system is required to complete initial source water monitoring based on the schedule in § 109.1202(c).
- (2) Systems shall report their bin classification under § 109.1203(c) to the Department for approval no later than 6 months after the system is required to complete the second round of source water monitoring based on the schedule in § 109.1202(c).
- (3) The bin classification report to the Department will include a summary of source water monitoring data and the calculation procedure used to determine bin classification.
- (4) Failure to comply with the conditions of this subsection is a violation of the treatment technique requirement.

(i) ~~(h)~~ *Microbial toolbox reporting requirements.* Systems are required to report items specified § 109.1204 (relating to requirements for microbial toolbox components) for all toolbox components for which they are requesting treatment credit. Systems must report to the State in accordance with Appendix C to subchapter L Microbial Toolbox Reporting Requirements ~~{which is available from the Department at [www.depweb.state.pa.us](http://www.depweb.state.pa.us) (DEP Keyword: Participation; select "Proposals Currently Open for Comment" or through the Contact Persons listed in the Preamble)}~~ IN A FORM ACCEPTABLE TO THE DEPARTMENT. ~~{SYSTEMS USING TREATMENT OPTIONS OTHER THAN CONVENTIONAL, DIRECT, SLOW SAND OR DIATOMACEOUS EARTH FILTRATION FOR BIN 1 SOURCES SHALL ALSO REPORT, IN A FORM ACCEPTABLE TO THE DEPARTMENT, THE ITEMS SPECIFIED IN § 109.1204 FOR THE TREATMENT OPTIONS USED.}~~

(j) ~~(i)~~ *Reporting significant change in disinfection practices.* Prior to making a significant change in disinfection practice, systems shall report disinfection profiles and benchmarks to the Department as established by the EPA under the National Primary Drinking Water regulations in 40 CFR 141.708 and 141.709 (relating to requirements when making a significant change in disinfection practice; and developing the disinfection profile and benchmark), which are incorporated by reference in § 109.204 (relating to disinfection profiling and benchmarking).

(k) (i) *Source water monitoring recordkeeping requirements.* Systems shall keep results from the initial round of source water monitoring under § 109.1202(a) and the second round of source water monitoring under § 109.1202(b) until 3 years after bin classification under § 109.1203 (b) and (c).

(k) *Notification retention.* Systems shall keep any notification to the Department that they will not conduct source water monitoring due to meeting the criteria of § 109.1202(d) for 3 years.

(m) (i) *Results retention.* Systems shall keep the results of treatment monitoring associated with microbial toolbox options under § 109.1204, as applicable, for 3 years.

**(Editor's Note: The following subchapter is new. It appears in regular text to enhance readability.)**

## **Subchapter M. ADDITIONAL REQUIREMENTS FOR GROUNDWATER SOURCES**

### **§ 109.1301. Scope.**

Beginning December 1, 2009, this subchapter applies to all public water systems that use groundwater excluding those systems that combine all of their groundwater with EITHER surface water or with groundwater under the direct influence of surface water prior to treatment under § 109.202(c)(1) (relating to State MCLs, MRDLs, and treatment technique requirements). For the purpose of this subchapter, “groundwater system” is defined as any public water system meeting this applicability statement including systems obtaining finished groundwater from another supplier.

### **§ 109.1302. Treatment technique requirements.**

(a) *Community groundwater systems.* Community groundwater systems are required to provide continuous disinfection under § 109.202(c)(2) (relating to state MCLs, MRDLs and treatment technique requirements) and in addition shall:

(1) Comply with triggered monitoring requirements under § 109.1303 (relating to triggered monitoring requirements for groundwater sources) until beginning compliance monitoring under paragraph (5).

(2) Maintain at each groundwater entry point a residual disinfectant concentration no less than [0.4] 0.40 mg/L expressed as free chlorine or its equivalent as approved by the Department, or other minimum residual [specified] APPROVED by the Department AS DEMONSTRATED UNDER § 109.1306 (RELATING TO INFORMATION DESCRIBING 4-LOG TREATMENT AND COMPLIANCE MONITORING) TO PROVIDE 4-LOG TREATMENT OF VIRUSES.

(3) Demonstrate how at least 4-log treatment of viruses will be provided by submitting information as required under § 109.1306 (relating to information describing 4-log treatment and compliance monitoring) when directed by the Department or no later than:

- (i) October 1, 2010, for systems serving more than 500 persons.
- (ii) October 1, 2011, for systems serving 100 to 500 persons.

(iii) October 1, 2012, for systems serving less than 100 persons.

(4) Provide at least 4-log treatment of viruses prior to ~~each groundwater entry point~~ **THE FIRST CUSTOMER** when directed by the Department or no later than:

(iv) ~~[January]~~ **APRIL** 1, 2011, for systems serving more than 500 persons.

(v) ~~[January]~~ **APRIL** 1, 2012, for systems serving 100 to 500 persons.

(vi) ~~[January]~~ **APRIL** 1, 2013, for systems serving less than 100 persons.

(vii) A Department-approved alternative compliance schedule.

(5) Conduct compliance monitoring as described in § 109.1305 (relating to compliance monitoring) when directed by the Department following notification of approval by the Department that at least 4-log treatment of viruses has been demonstrated for a groundwater source or sources.

(6) Provide at least 4-log treatment of viruses for new sources permitted after December 1, 2009, and conduct compliance monitoring as described in § 109.1305 beginning the first day the ~~entry point~~ **SOURCE** is put into service.

(b) *Noncommunity groundwater systems including bottled water and vended water systems, retail water facilities and bulk water hauling systems.*

(1) Noncommunity groundwater systems may demonstrate at least 4-log treatment of viruses is provided prior to ~~a groundwater entry point~~ **THE FIRST CUSTOMER** by submitting information as required under § 109.1306. Systems demonstrating at least 4-log treatment of viruses under this paragraph shall:

(i) ~~Conduct~~ **COMPLY WITH** compliance monitoring ~~as described in~~ **REQUIREMENTS UNDER** § 109.1305 when directed by the Department following notification of approval by the Department that at least 4-log treatment of viruses has been demonstrated for a groundwater source or sources.

(ii) Comply with triggered monitoring requirements under § 109.1303 until beginning compliance monitoring under subparagraph (i).

(2) Noncommunity groundwater systems not demonstrating at least 4-log treatment to the Department shall:

(i) Comply with triggered monitoring requirements under § 109.1303.

(ii) Comply with the requirements of assessment source water monitoring as described in § 109.1304 (relating to assessment source water monitoring) if the Department determines a groundwater source is at risk to fecal contamination. The Department will consider any factors that identify sources at risk to fecal contamination, including one or more of the following:

(A) Sensitivity of the source aquifer to fecal contamination.

(B) Proximity to sources of fecal contamination.

(C) Microbiological sampling history.

(c) *Groundwater systems with significant deficiencies or source water E. coli contamination.*

(1) A groundwater system with a significant deficiency or an *E. coli*-positive groundwater source sample collected under § 109.505 (3), § 109.1303(a) or § 109.1304(a) (relating to requirements for noncommunity water systems; triggered monitoring requirements for groundwater sources; and assessment source water monitoring) shall correct all significant deficiencies and, if directed by the Department, shall implement one or more of the following corrective actions:

- (i) Provide an alternative source of water.
- (ii) Eliminate the source of contamination.
- (iii) Submit information required under § 109.1306 and provide treatment that reliably achieves at least 4-log treatment of viruses before ~~for all~~ the first customer for the groundwater source or sources **AND COMPLY WITH COMPLIANCE MONITORING REQUIREMENTS UNDER § 109.1305.**

(2) A groundwater system with a significant deficiency or an *E. coli*-positive groundwater source sample collected under § 109.1303(a) or § 109.1304(a) will receive one of the following forms of notification:

- (i) Written notice from the Department of a significant deficiency.
- (ii) Notification from a laboratory under § 109.810(b) (relating to reporting and notification requirements) that a groundwater source sample collected under § 109.1303(a) or § 109.1304(a) was found to be *E. coli*-positive.
- (iii) Direction from the Department that an *E. coli* positive **SAMPLE** collected under § 109.1303(a) requires corrective action.

(3) Within 30 days of receiving initial notification under paragraph (2), the groundwater system shall consult with the Department regarding the appropriate corrective action unless the Department directs the groundwater system to implement a specific corrective action.

(4) Within 120 days of receiving initial notification under paragraph (2), or earlier if directed by the Department, the groundwater system shall **CORRECT ALL SIGNIFICANT DEFICIENCIES IF APPLICABLE AND SHALL** either:

- (i) Have completed corrective action in accordance with applicable Department plan review processes or other Department guidance or direction, if any, including Department-specified interim measures.
- (ii) Be in compliance with a Department-approved corrective action plan and schedule subject to the following conditions:

(A) ~~{The Department must also approve}~~ **THE GROUNDWATER SYSTEM SHALL REQUEST AND OBTAIN APPROVAL FROM THE DEPARTMENT FOR** any subsequent modifications to a Department-approved corrective action plan and schedule.

(B) If the Department specifies interim measures for protection of the public health pending Department approval of the corrective action plan and schedule or pending completion of the corrective action plan, the system shall comply with these interim measures as well as with any schedule specified by the Department.

**§ 109.1303. Triggered monitoring requirements for groundwater sources.**

(a) Groundwater systems not required to conduct compliance monitoring under § 109.1302 (relating treatment technique requirements), of one or more groundwater sources shall collect a source water sample ~~for E. coli~~ within 24 hours of notification of a total coliform-positive **ROUTINE** sample collected under § 109.301(3)(I) (relating to general monitoring requirements) **AND HAVE IT ANALYZED FOR THE PRESENCE OF E. COLI**. The system shall collect a sample from each groundwater source that is not provided with ~~at least~~ **DEPARTMENT-APPROVED** 4-log treatment of viruses and is connected to the distribution system from which the total coliform-positive sample was collected.

(b) The Department may extend the 24-hour time limit **UNDER SUBSECTION (a)** to a maximum of 72 hours if the system adequately demonstrates a logistical problem outside the system's control in having the source sample or samples analyzed within 30 hours of collection. A logistical problem outside the system's control may include a coliform-positive sample result received over a holiday or weekend in which the services of a Department-accredited laboratory are not available within the prescribed sample holding time.

(c) Systems that obtain written approval from the Department **PRIOR TO RECEIVING NOTIFICATION OF A TOTAL COLIFORM-POSITIVE ROUTINE SAMPLE COLLECTED UNDER § 109.301(3)(1)** may conduct monitoring **UNDER SUBSECTION (a)** at one or more sources within the groundwater system that are representative of multiple sources used by that system ~~and draw water from the same hydrogeologic setting~~. **THE DEPARTMENT WILL CONSIDER ANY FACTORS THAT IDENTIFY SOURCES AS REPRESENTATIVE OF MULTIPLE SOURCES INCLUDING ONE OR MORE OF THE FOLLOWING:**

- (1) **THE SOURCES DRAW WATER FROM THE SAME HYDROGEOLOGIC SETTING.**
- (2) **MULTIPLE DISTRIBUTION SYSTEMS WHERE NO INTERCONNECTION EXISTS ARE SUPPLIED BY SEPARATE SOURCES.**

(d) A groundwater source sample **REQUIRED UNDER SUBSECTION (a)** shall be collected at a location prior to any treatment.

(e) A public water system obtaining finished groundwater from another public water system shall notify the supplying system or systems within 24 hours of being notified of a total coliform-positive sample collected under § 109.301(3)(i).

(f) **PRIOR TO EXPIRATION OF THE 24 HOUR DEADLINE UNDER SUBSECTION (a), SOURCE WATER MONITORING REQUIREMENTS ARE NOT REQUIRED WHEN ONE OF THE FOLLOWING APPLY:**

- (1) **THE DEPARTMENT DETERMINES AND NOTIFIES THE PUBLIC WATER SYSTEM THAT A TOTAL COLIFORM-POSITIVE ROUTINE SAMPLE COLLECTED UNDER § 109.301(3)(i) IS CAUSED BY A DISTRIBUTION SYSTEM DEFICIENCY.**

- (2) **THE TOTAL COLIFORM-POSITIVE RESULT HAS BEEN INVALIDATED BY THE DEPARTMENT UNDER § 109.301(3)(iii).**

**{(f)} (g)** The following apply to an invalidation of an *E. coli* sample for groundwater source sampling:

- (1) The Department may invalidate an *E. coli*-positive groundwater source sample collected under this section if:
  - (i) The system provides the Department with written notice from the laboratory that improper sample analysis occurred.
  - (ii) The Department determines and documents in writing that there is substantial evidence that the *E. coli*-positive groundwater source sample is not related to source water quality.
- (2) If the Department invalidates an *E. coli*-positive groundwater source sample, the groundwater system shall collect a replacement source water sample under subsection (a) within 24 hours of being notified by the Department of its invalidation decision and have the replacement sample analyzed for *E. coli*. The Department may extend the 24-hour time limit on a case-by-case basis to 72 hours.

