

**PROPOSED RULEMAKING
ENVIRONMENTAL QUALITY BOARD
[25 PA. CODE CH. 109]
Revised Total Coliform Rule**

The Environmental Quality Board (Board) proposes to amend Chapter 109 (relating to safe drinking water). The amendments will supplement the Total Coliform Rule by requiring public water systems (PWS) that are vulnerable to microbial contamination to perform assessments to identify sanitary defects and subsequently take action to correct them. The amendments will also strengthen water system requirements relating to source water protection, disinfection and filtration.

The amendments include minor clarifications to the Stage 2 Disinfectants/Disinfection Byproducts Rule (Stage 2 DBPR) and Long Term 2 Surface Water Treatment Rule (LT2) in order to obtain primacy. EPA promulgated the Federal Stage 2 DBPR on January 4, 2006, and the Federal LT2 on January 5, 2006. Pennsylvania adopted state regulations implementing the Federal rules on December 26, 2009. Minor clarifications are needed in order to obtain primacy for these rules.

The amendments will protect public health through a multi-barrier approach designed to guard against microbial contamination by ensuring: the protection of public water sources, the adequacy of treatment designed to inactivate and remove microbial pathogens and the integrity of drinking water distribution systems.

Safe drinking water is vital to maintaining healthy and sustainable communities. Proactively avoiding incidents such as waterborne disease outbreaks can prevent loss of life, reduce the incidents of illness, and reduce health care costs. Proper investment in public water system infrastructure and operations helps ensure a continuous supply of safe drinking water; enables communities to plan and build future capacity for economic growth; and ensure their long-term sustainability for years to come.

One or more of the amendments will apply to all PWS.

This proposal was adopted by the Board at its meeting of _____.

A. Effective Date

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final rulemaking. Several provisions are deferred for up to 12 months following promulgation to allow time for capital improvements.

B. Contact Persons

For further information, contact H. Thomas Fridirici, Chief, Division of Operations and Monitoring, P. O. Box 8467, Rachel Carson State Office Building, Harrisburg, PA 17105-8467, (717) 772-4018 or William Cumings, Assistant Counsel, Bureau of Regulatory Counsel, P. O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Information regarding submitting comments on this proposal appears in Section I of this

preamble. Persons with a disability may use the Pennsylvania AT&T Relay Service by calling (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). The proposal is available electronically through the Department of Environmental Protection's (DEP) web site www.depweb.state.pa.us.

C. *Statutory Authority*

The proposed rulemaking is being made under the authority of section 4 of the Pennsylvania Safe Drinking Water Act (SDWA) (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 section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20) which authorizes the Board to promulgate rules and regulations necessary for the performance of the work of the Department.

D. *Background and Purpose*

Revised Total Coliform Rule:

In February 2013, the Environmental Protection Agency (EPA) adopted regulations amending 40 CFR Part 141 to implement a Revised Total Coliform Rule (RTCR). (See 78 FR 10269, February 13, 2013). Minor corrections to the RTCR were published in the *Federal Register* on February 26, 2014. (79 FR 10665). The compliance date for the RTCR is April 1, 2016. In order to maintain primacy with respect to the RTCR, it is imperative that the Department adopt regulations which are at least as stringent as those set forth in the federal regulations.

According to the preamble to the federal RTCR, this rule aims to increase public health protection through the reduction of potential pathways of entry for fecal contamination into the distribution system. Since fecal contamination may contain waterborne pathogens including bacteria, viruses, and parasitic protozoa; a decrease in fecal contamination should reduce the risk from all of these contaminants. In addition, this rule aims for greater public health protection than the 1989 TCR in a cost-effective manner by: maintaining the objectives of the 1989 TCR (i.e., to evaluate the effectiveness of treatment, to determine the integrity of the distribution system, and to signal the possible presence of fecal contamination); using the optimal indicator for the intended objectives (i.e., using total coliforms as an indicator of system operation and condition rather than an immediate public health concern and using *E. coli* as a fecal indicator); and requiring systems that may be vulnerable to contamination, as indicated by the nature of their operation, to have in place procedures that will minimize the incidence of contamination (e.g., requiring start-up procedures for seasonal systems). EPA, therefore, anticipates greater public health protection under the RTCR compared to the 1989 TCR because of the RTCR's more preventive approach to identifying and fixing problems that affect or may affect public health. (78 FR 10272 – 10273).

In addition to the proposed RTCR provisions, other proposed regulatory revisions include amendments relating to source water protection, filtration and disinfection requirements for PWS.

Amendments to Source Water Assessment and Protection Program;

The proposed Source Water Assessment and Protection Program changes will support the protection of public drinking water sources, which will result in maintaining the highest source

water quality available. These revisions will not only protect public health but also help to maintain, reduce or avoid drinking water treatment costs.

Source water protection represents the first barrier to drinking water contamination. A vulnerable drinking water source also puts a water utility and the community it serves at risk and at a disadvantage in planning and building future capacity for economic growth. Contamination of a community water system source is costly for the water supplier and the public. For example, it is estimated that the total cost of the Walkerton, Ontario *E. coli* contamination incident was \$64.5 million (*The Economic Costs of the Walkerton Water Crisis* by John Livernois, 2002). In addition to increased monitoring and treatment costs for the water system, there may be costs associated with containment and/or remediation, legal proceedings, adverse public health and environmental effects, reduced consumer confidence, diminished property values and replacement of the contaminated source.