**{(g)} (h)** For an *E. coli*-positive source water sample collected under subsection (a) that is not invalidated under subsection **{(f)} (g)**:

- (1) The Department may require a groundwater system to perform a corrective action as described under § 109.1302(c) (relating to treatment technique requirements).
- (2) If the Department does not require corrective action under § 109.1302(c), the system shall collect five additional source water samples from the same source within 24 hours of being notified of the *E. coli*-positive sample. If one of the additional samples collected under this paragraph is *E. coli*-positive, the groundwater system shall perform a corrective action as described under § 109.1302(c).
- (3) The system shall comply with Tier 1 public notification requirements under § 109.408 (relating to Tier 1 public notice – form, manner and frequency of notice).

**{(h)} (i)** Systems providing water to another public water system receiving notification under subsection (e) shall comply with subsection (a).

#### **§ 109.1304. Assessment source water monitoring.**

(a) To enable the Department to determine if a groundwater system is using A ~~fecally-contaminated~~ groundwater source **WITH FECAL CONTAMINATION**, the Department may require a groundwater system to conduct monitoring for *E. coli*. If directed by the Department **TO CONDUCT MONITORING UNDER THIS SECTION**, a water supplier shall:

(1) Collect a total of 12 samples from each groundwater source, ~~unless the system obtains written approval from the Department to conduct monitoring at one or more sources within the groundwater system that are representative of multiple sources used by that system and draw water from the same hydrogeologic setting~~.

**(i) THE SYSTEM MAY OBTAIN WRITTEN APPROVAL FROM THE DEPARTMENT TO CONDUCT MONITORING AT ONE OR MORE SOURCES WITHIN THE GROUNDWATER SYSTEM THAT ARE**

**REPRESENTATIVE OF MULTIPLE SOURCES USED BY THE SYSTEM.**  
**THE DEPARTMENT WILL CONSIDER ANY FACTORS THAT IDENTIFY**  
**SOURCES AS REPRESENTATIVE OF MULTIPLE SOURCES DRAWING**  
**WATER FROM THE SAME HYDROGEOLOGIC SETTING.**

- {(i)} (ii) For sources providing water to the public 12 months out of the year, groundwater systems shall collect one sample during each month.
- {(iii)} (iii) For sources providing water to the public for less than 12 months out of the year, groundwater systems shall collect 12 samples evenly distributed over the operational period.

{(iv)} (iv) samples collected under § 109.1303(3)(a) (relating to triggered monitoring requirement for groundwater sources) may be used to satisfy the requirements of this subsection, **IF APPROVED BY THE DEPARTMENT.**

{(v)} (v) If a groundwater system obtains an *E. coli*-positive groundwater source sample, the groundwater system shall perform a corrective action as described under § 109.1302(c) (relating to treatment technique requirements).

{(vi)} (vi) The groundwater system may discontinue assessment source water monitoring if the system demonstrates they provide at least 4-log treatment of viruses under § 109.1302(b)(1) or if directed by the Department.

- (2) Collect groundwater source samples at a location prior to any treatment of the groundwater source.

~~{(3) Collect a replacement groundwater source sample within 24 hours of being notified by the Department of its decision to invalidate a sample as established under § 109.301(3)(vi) (relating to general monitoring requirements) and have the replacement sample analyzed for *E. coli*.}~~

- (b) The following apply to an invalidation of an *E. coli* sample for groundwater source sampling:

- (1) A groundwater system may obtain a Department invalidation of an *E. coli*-positive groundwater source sample collected under this section as follows:
- (i) The system provides the Department with written notice from the laboratory that improper sample analysis occurred.
  - (ii) The Department determines and documents in writing that there is substantial evidence that the *E. coli* positive groundwater source sample is not related to source water quality.
- (2) If the Department invalidates an *E. coli* positive groundwater source sample, the groundwater system shall collect a replacement source water sample under subsection (a) within 24 hours of being notified by the Department of its invalidation decision and have the replacement sample analyzed for *E. coli*. The Department may extend the 24-hour time limit on a case-by-case basis to 72 hours.

**§ 109.1305. Compliance monitoring.**

(a) *Chemical disinfection.* Groundwater systems demonstrating at least 4-log treatment of viruses using chemical disinfection shall monitor for and maintain the Department-[determined] APPROVED residual disinfection concentration every day the system serves the public from the groundwater source.

(1) A groundwater system serving greater than 3,300 PEOPLE shall:

- (i) Continuously monitor the residual disinfectant concentration at the entry point or other location approved by the Department and record the results at least every 15 minutes each day that water from the groundwater source is served to the public.
- (ii) Maintain the Department-[determined] APPROVED minimum residual disinfectant concentration every day the public water system serves water from the groundwater source to the public.
- (iii) Conduct grab sampling every 4 hours until the continuous monitoring equipment is returned to service if there is a failure in the continuous monitoring equipment. The system shall resume continuous residual disinfectant monitoring within 14 days.

(2) A groundwater system serving 3,300 or fewer people shall comply with one of the following subparagraphs:

- (i) The groundwater system shall maintain the Department-[determined] APPROVED minimum residual disinfectant concentration every day the public water system serves water from the groundwater source to the public. The groundwater system shall take a daily grab sample at the entry point OR OTHER LOCATION APPROVED BY THE DEPARTMENT during the hour of peak flow or at any other time specified by the Department. If any daily grab sample measurement falls below the Department-[determined] APPROVED minimum residual disinfectant concentration, the groundwater system shall take follow up samples every 4 hours until the residual disinfectant concentration is restored to the Department-[determined] APPROVED minimum level.
- (ii) Monitor the disinfectant residual concentration continuously and meet the requirements of paragraph (1).

(b) ~~Membrane filtration. Groundwater systems demonstrating at least 4-log treatment of viruses using membrane filtration shall monitor the membrane filtration process in accordance with all Department-specified monitoring requirements and operate the membrane filtration in accordance with all Department-specified compliance requirements. A groundwater system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when the following conditions are met:~~

- ~~(1) The membrane has an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses.~~
- ~~(2) The membrane process is operated in accordance with Department-specified compliance requirements.~~

**(3) The integrity of the membrane is intact.**

**(e)** Alternative treatment. Groundwater systems demonstrating at least 4-log treatment of viruses using a Department-approved alternative treatment method, including a combination of treatment methods shall:

- (1) Monitor the alternative treatment in accordance with all Department-approved monitoring requirements.
- (2) Operate the alternative treatment in accordance with all compliance requirements that the Department determines to be necessary to achieve at least 4-log treatment of viruses.

**§ 109.1306. Information describing 4-log treatment and compliance monitoring.**

**(a) COMMUNITY WATER SYSTEMS, NONCOMMUNITY WATER SYSTEMS WHICH HOLD A VALID OPERATION PERMIT UNDER § 109.504 (RELATING TO PUBLIC WATER SYSTEM OPERATION PERMITS) AND BOTTLED WATER AND VENDED WATER SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS WHICH HOLD A VALID PERMIT UNDER § 109.1005 (RELATING TO PERMIT REQUIREMENTS) {Systems} demonstrating at least 4-log treatment of viruses under § 109.1302 (relating to treatment technique requirements) shall submit information in writing on forms provided by the Department and may include plans, specifications, engineer's report, water quality analyses and other data, information or documentation reasonably necessary to enable the Department to evaluate:**

- (1) Treatment effectiveness.
- (2) The methodology the system will use to comply with § 109.1305 (relating to compliance monitoring).

**(b) A NONCOMMUNITY WATER SYSTEM NOT COVERED UNDER SUBSECTION (a) DEMONSTRATING AT LEAST 4-LOG TREATMENT OF VIRUSES UNDER § 109.1302 (RELATING TO TREATMENT TECHNIQUE REQUIREMENTS) SHALL:**

- (1) FILE AN AMENDMENT TO THE SYSTEM DESCRIPTION AS DESCRIBED UNDER § 109.505(a)(2)(ii) (RELATING TO REQUIREMENTS FOR NONCOMMUNITY WATER SYSTEMS).**
- (2) SUBMIT AN APPLICATION FOR A NONCOMMUNITY WATER SYSTEM 4-LOG TREATMENT OF GROUNDWATER SOURCES PERMIT. THE APPLICATION SHALL BE SUBMITTED IN WRITING ON FORMS PROVIDED BY THE DEPARTMENT.**
- (3) SUBMIT PLANS, SPECIFICATIONS, ENGINEER'S REPORT, WATER QUALITY ANALYSES AND OTHER DATA, INFORMATION OR DOCUMENTATION REASONABLY NECESSARY TO ENABLE THE DEPARTMENT TO DETERMINE COMPLIANCE WITH THE ACT AND THIS CHAPTER. THE DEPARTMENT WILL MAKE AVAILABLE TO THE APPLICANT THE "PUBLIC WATER SUPPLY MANUAL", AVAILABLE FROM THE BUREAU OF WATER STANDARDS AND FACILITY REGULATION, POST OFFICE BOX 8774, HARRISBURG, PENNSYLVANIA 17105 WHICH**

**CONTAINS ACCEPTABLE DESIGN STANDARDS AND TECHNICAL  
GUIDANCE. WATER QUALITY ANALYSES SHALL BE CONDUCTED BY A  
LABORATORY ACCREDITED UNDER THIS CHAPTER.**

**{(b)} {c) {Plans, specifications and engineer's report.}}** Plans, specifications and engineer's reports ~~shall~~ **MUST** comply with the following:

- (1) The drawings, specifications and engineer's report shall be prepared by or under the supervision of a professional engineer registered to practice in this Commonwealth or in the state in which the public water system is located.
- (2) The front cover or flyleaf of each set of drawings, of each copy of the engineer's report, and of each copy of specifications ~~shall~~ **MUST** bear the signature and imprint of the seal of the registered engineer. Drawings must bear an imprint or a legible facsimile of the seal.

**§ 109.1307. System management responsibilities.**

- (a) *Reporting.* Groundwater systems shall comply with the following requirements and otherwise comply with § 109.701 (relating to reporting and recordkeeping):
- (1) A groundwater system conducting compliance monitoring under § 109.1305 (relating to compliance monitoring):
    - (i) Shall report to the Department, for each entry point **OR OTHER  
DEPARTMENT-APPROVED MONITORING LOCATION:**
      - (A) The date, time and lowest ~~residual disinfectant concentration~~ **VALUE** each day **THE RESIDUAL DISINFECTANT CONCENTRATION  
REMAINS EQUAL TO OR GREATER THAN THE DEPARTMENT-  
REQUIRED MINIMUM VALUE ESTABLISHED UNDER § 109.1306  
(RELATING TO INFORMATION DESCRIBING 4-LOG TREATMENT  
AND COMPLIANCE MONITORING).**
      - (B) The **INITIAL** date, **TIME AND VALUE FOR EACH OCCURRENCE  
THAT THE RESIDUAL DISINFECTANT CONCENTRATION IS LESS  
THAN THE DEPARTMENT-REQUIRED MINIMUM, AND THE  
SUBSEQUENT DATE, TIME AND VALUE THAT THE RESIDUAL  
DISINFECTANT CONCENTRATION IS EQUAL TO OR GREATER  
THAN THE REQUIRED MINIMUM** ~~[duration and number of periods each  
day when the residual disinfectant concentration is less than the Department  
established minimum for more than 4 hours].~~

**(C) EACH DATE THE ENTRY POINT IS NOT IN OPERATION.**

- (ii) That experiences a breakdown in treatment shall notify the Department within 1 hour after the water system learns of the violation or the situation and provide public notice in accordance with § 109.408 (relating to Tier 1 public notice—categories, timing and delivery). A breakdown in treatment occurs whenever the system fails to meet, for greater than 4 continuous hours, any Department-specified requirements relating to:

- (A) Minimum residual disinfectant concentration.

(B) ~~Membrane operating criteria or membrane integrity.~~

~~(C)~~ Alternative treatment operating criteria, if operation in accordance with the criteria or requirements is not restored within 4 hours.

(2) After completing any corrective action under § 109.1302(c) (relating to treatment technique requirements), a groundwater system shall notify the Department within 30 days of completion of the corrective action.

(b) *Recordkeeping*. Groundwater systems shall comply with § 109.701 and maintain the following information in its records:

(1) *Corrective actions*. Documentation shall be kept for at least 10 years.

(2) *Notice to the public as required under Subchapter D (relating to public notification)*. Documentation shall be kept for at least 3 years.

(3) *Records of invalidation of E. coli-positive groundwater source samples under §§ 109.1303 (f) and 109.1304 (b)*. Documentation shall be kept for at least 5 years.

(4) *Records of notification to other public water systems*. For a public water system obtaining groundwater from another public water system, documentation of notification to the supplier of total-coliform positive samples that are not invalidated under § 109.301(3)(iii) (relating to general monitoring requirements). Documentation shall be kept for at least 5 years.

(5) *Compliance monitoring*. For systems, including suppliers providing water to another public water system, that are required to perform compliance monitoring under § 109.1305 (relating to compliance monitoring):

(i) Documentation of the records of the Department-specified minimum disinfectant residual shall be kept for at least 10 years.

(ii) Documentation of the records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the Department-prescribed minimum residual disinfectant concentration for more than 4 hours, shall be kept for at least 5 years.

(iii) Documentation of the records of the Department-specified compliance requirements ~~for membrane filtration and of parameters~~ specified by the Department for Department-approved alternative treatment and records of the date and duration of any failure to meet ~~the membrane operating, membrane integrity or~~ alternative treatment operating requirements for more than 4 hours, shall be kept for at least 5 years.

## Appendix A to Subpart L. Long Term 2 Enhanced Surface Water Treatment Rule.

Table 1. CT VALUES (MG•MIN/L) FOR *Cryptosporidium* INACTIVATION BY CHLORINE-DIOXIDE<sup>1</sup>

Log Credit	Water Temperature, °C										
	<=0.5	1	2	3	5	7	10	15	20	25	30
(i) 0.25 .....	159	153	140	128	107	90	69	45	29	19	12
(ii) 0.5 .....	319	305	279	256	214	180	138	89	58	38	24
(iii) 1.0 .....	637	610	558	511	429	360	277	179	116	75	49
(iv) 1.5 .....	956	915	838	767	643	539	415	268	174	113	73
(v) 2.0 .....	1275	1220	1117	1023	858	719	553	357	232	150	98
(vi) 2.5 .....	1594	1525	1396	1278	1072	899	691	447	289	188	122
(vii) 3.0 .....	1912	1830	1675	1534	1286	1079	830	536	347	226	147

<sup>1</sup> Systems may use the equation to determine log credit between the indicated values: Log credit =  $(0.001506 \times (1.09116)^{\text{Temp}}) \times CT$ .

Table 2. CT VALUES (MG•MIN/L) FOR *Cryptosporidium* INACTIVATION BY OZONE<sup>1</sup>

Log Credit	Water Temperature, °C										
	<=0.5	1	2	3	5	7	10	15	20	25	30
(i) 0.25 .....	6.0	5.8	5.2	4.8	4.0	3.3	2.5	1.6	1.0	0.6	0.39
(ii) 0.5 .....	12	12	10	9.5	7.9	6.5	4.9	3.1	2.0	1.2	0.78
(iii) 1.0 .....	24	23	21	19	16	13	9.9	6.2	3.9	2.5	1.6
(iv) 1.5 .....	36	35	31	29	24	20	15	9.3	5.9	3.7	2.4
(v) 2.0 .....	48	46	42	38	32	26	20	12	7.8	4.9	3.1
(vi) 2.5 .....	60	58	52	48	40	33	25	16	9.8	6.2	3.9
(vii) 3.0 .....	72	69	63	57	47	39	30	19	12	7.4	4.7

<sup>1</sup> Systems may use the equation to determine log credit between the indicated values: Log credit =  $(0.0397 \times (1.09757)^{\text{Temp}}) \times CT$ .

Table 3. UV DOSE TABLE FOR *Cryptosporidium*, *Giardia lamblia*, AND VIRUS INACTIVATION CREDIT

Log Credit	<i>Cryptosporidium</i> UV dose (mJ/cm <sup>2</sup> )	<i>Giardia lamblia</i> UV dose (mJ/cm <sup>2</sup> )	Virus UV dose (mJ/cm <sup>2</sup> )
(i) 0.5 .....	1.6	1.5	39
(ii) 1.0 .....	2.5	2.1	58
(iii) 1.5 .....	3.9	3.0	79
(iv) 2.0 .....	5.8	5.2	100
(v) 2.5 .....	8.5	7.7	121
(vi) 3.0 .....	12	11	143
(vii) 3.5 .....	15	15	163
(viii) 4.0 .....	22	22	186

## **Appendix B to Subpart L. Long Term 2 Enhanced Surface Water Treatment Rule.**

### MICROBIAL TOOLBOX SUMMARY TABLE: OPTIONS, TREATMENT CREDITS AND CRITERIA

Toolbox Option	<i>Cryptosporidium</i> treatment credit with design and implementation criteria
<b>Source Protection and Management Toolbox Options</b>	
(1) Watershed control program .....	0.5-log credit for State-approved program comprising required elements, annual program status report to State, and regular watershed survey. Unfiltered systems are not eligible for credit. Specific criteria are in § 109.1204(b).
(2) Alternative source/intake management .....	No prescribed credit. Systems may conduct simultaneous monitoring for treatment bin classification at alternative intake locations or under alternative intake management strategies. Specific criteria are in § 109.1204(b) (c).
<b>Pre Filtration Toolbox Options</b>	
(3) Presedimentation basin with coagulation .....	0.5-log credit during any month that presedimentation basins achieve a monthly mean reduction of 0.5-log or greater in turbidity or alternative State-approved performance criteria. To be eligible, basins must be operated continuously with coagulant addition and all plant flow must pass through basins. Specific criteria are in § 109.1204(d).
(4) Two-stage lime softening.....	0.5-log credit for two-stage softening where chemical addition and hardness precipitation occur in both stages. All plant flow must pass through both stages. Single-stage softening is credited as equivalent to conventional treatment. Specific criteria are in § 109.1204(e).
(5) Bank filtration .....	0.5-log credit for 25-foot setback; 1.0-log credit for 50-foot setback; aquifer must be unconsolidated sand containing at least 10 percent fines; average turbidity in wells must be less than 1 NTU. Systems using wells followed by filtration when conducting source water monitoring must sample the well to determine bin classification and are not eligible for additional credit. Specific criteria are in § 109.1204(f).
<b>Treatment Performance Toolbox Options</b>	
(6) Combined filter performance .....	0.5-log credit for combined filter effluent turbidity less than or equal to 0.15 NTU in at least 95 percent of measurements each month. Specific criteria are in § 109.1204(g).
(7) Individual filter performance .....	0.5-log credit (in addition to 0.5-log combined filter performance credit) if individual filter effluent turbidity is less than or equal to 0.15 NTU in at least 95 percent of samples each month in each filter and is never greater than 0.3 NTU in two consecutive measurements in any filter. Specific criteria are in § 109.1204(h).
(8) Demonstration of performance.....	Credit awarded to unit process or treatment train based on a demonstration to the State with a State- approved protocol. Specific criteria are in § 109.1204(i).
<b>Additional Filtration Toolbox Options</b>	
(9) Bag or cartridge filters (individual filters) .....	Up to 2-log credit based on the removal efficiency demonstrated during challenge testing with a 1.0-log factor of safety. Specific criteria are in § 109.1204(j).
(10) Bag or cartridge filters (in series) .....	Up to 2.5-log credit based on the removal efficiency demonstrated during challenge testing with a 0.5-log factor of safety. Specific criteria are in § 109.1204(j).
(11) Membrane filtration .....	Log credit equivalent to removal efficiency demonstrated in challenge test for device if supported by direct integrity testing. Specific criteria are in § 109.1204(k).
(12) Second stage filtration .....	0.5-log credit for second separate granular media filtration stage if treatment train includes coagulation prior to first filter. Specific criteria are in § 109.1204(l).
(13) Slow sand filters.....	2.5-log credit as a secondary filtration step; 3.0-log credit as a primary filtration process. No prior chlorination for either option. Specific criteria are in 109.1204(m).
<b>Inactivation Toolbox Options</b>	
(14) Chlorine dioxide.....	Log credit based on measured CT in relation to CT table. Specific criteria in §109.1204(o).
(15) Ozone.....	Log credit based on measured CT in relation to CT table. Specific criteria in §109.1204(p).
(16) UV .....	Log credit based on validated UV dose in relation to UV dose table; reactor validation testing required to establish UV dose and associated operating conditions. Specific criteria in §109.1204(q).

## Appendix C to Subpart L. Long Term 2 Enhanced Surface Water Treatment Rule.

### MICROBIAL TOOLBOX REPORTING REQUIREMENTS

Toolbox option	Systems must submit the following information	On the following schedule
(1) Watershed control program (WCP).	(i) Notice of intention to develop a new or continue an existing watershed control program. (ii) Watershed control plan .....  (iii) Annual watershed control program status report .....  (iv) Watershed sanitary survey report .....	No later than two years before the applicable treatment compliance date in § 109.1203 No later than one year before the applicable treatment compliance date in § 109.1203 Every 12 months, beginning one year after the applicable treatment compliance date in § 109.1203 For community water systems, every three years beginning three years after the applicable treatment compliance date in § 109.1203. For noncommunity water systems, every five years beginning five years after the applicable treatment compliance date in § 109.1203.
(2) Alternative source/intake management.	Verification that system has relocated the intake or adopted the intake withdrawal procedure reflected in monitoring results.	No later than the applicable treatment compliance date in § 109.1203.
(3) Presedimentation .....	Monthly verification of the following: (i) Continuous basin operation (ii) Treatment of 100% of the flow (iii) Continuous addition of a coagulant (iv) At least 0.5-log mean reduction of influent turbidity or compliance with alternative State-approved performance criteria.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(4) Two-stage lime softening	Monthly verification of the following: (i) Chemical addition and hardness precipitation occurred in two separate and sequential softening stages prior to filtration (ii) Both stages treated 100% of the plant flow.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in 109.1203.
(5) Bank filtration .....	(i) Initial demonstration of the following: (A) Unconsolidated, predominantly sandy aquifer (B) Setback distance of at least 25 ft. (0.5-log credit) or 50 ft. (1.0-log credit). (ii) If monthly average of daily max turbidity is greater than 1 NTU then system must report result and submit an assessment of the cause.	No later than the applicable treatment compliance date in § 109.1203.
(6) Combined filter performance.	Monthly verification of combined filter effluent (CFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of the 4 hour CFE measurements taken each month.	Report within 30 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(7) Individual filter performance.	Monthly verification of the following: (i) Individual filter effluent (IFE) turbidity levels less than or equal to 0.15 NTU in at least 95 percent of samples each month in each filter (ii) No individual filter greater than 0.3 NTU in two consecutive readings 15 minutes apart.	Monthly reporting within 10 days following the month in which the monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(8) Demonstration of performance.	(i) Results from testing following a State approved protocol. (ii) As required by the State, monthly verification of operation within conditions of State approval for demonstration of performance credit.	No later than the applicable treatment compliance date in § 109.1203.
(9) Bag filters and cartridge filters.	(i) Demonstration that the following criteria are met: (A) Process meets the definition of bag or cartridge filtration; (B) Removal efficiency established through challenge testing that meets criteria in this subpart. (ii) Monthly verification that 100% of plant flow was filtered.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.  No later than the applicable treatment compliance date in § 109.1203.

## **Appendix C to Subpart L. Long Term 2 Enhanced Surface Water Treatment Rule.**

### **MICROBIAL TOOLBOX REPORTING REQUIREMENTS — Continued**

Toolbox option	Systems must submit the following information	On the following schedule
(10) Membrane filtration.....	(i) Results of verification testing demonstrating the following: (A) Removal efficiency established through challenge testing that meets criteria in this subpart; (B) Integrity test method and parameters, including resolution, sensitivity, test frequency, control limits, and associated baseline.  (ii) Monthly report summarizing the following: (A) All direct integrity tests above the control limit; (B) If applicable, any turbidity or alternative state-approved indirect integrity monitoring results triggering direct integrity testing and the corrective action that was taken.	No later than the applicable treatment compliance date in § 109.1203.  Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(11) Second stage filtration ..	Monthly verification that 100% of flow was filtered through both stages and that first stage was preceded by coagulation step.	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(12) Slow sand filtration (as secondary filter).	Monthly verification that both a slow sand filter and a preceding separate stage of filtration treated 100% of flow from subpart H sources..	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(13) Chlorine dioxide .....	Summary of CT values for each day as described in §141.720.¶	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(14) Ozone .....	Summary of CT values for each day as described in §141.720.¶	Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.
(15) UV.....	(i) Validation test results demonstrating operating conditions that achieve required UV dose.  (ii) Monthly report summarizing the percentage of water entering the distribution system that was not treated by UV reactors operating within validated conditions for the required dose as specified in 141.720(d).¶	No later than the applicable treatment compliance date in § 109.1203.  Within 10 days following the month in which monitoring was conducted, beginning on the applicable treatment compliance date in § 109.1203.

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**COMMENT AND RESPONSE DOCUMENT**  
for the

**STAGE 2 DISINFECTANTS/DISINFECTION BYPRODUCTS RULE (Stage 2 DBPR),  
LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE (LT2ESWTR)  
and the GROUNDWATER RULE (GWR)**

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## STAGE 2 DISINFECTANTS/DISINFECTION BYRPODUCTS RULE COMMENTS AND RESPONSES

### **1. Comment:**

109.1 Definition of consecutive water system - Existing definition is less stringent than federal definition of consecutive system, because it does not include PWS that obtain some, not all, water from wholesaler. Please also note that 109.701 references consecutive system rather than consecutive water system. (1)

#### **Response:**

Although Pennsylvania's definition of "consecutive water system" differs from EPA's definition of "consecutive system," Pennsylvania's regulations are more stringent. Pennsylvania's definition of "consecutive water system" was created as part of the Phase II/V rulemaking in 1992 so that systems purchasing only some of their water would still be required to monitor IOCs, VOCs, & SOCs (and now Radionuclides) at any entry point supplied by water from non-purchased sources. The difference between the federal definition of "consecutive system" and the Chapter 109 definition of "consecutive water system" was raised *and resolved* during the recent General Update rulemaking package. To change this definition would have detrimental consequences outside the scope of this rulemaking. Under Chapter 109 regulations, a system that purchases some of its water but also has its own sources is regulated as an independent public water system that must meet all the requirements of Chapter 109 regulations. These systems are included in the definition of a "combined distribution system" and would be part of the requirements of the Stage 2 DBPR. Additionally, consecutive water systems in Pennsylvania are required to conduct DBP monitoring under the existing Stage 1 DBPR. Therefore, Pennsylvania DEP's regulations are at least as stringent as the federal provisions.

### **2. Comment:**

The following treatment technique requirements need to be added: 40 CFR 141.2 definitions of GAC10 and GAC20, 40 CFR 141.64(a)(2), 40 CFR 141.64(b)(1)(ii), 40 CFR 141.64(b)(2)(ii - ii). (1)

#### *Supplemented comment:*

The 40 CFR Section 141.2 definitions of GAC10 and GAC20 when related to BAT brought to our attention an issue concerning the adoption by reference in Chapter 109 of BAT. While BAT is defined in Chapter 109, this term is not used in the chapter except for its use in the definition of "innovative technology." Because we have not been able to find BAT used elsewhere in Chapter 109, we are concerned that the adoption by reference of the term might not be effective. Since there are numerous technologies defined as BAT in 40 CFR Part 141, it is highly recommended that Chapter 109 explicitly adopt by reference those best available technologies as defined in the federal regulations. We recognize that this comment was more appropriate for the recently proposed Variance and Exemption revisions to Chapter 109. Therefore, if at all possible, we encourage Pennsylvania to capture this incorporation by reference as those regulations are finalized. The need for such a clear statement is applicable to many parameters and the corresponding BATs under the drinking water regulations, and not solely the Stage 2 Disinfectants/Disinfection By-products Rule. (1)

**Response:**

These definitions have been added to the final rulemaking. In addition, DEP will clarify the adoption by reference of best available technologies as defined in the federal regulations.

**3. Comment:**

109.301(8)(ii)(A) – Cross references to vacated sections 141.12 and 141.30 need to be removed. (1)

**Response:**

These cross references have been corrected.

**4. Comment:**

109.301(8)(vi) – The proposed regulation should be changed to cross reference to paragraphs (i -v) instead of (i – iv). (1)

**Response:**

These changes have been made as recommended.

**5. Comment:**

109.301(12)(i) – The proposed regulation does not clearly specify that Stage 1 MCL requirements are applicable only until the Stage 2 effective dates, as described by the last sentence of 141.64 (b)(1)(i). (1)

**Response:**

DEP incorporates the MCL's by reference under § 109.202. For more clarity, a subclause was added under § 109.301(12)(ii)(A)(III) to read: "All systems monitoring under this paragraph must comply with requirements of subparagraph (i) until the dates specified in this subparagraph."

**6. Comment:**

109.301(12)(i)(B)(I)(-c-) – The proposed regulation, when compared to 141.132(b)(1)(iii), should refer to disinfection byproduct precursors as listed in subparagraph (v) not subparagraph (ii) for Stage 2 DBP monitoring. (1)

**Response:**

These changes have been made as recommended.

**7. Comment:**

109.301(12)(ii)(B)(I) – The last sentence of the proposed regulation is confusing as to which monitoring plan that it refers. The federal regulation refers to the Stage 1 monitoring plan. (1)

**Response:**

The federal regulation refers to the Stage 1 monitoring plan *as it is updated by the Stage 2 provisions*. DEP is referring to the Stage 2 monitoring plan. The following italicized text was added to the subclause to clarify this:

“... shall monitor at the locations and dates identified in its ***Stage 2 DBP Rule*** monitoring plan following the schedule in ...”

**8. Comment:**

109.301(12)(ii)(B)(III) – The proposed state regulation does not include the Stage 2 DBP Rule correction of 141.621(a)(2) as proposed in the Nov. 14, 2008 Federal Register. The correction states that “ground water systems serving 500-9,999 people on annual monitoring must take dual sample sets at each monitoring location.” (1)

**Response:**

EPA published the correction after the DEP proposed Stage 2 DBPR was approved by the EQB. The correction has been incorporated in the final rulemaking in § 109.301(12)(ii)(B)(III).

**9. Comment:**

The proposed regulation 109.301(12)(ii)(D)(IV) seems as if it should be included in paragraph C not D as it relates to reduced monitoring. (1)

**Response:**

Subclause § 109.301(12)(ii)(D)(IV) was reformatted for clarity and moved to § 109.301(12)(ii)(C)(VII).

**10. Comment:**

The federal regulations include specific references to Stage 1 and Stage 2 analytical methods and minimum reporting levels in 141.131 which could be incorporated by reference into 109.304(a) by referencing all analytical methods as listed in 40 CFR 141. (1)

**Response:**

§ 109.304(a) already incorporates EPA-approved analytical methods.

**11. Comment:**

109.701(a)(9) – The proposed regulation is not clear as to specifically whether RAA or LRAA are to be reported. The proposed regulation also does not differentiate how the RAA and RAA reporting process will change after the Stage 2 effective date. (1)

**Response:**

Under 40 CFR 141.629(a)(3), States have the option to perform calculations and determine compliance for water systems and whether the system is eligible for reduced monitoring. DEP has chosen to calculate LRAA values and determine compliance for water systems in Pennsylvania. Therefore, systems are only required to report the results of analyses conducted, not the RAA and

LRAA calculations. As a result, the text in § 109.701(a)(9) will be deleted from the final rulemaking. RAA and LRAA calculations will be available in DEP's data system, PADWIS.

**12. Comment:**

The proposed regulation does not include the source water TOC reporting requirements of 141.629(a)(2) similar to the other disinfection byproduct reporting requirements in 109.701(a)(9). (1)

**Response:**

Under 40 CFR 141.134(d), States have the option to perform calculations and determine compliance for water systems and whether the system is eligible for reduced monitoring. DEP has chosen to calculate DBP precursor removal requirements as well as the RAA values and determine compliance for water systems in Pennsylvania. Therefore, systems are only required to report the results of analyses conducted, not the compliance calculations. As a result, the text in § 109.701(a)(9) and § 109.701(a)(10) will be deleted from the final rulemaking. Again, RAA calculations will be available in PADWIS.

**13. Comment:**

109.701(g)(2)(ii)(A) – The proposed regulation should not refer to “this subpart” but should refer to 109.301(12)(ii)(A). (1)

**Response:**

The change has been made as follows: “The monitoring plan must contain the elements in subclauses (I)-(III) and be completed no later than the date systems conduct their initial monitoring under § 109.301(12)(ii)(A)”.

**14. Comment:**

141.622(a)(2) has a statement “If you have more subpart L (Stage 1) monitoring locations than required for subpart V (Stage 2) compliance monitoring in § 141.605(b).” The corresponding statement in the proposed version of 109.701(g)(2)(ii)(B) is confusing because it does not describe or cross reference the monitoring locations as Stage 1 and 2. (1)

**Response:**

The change has been made as recommended. Text has been added to clarify the Stage 1 DBPR locations from the Stage 2 DBPR locations.

**15. Comment:**

109.701(g)(2)(iii)(C)(II) – The proposed regulation cross reference about schedule needs to be changed from subclause (I) to paragraph (B). (1)

**Response:**

The change has been made as follows: “The request to limit the scope of the evaluation does not extend the schedule in clause (B) for submitting the written report”.

**16. Comment:**

141.131(b)(2)(iii) requires specific quantitative results required for performance evaluations. These requirements are not included in the drinking water chapter 109 or performance test regulations 252.501. (1)

**Response:**

Currently, DEP's Bureau of Laboratories (BoL) enforces proficiency testing requirements through PA's Lab Accreditation Program. Proficiency testing requirements are specified in BoL's policy, entitled: *Proficiency Testing (PT) Guidance for Laboratories*. The policy is available on BoL's website at [http://www.depweb.state.pa.us/labs/lib/labs/g006\\_pt\\_guidance\\_for\\_laboratories\\_rev\\_1.pdf](http://www.depweb.state.pa.us/labs/lib/labs/g006_pt_guidance_for_laboratories_rev_1.pdf). The policy incorporates the requirements under 40 CFR Part 141. BoL is in the process of revising their Chapter 252 regulations. For clarity, DEP will add the incorporation by reference to BoL's proposed rulemaking.

**17. Comment:**

A few changes to citations in the regulatory crosswalk were identified. (1)

**Response:**

Thank you for the comment. The crosswalk is not part of the proposed rulemaking and does not affect the regulatory language. It was provided to assist EPA with their review of the proposed rulemaking. Any necessary edits will be made before the final crosswalk is submitted to EPA.

**18. Comment:**

In the proposed rule preamble, the description of Operational Evaluation Level should define OEL as the sum of the two previous quarters' results plus two times the current quarter result. (1)

**Response:**

Thank you for the comment. The explanation for the operational evaluation level has been edited.

**19. Comment:**

In the preamble introduction on page 7055, "Disinfection byproduct" and "disinfectant byproduct" are used interchangeably. It would be preferable to be consistent with terminology. "Disinfection byproduct" has been the conventional term to-date. (2)

**Response:**

Thank you for the comment. The acronym DBP, defined as "disinfection byproduct" is used in the Order for the final rulemaking.

**20. Comment:**

On page 7055, under D. Background and Purpose, some statements should be corrected. Health effects from DBPs have not been established conclusively. Federal regulations are designed to reduce potential risks from DBPs. Language about health effects in the State rule should not extend

certainty to such risks. The second sentence in the first paragraph of this section (...DBPs, which pose health risks at certain levels.) should be modified accordingly (...DBPs, which **may** pose health risks at certain levels.)

On page 7056, a sentence in the sixth paragraph of this section needs correction (... accomplish an overall reduction in health risks due to both pathogens and D/DBPs). The tenth paragraph in this section has a typographical error (*chloromine.*) (2)

**Response:**

Thank you for the comments. The language in the Order for the final rulemaking has been edited.

**21. Comment:**

On page 7058, the explanation under item 15 for operational evaluation level calculation is incorrect (see fourth paragraph of explanation.) It should read "... plus two times the current quarter's TTHM or HAAs result." (2)

Also on page 7058, the amendments will affect CWSs and NTNCWSs (not NTHCWSs). How were State-level benefits and compliance costs derived? Are these analyses public record? Where can PWD get a copy? (2)

**Response:**

Thank you for the comment. The explanation for the operational evaluation level has been edited.

State level benefits were derived using EPA analysis of national costs. The derivation of state costs are explained in the Regulatory Analysis Form which is published in the IRRC website for public records. <http://www.irrc.state.pa.us/Regulations/RegInfo.cfm?IRRCNo=2736>

**22. Comment:**

On page 7066, under (iii) Operational Evaluation Levels, (B), the subclause requirement that written OEL reports must be made available to the public upon request has the potential to present security concerns given the additional subclause (g)(2)(iii)(C) requirement that the evaluation must specifically include examination of storage tank operations, excess storage capacity, distribution system flushing, etc. Some of the relevant operational information may be considered sensitive by water utilities. PWD suggests that "if the water system has security concerns about supplying information about specific operations, then the OEL shall contain general information and specific operational details shall be provided to the Department under separate submittal, marked confidential due to security concern, and referenced to the appropriate section of the OEL. The confidential document shall not be shared with the public". (2)

**Response:**

DEP agrees that some of the information resulting from an operational evaluation may be considered sensitive. Although both federal and state regulations require that the operational evaluation consist of specific elements, the report need only certify that the evaluation was conducted as required and summarize the results of the evaluation. Details of an evaluation may be kept on file and reviewed by DEP staff as needed during an inspection.

### **23. Comment**

General - Possible conflict with existing regulation; Protection of the public health, safety and welfare; Economic impact.

In the Preamble, the EQB states: The draft proposed amendments were submitted for review to the Small Water Systems Technical Assistance Center Advisory Board (TAC) for review and discussion on November 15, 2007. The TAC Board noted that the revisions are required for the Department to receive primacy and are not more stringent than the Federal rule. The TAC Board approved the proposed revisions in a letter dated December 12, 2007.

Additionally, the EQB approved this proposed regulation on August 19, 2008.

However, the Environmental Protection Agency (EPA) filed comments on this regulation and a clarification of its comments, both dated January 20, 2009. The EPA cited what it characterized as concerns related to six “major changes,” ten “minor changes” and “other changes” to the existing regulation. In light of the EPA concerns, the final-form regulation should include an explanation of how these EPA concerns were addressed and a summary of the communications the EQB had with the EPA to make sure Pennsylvania will maintain primacy with the implementation of the final-form regulation. (3)

#### **Response**

All EPA comments have been addressed as noted in the responses to Comments 1 – 18.

### **24. Comment:**

Section 109.701. Reporting and recordkeeping. - Protection of the public health, safety and welfare; Clarity.

There are three discrepancies in this section between the regulatory package submitted by the EQB on November 24, 2008, and the publication in the December 20, 2008 edition of the *PA Bulletin*. First, Subparagraph (a)(8)(ii) is missing a bracket, and therefore, it is unclear what language the EQB proposes to delete. Second, Paragraph (a)(9) in the *PA Bulletin* has a missing bracket, as it appears that the EQB intended to delete (9) in its entirety and renumber (10) to (9). Finally, in Paragraph (a)(10) in the *PA Bulletin*, the word “precursors” should not be shown in bold type.

These discrepancies may have caused confusion and impacted public comment. Ideally, a correction would have been published in the *PA Bulletin* before the close of the public comment period. Since the opportunity for that correction has passed, the EQB should make efforts to ensure that the regulated community is both aware of the discrepancies and has had the opportunity to address any concerns before the final-form regulation is submitted. (3)

#### **Response:**

The DEP was advised that there is no need to print a Correction Notice to rectify the errors, as they are not significant (given the complexity of the regulations) and they can easily be addressed in the final rulemaking. These changes have been included in the Annex for the final rulemaking to fix inadvertent publication errors.

**25. Comment:**

The City of Philadelphia commented that the requirement to make written reports of operational evaluation levels available to the public under clauses 109.701(g)(2)(iii)(B) and (C) could present security concerns. These reports are required to include “an examination of system treatment and distribution operational practices, including storage tank operations....changes in sources....” *See* § 109.701(g)(2)(iii)(C). The EQB should explain how it considered security concerns in relation to this requirement and how the requirement will not make information available to the public that could be used for nefarious purposes. (3)

**Response:**

Please see the response to comment #22.

## LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE COMMENTS AND RESPONSES

### **26. Comment**

Based on our review of the proposed rulemaking, EPA believes that the proposed regulation is no less stringent than the Federal Long-Term 2 Enhanced Surface Water Treatment Rule. While EPA provides these initial comments to be helpful and provide clarity, EPA continues to retain its authority for primacy program approval related to the proposed rule and looks forward to Pennsylvania's formal submission of a request for revision of the Commonwealth's primacy program in accordance with 40 CFR Section 142.12. (1)

#### **Response:**

DEP appreciates the commentator's support.

### **27. Comment:**

The following two statements are referenced by page number.

“The higher the *Cryptosporidium* oocyst concentration of the source water, the higher the bin classification” (page 7035 under D. Background and Purpose)

“Beginning January 1, 2002, public water suppliers serving 10,000 or more people shall provide at least 99% removal of *Cryptosporidium* oocysts” (page 7042 under 109.202(1))

If Pennsylvania's Department of Environmental Protection wishes to develop clearer and concise wording to help direct the better application of the LT2, then everywhere “*Cryptosporidium* oocysts” occurs it should read “viable and human-infective *Cryptosporidium* oocysts.” This language would be a much more accurate statement as to what is being controlled by the LT2. It is known today that watersheds contain non-viable as well as non-human infective oocysts and these are not the intent for LT2 control. For example, if a **watershed control program** found sources of oocysts that were non-human infective and was able to reduce the influx of human-infective oocysts, then that would be an effective control. The control of non-human infective oocysts would provide no true health benefit. Microbial source tracking and *Cryptosporidium* genotyping are techniques being used to enhance watershed controls and their uses are advancing quickly. PCR technology is widely available today for water utility laboratories. This regulation should encourage the further development of such tools by leaving open their application to demonstrate effective source controls. The recommended adjustment in wording above would facilitate this purpose. (2)

#### **Response:**

Thank you for your comment. DEP must incorporate treatment techniques and analytical methods that are at least as stringent as the federal LT2ESWTR. Only the EPA administrator can approve analytical methods for determining *Cryptosporidium* oocyst concentrations.

EPA recognized the limitations in the best available technology for identifying *Cryptosporidium* oocysts. The text below is an excerpt from EPA's published methods for *Cryptosporidium* analysis.

## **Method 1622 *Cryptosporidium* and Method 1623 *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/FA**

### **1.0 Scope and Application**

**1.2** This method is designed to meet the survey and monitoring requirements of the U.S. Environmental Protection Agency (EPA). It is based on laboratory testing of recommendations by a panel of experts convened by EPA. The panel was charged with recommending an improved protocol for recovery and detection of protozoa that could be tested and implemented with minimal additional research.

**1.3** This method identifies the genera, *Cryptosporidium* or *Giardia*, but not the species. The method cannot determine the host species of origin, nor can it determine the viability or infectivity of detected oocysts and cysts.

For a complete explanation, please reference EPA's guidance manuals (both dated December 2005) using the links provided:

Method 1622 EPA-815-R-05-001: [EPA Method 1622 \(December 2005\) \(PDF\)](#)

Method 1623 EPA-815-R-05-002: [EPA Method 1623 \(December 2005\) \(PDF\)](#)

This issue was also addressed in *J. (2)(c) Summary of Major comments, relating to Cryptosporidium Methods*. Page 724 of the federal LT2ESWTR Preamble states,

"Public comment on the August 11, 2003 proposed LT2ESWTR supported approval of the revised versions of Methods 1622 and 1623, which today's rule establishes for source water *Cryptosporidium* monitoring. EPA also received comment regarding the lack of viability and infectivity information with these methods and requirements for analyzing QC samples. Several commentators were concerned that Methods 1622 and 1623 do not indicate whether a *Cryptosporidium* oocyst is viable and infectious. While EPA recognizes that these methods do not provide information on *Cryptosporidium* infectivity, EPA's analysis indicates that they can perform effectively for identifying those PWSs that should provide additional *Cryptosporidium* treatment (USEPA 2005a). This analysis is based on the actual performance of these methods in the ICRSS. Further, EPA and the M-DBP Advisory Committee, which recommended Methods 1622 and 1623, accounted for this lack of information on infectivity when designing the *Cryptosporidium* treatment bins in today's rule. EPA has not identified any feasible methods for quantifying *Cryptosporidium* infectivity in a national monitoring program."

EPA conducts a 6-year review of all regulations to determine whether changes are needed to improve the effectiveness of the rules. These changes often include new analytical methods. DEP supports your ongoing research efforts to determine the viability and source of *Cryptosporidium* oocysts, and would encourage you to submit your data to EPA to better inform their review process.

### **28. Comment:**

On page 7037, 109.1202 refers to the continuing use of *E. coli* to determine vulnerability to *Cryptosporidium* oocysts. Again under page 7044, 109.1202 the direction is given to larger systems to monitor for *Cryptosporidium* oocysts, turbidity and *E. coli*.

A paper presented (and found in the proceedings) at the recent AWWA Water Quality Technology Conference by E. Nieminski et al., (Is Monitoring for *E. coli* a Good Surrogate for *Cryptosporidium* occurrence in water?) found from analyzing actual data, as would be collected under the LT2, that there was a poor correlation between *E. coli* and *Cryptosporidium* oocysts. The authors state that,

"The analyses indicate that elevated concentration of *E. coli* would not be indicative of the presence of *Cryptosporidium* in surface water." Both turbidity and *E. coli* were found to be poor surrogates. Note that the authors include utility staff, *Cryptosporidium* experts and Utah State representatives which eliminates the potential for bias.

While we recognize the difficulty with small systems monitoring for *Cryptosporidium* oocysts, we also recognize the need to be up-to-date, and technically and scientifically sound and accurate in the published regulations. The EPA's hope that there would be a correlation has not been shown in recent studies. (2)

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The Philadelphia Water Department submitted comments noting research indicating "a poor correlation between *E. coli* and *Cryptosporidium* oocysts." The research raises concerns relating to the options provided by this proposed regulation for monitoring *Cryptosporidium* levels in small public water systems. We recognize that this option is provided by the federal regulations, and it gives smaller systems a less expensive alternative for monitoring *Cryptosporidium*. However, if it is not an effective tool for screening for possible threats from *Cryptosporidium*, this raises questions concerning the need for and costs of tests that do not necessarily produce reliable results. Doubts over reliability also raise public health concerns. We recommend that the Board and Department of Environmental Protection work closely with the U.S. Environmental Protection Agency in reviewing all the scientific data and bases for using *E. coli* tests as screening tool for *Cryptosporidium*. (3)

**Response:**

As indicated in Comment #27 above, DEP must incorporate the federal treatment techniques and EPA-approved methods for required drinking water monitoring. DEP can be no less stringent than the federal LT2ESWTR.

EPA recognizes the limitations of using *E. coli* as an indicator of, or surrogate for, *Cryptosporidium*. However, EPA believes that low levels of *E. coli* may also indicate low levels of *Cryptosporidium*. Pg 668 of the federal LT2ESWTR Preamble states:

**"Indicator Monitoring"**

Due to the relatively high cost of analyzing samples for *Cryptosporidium*, the Advisory Committee and EPA investigated indicators that are less costly to analyze to determine if any could be used in place of *Cryptosporidium* monitoring. No indicators were identified that correlated strongly with *Cryptosporidium* and could fully substitute for *Cryptosporidium* monitoring for determining treatment bin classifications. **However, this investigation did identify an indicator, *E. coli*, that can be used to identify some of the water sources that are unlikely to exceed a *Cryptosporidium* level of 0.075 oocysts/L—the level at which filtered PWSs must provide additional treatment under the LT2ESWTR.**

Data from the ICR and ICRSS were used in the investigation of indicators. With these data, *E. coli* performed the best in identifying sources with low *Cryptosporidium* levels. In addition, analyzing plants separately based on source water type was necessary due to a different relationship between *E. coli* and *Cryptosporidium* in reservoir/lake sources compared to flowing stream sources."

DEP addresses incorporating alternatives in § 109.1202(a)(5) and discussed the additional language in the preamble for Pennsylvania's LT2ESWTR.

§ 109.1202(a)(5) For filtered systems serving fewer than 10,000 people, the Department may approve monitoring for an indicator other than *E. coli* under paragraph (a)(3). The Department also may approve an alternative to the *E. coli* concentration in subparagraph (a)(4)(i), (ii) or (iv)

to trigger *Cryptosporidium* monitoring. The Department added the following language “*This approval by the Department would be based on EPA-supported research indicating the validity of an alternative to E. coli.*”

The italicized language is necessary because the decision to approve an alternative to *E. coli* should be based on substantial national research.

**References:**

Part 1 of federal LT2 ESWTR Preamble

**29. Comment:**

The definition of “plant intake” on page 7041 under 109.1 Definitions needs more review. The definition limits “intake” to the “head of a conduit.” PWD has one intake on the Delaware River that is not the head of a conduit. The definition could be modified to “head of a conduit entering a water treatment or the location where a source water enters a physical structure that is part of a treatment plant”. (2)

**Response:**

Thank you for the comment. DEP realizes there are subtle differences in the design of intake structures. Those differences would be too numerous to capture in a concise definition. Pennsylvania’s proposed LT2ESWTR will allow for the differences of intake structures through the review and approval of the sampling plans. The definition is from the federal LT2ESWTR. Pennsylvania’s definition can be no less stringent.

**30. Comment:**

The definition for “Significant Deficiency” on page 7042 under 109.1 Definitions also needs more review. The definition states, “A defect in design, operation or maintenance, or a failure or malfunction of the sources, treatment, storage or distribution system that the Department determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.”

A more appropriate definition might be: “A significant defect in design, or a significant failure in operation or maintenance within the treatment, storage or distribution systems of a water supply that the Department determines to be causing, or has the potential for causing, the introduction of contamination of public health concern into the water delivered to consumers.”

Source water (sources) should not fall within significant deficiency. If the source becomes contaminated, and the treatment plant cannot treat that source water to current standards, then the defect is in the design of treatment to handle the contamination. A water source cannot malfunction. Also, contamination should be that which would be of public health concern that applies to the ESWTR or the LT2ESWTR. (2)

**Response:**

Thank you for the comment. The definition of significant deficiency was developed from EPA requirements promulgated under LT2ESWTR. Page 728 of the LT2ESWTR preamble, subsection *L. Requirements for Sanitary Surveys Conducted by EPA* describes significant deficiencies, including a failure or malfunction of the sources as follows:

#### *L. Requirements for Sanitary Surveys Conducted by EPA*

##### **1. Today's Rule**

Today's final rule establishes requirements for PWSs to respond to significant deficiencies identified in sanitary surveys that EPA conducts. These requirements give EPA authority equivalent to that exercised by States under existing regulations to ensure that PWSs address significant deficiencies.

- For sanitary surveys conducted by EPA under SDWA section 1445 or other authority, PWSs must respond in writing to significant deficiencies outlined in sanitary survey reports no later than 45 days after receipt of the report, indicating how and on what schedule the PWS will address significant deficiencies noted in the survey.
- PWSs must correct significant deficiencies identified in sanitary survey reports according to the schedule approved by EPA, or if there is no approved schedule, according to the schedule the PWS reported if such deficiencies are within the control of the PWS.
- A sanitary survey, as conducted by EPA, is an onsite review of the water source (identifying sources of contamination by using results of source water assessments where available), facilities, equipment, operation, maintenance, and monitoring compliance of a PWS to evaluate the adequacy of the PWS, its sources and operations, and the distribution of safe drinking water. **A significant deficiency includes a defect in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that EPA determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.**

As established under the existing primacy agreement, PA DEP must conduct sanitary surveys for public water systems. The Interim Enhanced Surface Water Treatment Rule (IESWTR) required that sanitary surveys include significant deficiencies. The PA DEP proposed definition is not just limited to the LT2ESWTR. The definition also has broad applicability covering all rules requiring a sanitary survey, such as the GWR and the IESWTR. PA DEP can be no less stringent than the federal rule in determining a significant deficiency. More details about significant deficiencies will be provided in guidance.

#### References:

##### Part 2 of federal LT2ESWTR Preamble

Guidance Manual for Conducting Sanitary Surveys of Public Water Systems; Surface Water and Ground Water Under the Direct Influence (GWUDI). USEPA, 1999. EPA 815-R-99-016.  
(<http://www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf>)

#### **31. Comment:**

The proposed rulemaking states that systems are to "Begin the second round of source water monitoring no later than the month beginning April 1, 2015" (page 7045). The rulemaking does not state how soon a water system may begin the second round of monitoring. PWD has already submitted its first round and bin determinations, and can begin second round monitoring well in advance of 2015. PWD would like this regulation to provide an acceptable early start date for this monitoring. Suggested language might be (Begin the second round of source water monitoring between .....and .....and no later than the month beginning April 1, 2015." (2)

**Response:**

Thank you for the comment. The intent is for a six year term of separation between first and second rounds of monitoring. EPA's intent was to begin the second round of monitoring six years after the initial bin classification was made. Additionally, the preamble suggests monitoring and sampling responsibilities based on the potential of regulatory update driven by analytical method or risk assessment change.

Please reference the following sections of the federal LT2ESWTR Preamble below which states:

*Pg 667 - "Second round of monitoring."*

PWSs must begin a second round of source water monitoring beginning six years after initial bin classification (see compliance dates in section IV.G). If EPA does not modify LT2ESWTR requirements by issuing a new regulation prior to the second round of monitoring, PWSs must carry out this monitoring according to the requirements that apply to the initial round of source water monitoring. PWSs will then be reclassified in LT2ESWTR treatment bins based on the second-round monitoring result. However, if EPA changes the LT2ESWTR treatment bin structure to reflect a new analytical method or new risk information, PWSs will undergo a risk characterization in accordance with the revised rule."

*Pg 671 - "Second round of monitoring."*

A more rigorous reassessment of the source water occurs through a second round of monitoring that begins six years after initial bin classification. If EPA does not develop and finalize modifications to the LT2ESWTR prior to the date when PWSs must begin the second round of monitoring, then this second round must conform to the same requirements that applied to the initial round of monitoring."

DEP agrees for the need to clarify how soon a system may begin the second round of monitoring. Since PA DEP can be no less stringent than the federal LT2ESWTR; we will clarify § 109.1202(c) to read, "Begin the second round of source water monitoring at least 6 years after submitting the initial bin classification but no later than the month beginning..." (schedule 1-4 deadline date for bin submission).

**32. Comment:**

Finally, for Bin classification, the DEP should allow for calculations of Bins using the fullest of data sets available, rather than a data set over a specific period of time (24 months). It is important that water systems collect a certain minimum number of spaced samples. But there should be no limit to water systems that have an extensive data set that more accurately reflects the occurrences in their watersheds. Smaller data sets can be misleading with regards to long term occurrence. PWD strongly recommends that this regulation enforce the 24 months minimum standard but consider allowing more than 24 months of data, as long as minimum samples per month are achieved. (2)

**Response:**

Thank you for your comment. The monitoring period of 24 months is consistent with EPA language in the federal LT2ESWTR. DEP cannot be less stringent than federal requirements so we cannot extend the sample period beyond the 24-months specified in the regulations. DEP will enforce the 24-month minimum standard. Those systems that operate year-round and fail to monitor for the full 24-month period will receive monitoring violations. However, DEP encourages systems to collect more than the minimum 24 samples during the sample period. The LT2ESWTR allows for

additional samples that are collected within the 24-month sample period to be used in the bin classification calculation.

From page 668 of the federal LT2ESWTR Preamble:

"Today's rule does not allow bin classification based on fewer samples (except in the case of PWSs operating only part of the year) as this would involve unacceptably high false positive or false negative rates and would, therefore, be an inappropriate basis to determine *Cryptosporidium* treatment requirements. EPA believes, though, that PWSs should have the choice to collect more than 24 samples to further improve the accuracy of bin classification, and today's rule allows this. In regard to the time frame for LT2ESWTR monitoring, the Agency considered the trade-off between monitoring over a long period to better capture temporal fluctuations and the desire to prescribe additional treatment quickly to PWSs with higher *Cryptosporidium* levels. Today's rule requires large PWSs to evaluate their source water *Cryptosporidium* levels using two years of monitoring. This will account for some degree of yearly variability, without significantly delaying additional public health protection where needed."

### 33. Comment:

On page 7048 of the proposed rulemaking, under (h) *Increased Watershed Contamination*, the language is very general and does not provide any criteria for determining how PADEP will conduct a source water assessment, evaluate source water long term changes, and determine if increased watershed contamination has occurred. This very general language is of great concern because it implies that PADEP could impose new microbiological sampling and analysis requirements and possibly require higher level treatment requirements prior to the next round of *Cryptosporidium* sampling in 2015 without real criteria for making that determination. PWD recommends that, at the least, the language might be changed to state that "If the Department scientifically determines during a sanitary survey or source water assessment that a permanent and significant increase in contamination has occurred in a watershed, the Department will consult with the water system, and if necessary, require additional source water monitoring or implementation of additional toolbox credits." (2)

#### Response:

EPA's *The Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) Implementation Guidance*, EPA 816-R-07-006, August 2007, **Section 4.4.2 Assessment of Significant Changes in Watershed and Source Water** indicates that all states are required to submit criteria of how to determine and address in detail. References cited are the EPA *Guidance for Conducting Sanitary Surveys of Public Water Systems; Surface Water and Ground Water Under the Direct Influence (GWUDI)*, EPA 815-R-99-016, April 1999, (<http://www.epa.gov/safewater/mdbp/pdf/sansurv/sansurv.pdf>). That guidance provides the criteria in **Section 3.1 Source (Protection, Physical Components, and Condition)**; how to determine the potential for increased watershed contamination.

PA is in the process of developing guidance detailing the criteria.

### 34. Comment:

The proposed rulemaking states that water systems may request toolbox credits over or above the bin requirements established by the *Cryptosporidium* oocyst monitoring. In other words, water systems might apply for extra credits because the system can achieve those credits. When a toolbox credit is considered a requirement and the water system submits toolbox credits to comply with that

requirement, if the water system does not comply during a monthly reporting period, a violation of the treatment technique has occurred. However, if extra credits have been submitted and approved, and the water system does not comply with one toolbox credit but complies overall with the credits needed to meet the bin classification, then a treatment technique violation has not occurred.

For example, a water system is in Bin 2 and is required to get 1 log of additional credit. The system applied for and receives 1.5 logs of credit for combined filter effluent, individual filter effluent, and source water protection. For a given month, the system does not meet the criteria for individual filter effluent. Does the PADEP issue a notice of violation for the treatment technique requirement even though 1 log credit is maintained? Since PADEP notice of violations are available to the public and may require direct public notification, this is an important issue to address. PWD recommends that PADEP provide some language in the proposed rulemaking which addresses this concern. (2)

**Response:**

The LT2ESWTR only states the *minimum* additional log treatment that is required.

- (g) *Failure to meet treatment credit.* Failure by a system in any month to achieve treatment credit by meeting criteria in § 109.1204(b), (c) and (n)-(q) for microbial toolbox options that is **at least equal to the level of treatment required in subsection (e)** is a violation of the treatment technique requirement.

Pennsylvania will allow for any amount of additional log credit beyond the minimum required that a system chooses to implement. PA DEP will only be ensuring that the minimum additional log credit needed for a system's bin requirement is met. As long as the minimum additional log treatment requirements for the system's filtration type (conventional, direct, slow sand or DE and alternative) are met each month, the system is in compliance with the treatment technique. PA DEP will clarify this in guidance.

**35. Comment:**

The Philadelphia Water Department (PWD) has developed, conducted, and improved a source water protection program for over a decade which targets *Cryptosporidium* control as well as the control of other sources of potential contamination to our watersheds. This program has resulted in the reduction of microbiological contaminants entering our source waters, dramatically increased public awareness about source water protection, improved the use of best management practices in all source watersheds, fostered continuing partnerships with water, wastewater, and industry in the watershed, led to detection of watershed contamination problems, established and maintains an early warning system for the Schuylkill and Delaware Rivers, and fosters research to identify, track, understand, and mitigate microbiological contamination within our watersheds.

The Philadelphia Water Department recommends the Pennsylvania Department of Environmental Protection give water suppliers primary credit for the Watershed Control Program toolbox item instead of the additional credit proposed. PWD's recommendation is consistent with the scientific basis of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2), the basis of PADEP's Source Water Protection Program, and the multiple barrier concept in water treatment and supply.

The LT2 is based on endemic risk (1 in 10,000 average annual risk of infection) and not epidemic risk. The existing ESWTR addressed epidemic risk in the filtration requirements. The binning process of the LT2 is set up to determine the log removal requirements based on an average *Cryptosporidium* concentration over time. Although this average concentration includes episodic conditions, spills, accidents, and wet weather events in the risk estimate, the intent of the LT2 is to

address endemic risk. All of PADEP's arguments against primary credit are based on epidemic concerns which are not the basis of the LT2ESWTR.

As stated by the PADEP's staff and the Source Water Protection Program, a source water protection program results in heightened awareness, better communication, and quicker response to upstream events and spills as well as long term planning for the reduction of baseline risk. Unfortunately, the PADEP'S proposed rule takes away the incentive that water utilities need to gain support for Watershed Control Programs. This decision could have a long term impact. Water utilities who are not implementing a program have no incentive to implement one and are at greater risk of both endemic and epidemic conditions. Water utilities that have a program have incentive to downsize or eliminate it.

Removing incentives for watershed control programs places these programs at risk. PWD has been, through its watershed control program, pursuing reductions in source water contamination regionally and has been investing in microbial source tracking and *Cryptosporidium* genotyping. PWD has been promoting best management practices such as riparian buffers and has developed a watershed-wide network focused on reducing sources of pathogens. It is well recognized within the drinking water community that these efforts will produce long term reductions in both average and peak occurrences of waterborne pathogens.

Therefore, PWD suggests that the PADEP reconsider its proposed rule on the basis that primary credit for a Watershed Control Program is supported by good engineering and scientific principles, existing long term PADEP programs, and industry practices to reduce endemic *Cryptosporidium* illness and risk. (2)

#### **Response:**

DEP applauds and supports Philadelphia Water Department's efforts in implementing a watershed control program. However, DEP has some concerns with approving a watershed control plan toolbox credit as a stand-alone credit option. As stated in the preamble to the proposed rulemaking Pennsylvania's LT2ESWTR:

*“§ 109.1204 (b) Watershed control program. Systems receive 0.5-log *Cryptosporidium* treatment credit for implementing a watershed control program that meets the requirements. This credit may not be used to maintain the additional log removal credits specified in § 109.1203 (relating to bin classification and treatment technique requirements). This credit may only be applied in addition to the toolbox options used to meet the minimum log removal and may apply in lieu of a toolbox option for which credit has been temporarily revoked.*

The above italicized text is more stringent than federal language. It is necessary to avoid imposition of treatment technique violations upon water systems due to events which they have no control over. The watershed control program option is different than other toolbox options in that it relates to efforts undertaken outside of the filter plant operations to reduce *Cryptosporidium* loading entering the filter plant. Additionally, this option focuses on source water protection, as opposed to in-plant treatment and monthly reporting. The Department anticipates that in a scenario where a spill or other contamination of the source water was to occur upstream of the filter plant intake, the watershed control program credit could be revoked. If systems rely on this credit to maintain the minimum *Cryptosporidium* log removal credit, a treatment technique violation would be incurred by the water system through no action of their own. The italicized language encourages source water protection and allows systems to pursue this valuable toolbox option, while preventing situations where systems rely on this option to maintain a monthly treatment technique, thereby avoiding the previously mentioned scenario. The Department anticipates that systems will wish to pursue

additional log removal treatment beyond the minimum required by their bin classification (Bin 2 and greater). It would be wise for systems to do this in order to provide a margin of safety regarding the removal of *Cryptosporidium*."

## **GROUNDWATER RULE COMMENTS AND RESPONSES**

### **36. Comment:**

Section 109.1303(a) should be modified to be consistent with the EPA Groundwater Rule. The revised requirement should state that sampling of water sources is required for a valid total coliform-positive result within 24 hours of determining that the total coliform-positive is not conclusively related to a distribution system deficiency. (4, 5, 6)

### **Response:**

The Department agrees that systems should not be required to analyze triggered source water samples under § 109.1303 when the original total coliform distribution sample is invalidated or when the Department determines that the total coliform-positive was the result of a distribution deficiency.

Under existing regulation, the Department allows for the original total coliform-positive sample to be invalidated when the laboratory which performed the analysis establishes that improper analysis caused the total coliform-positive result [§ 109.301(3)(iii)(A)(I)], when the total coliform-positive result is limited to a single service connection as demonstrated by specific check sampling results [§ 109.301(3)(iii)(A)(II)], or when the Department determines that the positive result does not reflect water quality in the distribution system [§ 109.301(3)(iii)(A)(III)]. These are consistent with EPA's total coliform invalidation requirements under 40 CFR 141.21(c)(1).

The Department intends to add language to § 109.1303 (see below) that will allow the Department to waive triggered source water monitoring when the Department determines, at its discretion, that the original total coliform-positive resulted from a distribution deficiency.

The Department does not agree, however, that the clock for the 24 hour deadline for collecting source water samples begins *after* the system has ruled out sample invalidation or a problem related to the distribution system. The federal rule states in 40 CFR 141.402(a)(2): "A groundwater system must collect, within 24 hours of notification of the total coliform-positive sample, at least one sample from each groundwater source in use at the time the total coliform-positive sample was collected." The clock for the 24 hour deadline, therefore, begins upon notification of the original total coliform-positive result. The federal GWR does not allow for an extension of the triggered source sampling deadline in order to investigate the possibility that the TCR-positive sample was caused by the distribution system. EPA allows only for an extension when a system cannot collect the source water sample due to logistics beyond its control. The Department has confirmed this interpretation of the federal requirements through consultation with EPA. The PA GWR cannot be less stringent than the federal requirements.

The 24-hour deadline provides only a small window of time for the Department to confirm that the original total coliform-positive sample resulted from a distribution problem. For this reason, the Department anticipates that triggered monitoring waivers granted under such circumstances will be rare.

To address this comment, the Department intends to add the following language to § 109.1303 to read:

**"(f) Prior to expiration of the 24 hour deadline under subsection (a) of this section, source water monitoring requirements are not required when:**

- (1) The Department determines and notifies the public water system that a total coliform-positive routine sample collected under § 109.301(3)(i) is caused by a distribution system deficiency, or**
- (2) The total coliform-positive result has been invalidated by the Department under 109.301(3)(iii) (relating to invalidation of total coliform samples)."**

**37. Comment:**

PA DEP should develop a technical guidance document for evaluating total coliform-positive results for public water suppliers with groundwater sources to determine or refute direct relationship to the distribution system, and establishing a communicating decision criteria for source sampling under § 109.1303(a). A workgroup of technical representatives from PA water suppliers with groundwater sources could be utilized to help identify key criteria for the document. (4, 5)

**Response:**

The Department agrees that a comprehensive GWR guidance document is needed, including detailed instructions on how to comply with the triggered monitoring requirements. The Department's guidance writers will seek input from industry experts during drafting and all interested parties will have the opportunity to comment on the document during the publication process.

**38. Comment:**

109.1307 requires Tier 1 public notice when a breakdown in treatment occurs for more than 4 hours, whereas the 40 CFR 141.404(a)(C) and (D) mandate Tier 2 public notice. We recommend that the Department's rule matches the federal requirements and that these incidences do not require a Tier 1 public notice. Treatment systems are prone to malfunction and until the technology improves, it can be expected that numerous ones could occur. Numerous Tier 1 notices can result in customers becoming complacent to the intent of the notices. (6)

**Response:**

The Department agrees that too many Tier 1 notices may desensitize customers and reduce the notices' intended effect. That is why the Department requires Tier 1 PN **ONLY** for those violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure. For example, failure to comply with the treatment technique or MCL for pathogenic bacteria, viruses and protozoan cysts requires the issuance of Tier 1 PN, usually in the form of a "Boil Water Advisory". Pathogenic organisms can make people sick within hours or days. Similarly, a breakdown in key water treatment processes (where the primary purpose of the treatment is to inactivate these same pathogenic organisms) should also require the issuance of Tier 1 PN in order to protect public health. The fact that a breakdown in treatment may have resulted from recurring system malfunctions does not relieve the system of its obligation to keep its customers informed of potential health threats. Systems with difficulty maintaining the required level of treatment should investigate updating their equipment or treatment protocols in order to correct underlying problems.

The Tier 1 PN requirement for a breakdown in 4-log treatment is more stringent than the federal requirement. However, it is consistent with existing requirements in Chapter 109. Specifically, § 109.408(a)(7) requires Tier 1 PN in the event of an "emergency situation as defined by § 109.701(a)(3)(iii) that adversely affects the quality or quantity of the finished water." A failure or significant interruption in key water treatment processes is listed as one of these situations in

§ 109.701(a)(3)(iii)(B). A breakdown in 4-log treatment in a system required to maintain it represents such a failure and Tier 1 PN would be required by existing regulation even if not explicitly included in § 109.1307(a). The PN requirement is included in § 109.1307(a) for clarity.

**39. Comment:**

Minor Clarifications to the Variance and Exemption Requirements in Chapter 109. Based on our review at this time, EPA believes that the proposed regulations are no less stringent than the federal Variance & Exceptions Rule. (1)

**Response:**

The Department appreciates the commentator's support.

**40. Comment:**

CCR Provisions of the Ground Water Rule. EPA believes that Chapter 109 does not require amendments to capture the CCR provisions related to the Ground Water Rule, as these provisions of the federal GWR have been adopted by reference. EPA encourages Pennsylvania to include mention of these CCR requirements in the preamble to the final rule in order to better inform the regulated community. (1)

**Response:**

The Department agrees and thanks EPA for its comment.

**41. Comment:**

Ground Water Rule Provisions. Based on our review at this time, EPA believes that the proposed regulations are no less stringent than the federal Ground Water Rule. (1)

**Response:**

The Department thanks EPA for its comment.

**42. Comment:**

Groundwater systems demonstrating 4-log treatment using chemical disinfection and serving 3,300 or fewer people are required to, among other things, take a daily grab sample during the hour of peak flow. If any daily grab sample measurement falls below the minimum residual disinfectant concentration, the system shall take follow-up samples every 4 hours until the residual disinfectant concentration is restored to the minimum level.

- (a) Small noncommunity water systems (less than 500 people served) will find this requirement onerous since it effectively requires that a certified operator be on-site at all times. The resources required to meet this part of the rule will be burdensome to most small systems such as office buildings, schools, churches, etc. At a time when systems are already struggling to comply with limited resources, this requirement seems unduly strict.
- (b) The requirement for continuous sampling is no less onerous as grab sampling is required if the continuous monitor fails. In addition, the rule is silent on requirements for sampling during calibration or maintenance of the monitor.

(c) 4-log treatment is not a reasonable remedy for small systems. (7)

**Response:**

In general, the GWR is intended to target those noncommunity water systems with confirmed source water fecal contamination documented during triggered monitoring, assessment source water monitoring or other Department oversight. These systems draw from sources that pose a known health threat. The systems will have the option of abandoning the source or providing 4-log treatment. While the Department agrees that some small systems will bear financial and logistical burdens to comply with this rule, the benefit that noncommunity water systems achieve through the prevention of waterborne disease outbreaks far exceeds the cost. In addition to ensuring public health protection, noncommunity water systems realize additional benefits from the proactive measures in this rule, such as avoiding a loss of productivity due to illness, avoiding lost revenue, and avoiding closures due to unsafe water. All of the requirements described above are consistent with the federal GWR. The Department cannot propose regulations that are less stringent than the federal requirements.

**43. Comment:**

Triggered source water monitoring is required when a positive total coliform result is collected. If it is positive for a fecal indicator, the State will require the system to take corrective action or take five additional samples.

Triggered source water monitoring at many small systems is not a simple task. Further, the suggestion that all GWSs should have a sample tap at each source that enables sampling is a costly upgrade for many small systems. Without this tap, it will be difficult to obtain a sample within 24 hours as required. (7)

**Response:**

See the response to Comment #42. The proactive requirements in this rule provide benefits that far out weigh the costs. GWSs should install a sample tap at each source now, in order to avoid potential monitoring violations in the future. While the Department agrees that some small systems will bear financial and logistical burdens to comply with this rule, all of the requirements mentioned by the commentator are components of the federal GWR. The Department cannot propose regulations that are less stringent than the federal requirements.

**44. Comment:**

States have two years to adopt the rule. The rule requires each state to define significant deficiencies for each of the eight sanitary survey elements. Further, the states have until December 31, 2014 to conduct sanitary surveys of noncommunity water systems. However, the requirement to conduct triggered monitoring goes into effect December 1, 2009.

Only those systems with significant deficiencies or documented fecal contamination are required to provide corrective actions. How will the State determine corrective actions (when a positive fecal coliform result is obtained during triggered monitoring) when they have not developed their own rule? If a positive fecal coliform result is obtained before the State rule is finalized, on what basis will the State proceed with corrective actions? How will they determine significant deficiencies when they have not developed the definitions? This rule requires triggered monitoring to be done without a State rule to govern the next steps. (7)

**Response:**

The Department has published proposed revisions to Chapter 109 Safe Drinking Water Regulations to account for the federal GWR. Systems will not be required to comply with the triggered monitoring requirements until December 1, 2009. Barring delays to final publication, Pennsylvania's GWR will be in place before any systems are required to comply with triggered monitoring requirements. In the event that the GWR is delayed, EPA would be responsible for enforcing the federal GWR requirements.

**45. Comment:**

*General. - Fiscal impact; Feasibility; Reasonableness; Clarity.*

*Compliance costs*

We recognize the public benefit and the mandate to meet the Federal Groundwater Rule explained in the Regulatory Analysis Form (RAF) responses to questions 10 and 11. RAF question 13 states that approximately seven million Pennsylvanians served by 9,100 public water supplies will be affected by this regulation. Directly related to the implementation of these benefits are the costs to comply with the requirements. The Board's responses to RAF question 17 state that the Environmental Protection Agency "estimates corrective actions systems must take in response to any significant deficiencies... may be the most costly expenses a system can incur." The Preamble briefly explains a Compliance Assistance Plan involving PENNVEST.

The Board should further explain how the affected systems can meet the costs of the new requirements, whether the resources of PENNVEST are sufficient to meet the financial needs for all systems affected by the regulation and whether any other financial assistance is available for systems that do not qualify for financial assistance from the PENNVEST Program.

*Significant deficiency*

Many sections of this proposed regulation contain the phrase "significant deficiencies" or some derivative of that phrase. The regulation should specifically state, reference or define what constitutes a "significant deficiency." (3)

**Response:**

The Department would like to point out that the most reliable way to meet the costs associated with responding to significant deficiencies is to prevent the deficiencies from occurring in the first place. Many significant deficiencies can be avoided through proper operation and maintenance of water facilities. A definition for *significant deficiency* was included in the LT2ESWTR proposed rulemaking published in the December 20, 2008 *Pennsylvania Bulletin*. A significant deficiency would be classified as what has been traditionally called an "imminent threat or priority violation." Regardless of GWR requirements, the Department historically would require a public water system to correct a deficiency which may cause or has the potential to cause the introduction of contaminants into the water served to consumers.

Currently, PENNVEST is the only resource for financial assistance provided by the Commonwealth.

**46. Comment:**

Section 109.705. *Sanitary surveys.* – *Clarity:* In Paragraph (b)(l), a system can qualify for surveys every five years by accomplishing an “outstanding performance record.” The regulation should specify what a system must do to accomplish an “outstanding performance record.” (3)

**Response:**

Outstanding performance is presented as an option under the Special primacy requirements found in the federal GWR in § 142.16(o)(2)(iii). This subparagraph [§ 142.16(o)(2)(iii)] states:

*“The State may conduct sanitary surveys once every five years for community water systems if the system either provides at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log inactivation and removal) before or at the first customer for all its ground water sources, or if it has an outstanding performance record, as determined by the State and documented in previous sanitary surveys and has no history of total coliform MCL or monitoring violations under § 141.21 of this chapter since the last sanitary survey. In its primacy application, the State must describe how it will determine whether a community water system has an outstanding performance record.”*

Ensuring sanitary surveys are completed per the federal requirements is a responsibility borne by the Department and not public water systems. Upon discussing “outstanding performance” criteria with additional Department staff, the decision has been made to delete any reference to outstanding performance and the possibility for an extended, alternative frequency of scheduled sanitary surveys. The Department feels that the current sanitary survey (full inspection) frequencies ensure a strong presence in the field, and provide more opportunity for technical assistance and outreach.

**47. Comment:**

Section 109.908. *Compliance schedules.* – *Clarity:* Under Subsection (e), in what format will the Department document its findings? (3)

**Response:**

Generally, the Department prefers to negotiate compliance agreements to address non-compliance and ensure Safe Drinking Water Act requirements are met. However, in the event that a variance or exemption is requested, the Department will use forms provided by EPA to document its decision to grant or deny the variance or exemption. Where a variance or exemption has been approved, the Department will formalize the details of the approval (i.e. - the compliance schedule, special conditions for supplying bottled water) in an enforceable document, such as a permit, compliance agreement or order.

**48. Comment:**

Section § 109.1302. *Treatment technique requirements.* – *Reasonableness; Clarity.* Paragraph (a)(2) provides a specific treatment standard of at least 0.4 mg/L, but also allows “its equivalent as approved by the Department, or other minimum, residual specified by the Department.” As written, the regulation does not provide a clear standard. The regulation allows the Department the discretion to specify some other standard that could be higher or lower, and would be done without public or legislative review under the regulatory review process. It could also allow unequal treatment of the regulated community. The regulation should provide a clear standard, and if flexibility is needed, an open, public process to determine an alternative minimum standard. (3)

**Response:**

The Department agrees that § 109.1302(a)(2) should be revised for clarity. The above referenced statement will be revised to state “its equivalent as approved by the Department, or other minimum residual approved by the Department as demonstrated under § 109.1306 (relating to information describing 4-log treatment and compliance monitoring) to provide 4-log treatment of viruses.”

The revised language recognizes that some public water systems may need to maintain a free chlorine residual other than 0.40 mg/L to provide 4-log inactivation of viruses. The language also recognizes that disinfectants or treatment strategies other than chlorination may be used to inactivate viruses from a system’s source water.

**49. Comment:**

Section 109.1303. *Triggered monitoring requirements for groundwater sources: Consistency with federal regulations; Economic impact; Reasonableness.* In the Preamble, the Board explains the implementation of the federal Groundwater Rule in Section 109.1303. Commentators believe that Subsection (a) improperly excludes portions of the federal rule, particularly an exemption available in the federal rule. We request further explanation of how the regulation is consistent with the federal rule. A similar concern applies to Section 109.1307(a)(1)(ii). (3)

**Response:**

Please see the response to Comment #36.

Additionally, as stated in the Preamble, the Department will not allow a system serving fewer than 1000 people to collect a Total Coliform Rule (TCR) repeat sample at the source(s) to satisfy both the sampling requirements of the Groundwater Rule and the TCR. Source water samples cannot be used to make determinations of water quality within the distribution system. All repeat samples required under existing TCR regulations and as required under triggered source water monitoring must be collected with no substitutions permissible.

Please see the response to Comment #38. Also, as stated in the Preamble, § 109.1307(a)(1)(ii) is not consistent with the federal GWR, but in fact is consistent with existing public notification requirements under § 109.408.

**50. Comment:**

Section 109.1307. *System management responsibilities. – Clarity, Reasonableness, Consistency with federal regulations.*

*Tier 1 notice*

A commentator believes that the requirement for Tier 1 notice in Subsection (a) is inconsistent with the Code of Federal Regulations which only requires a Tier 2 notice. The Board should explain how it determined Tier 1 notice is necessary.

*Documentation*

Numerous provisions in Subsection (b) require documentation to be maintained for various timeframes. We have three concerns. First, what specific “documentation” is required? For example, under Paragraph (2), would the actual notice be required in the records, or just documentation that a notice to the public occurred? Second, how did the Board determine how long the records must be kept? Finally, can electronic records be used to meet this requirement? (3)

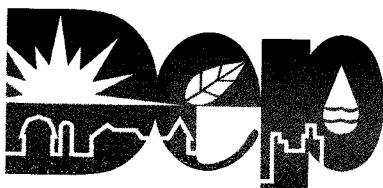
**Response:**

Please see the responses to Comment #38 and #49 regarding Tier 1 public notification under § 109.1307 (a)(1)(ii).

The Department must incorporate recordkeeping requirements that are no less stringent than the federal GWR. The Department's timeframes are consistent with the recordkeeping requirements established in the Code of Federal Regulations under § 141.405(b).

Existing Chapter 109 provisions under Subchapter G specify the reporting and recordkeeping requirements for analytical results and public notices. The requirements include provisions for form and content. For example, water suppliers are required to submit a copy of all public notices, and a certification form, indicating how and when the notice was delivered to consumers. Analytical results may be submitted via paper or in an electronic format. (Note: The Department is nearing completion of a rulemaking that will mandate electronic reporting of all analytical data to improve data quality. Once final, electronic reporting will be phased-in over a two-year period.) Specifics regarding the documentation of corrective actions, as required under § 109.1307, will be included in forthcoming guidance further explaining and clarifying the requirements of the Groundwater Rule.





Pennsylvania Department of Environmental Protection

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P.O. Box 2063

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October 2, 2009

Policy Office

717-783-8727

Kim Kaufman, Executive Director  
Independent Regulatory Review Commission  
333 Market Street, 14th Floor  
Harrisburg, PA 17120

Re: Final-Form Rulemaking – Underground Storage Tank Operators Training Requirements (#7-432);  
Final-Form Rulemaking – Safe Drinking Water Amendments (#7-439)

Dear Mr. Kaufman:

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find enclosed copies of two final-form rulemakings for review and comment by the Independent Regulatory Review Commission (IRRC). The Environmental Quality Board (EQB) approved these is final-form rulemakings at its September 15, 2009, meeting.

The Underground Storage Tank Operators Training Requirements final-form rulemaking amends the current underground storage tank (UST) regulations in 25 Pa Code Chapter 245 to establish comprehensive UST operator training requirements for three distinct classes of UST operators, including Class A, Class B and Class C Operators. The amendments are necessary to meet federal mandates of the U.S. EPA as required by the Energy Policy Act of 2005. Section 1524 of the Energy Policy Act amended Section 9010 of Subtitle I of the Solid Waste Disposal Act. The amendments require that states receiving federal funds under Subtitle I develop state-specific training requirements for UST operators consistent with EPA guidelines. In addition, states must ensure that all three classes of operators are trained according to state-specific training requirements by August 8, 2012. Since Pennsylvania receives funding under Subtitle I, failure to establish an operator training program will jeopardize receipt of future federal funding under Subtitle I for the UST and Leaking UST (cleanup) programs.

The final rulemaking includes specific training requirements for Class A, Class B and Class C Operators. Each class varies depending upon the overall responsibilities of the individual for the operation and maintenance of USTs. The regulations include descriptions of the three classes of operators to be trained, the required training for each, the acceptable forms of training, deadlines for new and existing operators to meet the training requirements, and documentation requirements. The rulemaking will impact nearly 3,500 tank owners in Pennsylvania, including approximately 8,700 UST facilities. Of the tank owners, more than half are major corporations, while the remaining owners are small businesses and government entities. The number of operators to be trained at any particular facility will range from one to several, depending on the size of the facility and hours of operation.





During the public comment period, six commentators provided comments to the Board on the proposed rulemaking, including EPA Region III, Sunoco Inc., FirstEnergy Corp., and IRRC. At final rulemaking, the Department addressed the ambiguity concerning when a manned facility needs to have a Class C operator on site by adding language that relies on current Department of Labor and Industry rules for the supervision of facilities when dispensing fuel for retail sales to the general public. The Department worked with the Storage Tank Advisory Committee during the development and review of the rulemaking, including the review of public comments received on the proposed regulations. The committee voted at its June 9, 2009, meeting to support the rulemaking and urged the Department to submit the regulation to the EQB for consideration as a final-form rulemaking.

The final Safe Drinking Water Amendments amend Chapter 109 to incorporate necessary federal requirements for the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR), the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), and the Groundwater Rule (GWR). The rulemakings are necessary to maintain primary enforcement authority and were presented to the Board as three individually proposed rulemakings on August 19, 2008. To aid in clarifying the breadth of changes proposed to Chapter 109, the Department consolidated the proposed regulations into one comprehensive final rulemaking.

The *Stage 2 DBPR* incorporates federal provisions in order to reduce disease incidence associated with the disinfection byproducts that are formed when public water systems add disinfectants. While DBPs disinfect water by controlling harmful microorganisms, they can react with organic and inorganic matter in the water to form byproducts that pose health risks at certain levels. This rulemaking augments the Stage 1 DBP Rule that was promulgated by the Commonwealth in 2001 by targeting the highest risk monitoring sites where customers are exposed to high levels of DBPs. The amendments will apply to community water systems and nontransient noncommunity water systems that add a primary or residual disinfectant other than ultraviolet light (UV) or deliver water that has been treated with a primary or residual disinfectant other than UV. Three commentators provided comments on the proposed rulemaking, including EPA Region III, the City of Philadelphia, and IRRC. At final rulemaking, the requirement for water suppliers to report compliance values for the Stage 2 DBPR parameters was deleted because the Department already performs these calculations. The requirement was also deleted in order to be consistent with existing policies and reporting requirements of the Department.

The *LT2ESWTR* is proposed to provide further public health protection against *Cryptosporidium* and other microbial pathogens by requiring public water systems to monitor their source water to determine an average *Cryptosporidium* level. *Cryptosporidium* is known to have caused a number of waterborne disease outbreaks in the United States and is highly resistant to chlorine. Based upon monitoring data collected, public water systems will be classified into one of four treatment categories, which will vary depending on the concentration of *Cryptosporidium* in the source water. Those having higher concentration levels will be required to implement a higher degree of additional *Cryptosporidium* treatment beyond existing treatment requirements. In Pennsylvania, approximately 355 public water systems will be impacted by the proposed amendments. During the public comment period, EPA Region III, the City of Philadelphia, and IRRC provided comments. At final rulemaking, the Department has added the requirement that a Tier 1 public notice (PN) is necessary for a LT2ESWTR treatment technique violation resulting from a failure to maintain the required level of treatment for *Cryptosporidium* because the violation constitutes a breakdown in treatment. Existing PN requirements classify a breakdown in treatment as a Tier 1 situation requiring a Tier 1 PN.



The *Groundwater Rule* provides for increased public health protection against fecal contaminants at public water systems served by groundwater sources. Currently, there is no Federal regulation that requires monitoring of groundwater sources or corrective action when fecal contamination is found in groundwater sources. To address this, EPA established the Ground Water Rule as a risk-targeted strategy where ground water systems that are susceptible to fecal contamination would be targeted for regulation, instead of the regulation of all ground water systems. Through this proposal, the Department has incorporated EPA's strategy, whereby systems with sources potentially at risk of fecal contamination that do not provide adequate treatment of viruses must monitor their untreated source water for *E. coli*, if directed by the Department. Systems detecting the presence of *E. coli* in their source water must take corrective action to protect consumers. Six commentators provided comment on the proposal, including Merck and Co., Inc., PPL, the PA Chamber of Business and Industry, Penn State University, EPA Region III and IRRC. At final rulemaking, a provision was added that will not require triggered source water *E. coli* monitoring if the routine coliform samples are invalidated within 24 hours. This provision added at final rulemaking is consistent with federal requirements.

The final rulemaking was presented to the Small Water Systems Technical Assistance Center Advisory Board (TAC) for review and discussion on May 21, 2009. Although the Board supports the revisions made to the final rulemaking, it submitted comments for consideration by the Department, which are provided on the Board's website and available to you upon request.

The Department will provide assistance as necessary to facilitate the Commission's review of these final-form rulemakings under Section 5.1(e) of the Regulatory Review Act. Please contact me at 717-783-8727 if you have any questions or need additional information.

Sincerely,



Michele L. Tate  
Regulatory Coordinator

Enclosures





**COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF POLICY**

**TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO  
THE REGULATORY REVIEW ACT**

I.D. NUMBER: 7-439

SUBJECT: Safe Drinking Water Amendments

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

**TYPE OF REGULATION**

- Proposed Regulation
- Final Regulation
- Final Regulation with Notice of Proposed Rulemaking Omitted
- 120-day Emergency Certification of the Attorney General
- 120-day Emergency Certification of the Governor
- Delivery of Tolled Regulation
  - a.  With Revisions
  - b.  Without Revisions

NOVEMBER 2006  
 INDEPENDENT  
 REGULATORY  
 REVIEW COMMISSION  
 7-439  
 10/2/09  
 REC'D BY

**FILING OF REGULATION**

## DATE

## SIGNATURE

## DESIGNATION

10-2-09

Majority Chair, HOUSE COMMITTEE ON  
ENVIRONMENTAL RESOURCES & ENERGY

10/2/09

Minority Chair, HOUSE COMMITTEE ON  
ENVIRONMENTAL RESOURCES & ENERGY

10-2-09

Majority Chair, SENATE COMMITTEE ON  
ENVIRONMENTAL RESOURCES & ENERGY

10-2-09

Minority Chair, SENATE COMMITTEE ON  
ENVIRONMENTAL RESOURCES & ENERGY

10/2/09

INDEPENDENT REGULATORY REVIEW COMMISSION

ATTORNEY GENERAL (for Final Omitted only)

LEGISLATIVE REFERENCE BUREAU (for Proposed only)