A Texas A&M study shows that water suppliers in source water areas with chemical contaminants paid \$25 more per gallon to treat drinking water than suppliers in areas with no chemical contaminant detections. The study also showed that for every four percent increase in source water turbidity (an indicator of water quality degradation from sediment, algae and microbial pathogens), treatment costs increase by one percent (Trust for Public Land, 2002). A study by the PA Legislative Budget and Finance Committee (2013) stated, “(r)educing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards. An EPA study of drinking water source protection efforts concluded that every \$1 spent on source-water protection saved an average of \$27 in water treatment costs. Similarly, a study by the Brookings Institute suggested that a 1 percent decrease in sediment loading will lead to a 0.05 percent reduction in water treatment costs.” Findings from the source water assessments can support and enhance emergency response, improve land use planning and municipal decisions, complement sustainable infrastructure initiatives and help prioritize and coordinate actions by federal and state agencies to better protect public health and safety.

The need to understand and update potential threats to public drinking water sources and how to minimize those threats are underscored by the January 2014 chemical spill in West Virginia that impacted the drinking water for 300,000 people. Currently, of the 10.6 million people served by community water systems in Pennsylvania, 7.7 million people are covered by substantially implemented local source water protection programs. Thus, nearly 3 million additional people can benefit from local source water protection efforts.

Amendments to Surface Water Treatment Regulations:

The proposed amendments to surface water treatment regulations will benefit more than 8 million Pennsylvanians who are supplied with water by PWS utilizing filtration technologies. The filtration amendments are designed to identify and correct problems at the plant before a turbidity exceedance occurs or escalates. EPA defines turbidity as “a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (such as whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.” (EPA 816-F-09-004 May 2009). Therefore, PWS that prevent water from exceeding turbidity standards

before it enters the distribution system will help ensure safe and potable water is delivered to all users.

The proposed amendments are intended to reduce the public health risks related to waterborne pathogens and waterborne disease outbreaks. Costs related to waterborne disease outbreaks are extremely high. For example, the total medical costs and productivity losses associated with the 1993 waterborne outbreak of cryptosporidiosis in Milwaukee, Wisconsin was \$96.2 million: \$31.7 million in medical costs and \$64.6 million in productivity losses. The average total cost per person with mild, moderate, and severe illness was \$116, \$475, and \$7,808, respectively according to the following study: Cost of illness in the 1993 Waterborne *Cryptosporidium* outbreak, Milwaukee, Wisconsin. Corso, et al. Emerg Infect Dis [serial online] 2003 April. Available from: URL: <http://wwwnc.cdc.gov/eid/article/9/4/02-0417>.

In 2008, a large *Salmonella* outbreak caused by contamination of the municipal drinking water supply occurred in Alamosa, Colorado. The outbreak's estimated total cost to residents and businesses of Alamosa using a Monte Carlo simulation model (10,000 iterations) was approximately \$1.5 million (range: \$196,677–\$6,002,879), and rose to \$2.6 million (range: \$1,123,471–\$7,792,973) with the inclusion of outbreak response costs to local, state and nongovernmental agencies and City of Alamosa healthcare facilities and schools. This investigation documents the significant economic and health impacts associated with waterborne disease outbreaks and highlights the potential for loss of trust in public water systems following such outbreaks. This information can be found in the following study: Economic and Health Impacts Associated with a *Salmonella* Typhimurium Drinking Water Outbreak—Alamosa, CO, 2008.

When problems do occur at filter plants, such as rapid changes in source water quality, treatment upsets requiring a filter backwash or other unforeseen circumstances, an immediate response from water plant operators is needed. The proposed amendments will ensure that operators are immediately alerted to major treatment problems or if an operator is unable to respond, that a plant will automatically shut down when producing improperly treated water, thereby preventing Tier 1 violations. Preventing Tier 1 violations will protect public health, reduce PWS costs related to issuing public notice, reduce costs to the community and maintain consumer confidence.

Amendments to Disinfectant Residual Requirements in the Distribution System:

The proposed amendments are intended to strengthen the distribution system disinfectant residual treatment technique requirement by increasing the minimum disinfectant residual in the distribution system to 0.30 mg/L free chlorine or 0.50 mg/L total chlorine (for systems that chloramine). The Department's existing disinfectant residual treatment technique requirements for the distribution system have not been substantially updated since 1992 and require the maintenance of a detectable residual (0.02 mg/L). Based on numerous studies and reports that have been published since 2002, these existing requirements may not adequately protect against microbial contamination in the distribution system. Emerging pathogens, such as *Legionella*, an opportunistic pathogen that causes Legionnaires Disease and is associated with potable plumbing systems, create even more challenges for water systems.

According to the Centers for Disease Control and Prevention (CDC), despite advances in water treatment and management, waterborne disease outbreaks continue to occur in the United States. (Figure 1) The outbreaks reported during 2009 – 2010 highlight several emerging and persisting public health challenges associated with drinking water systems. *Legionella* accounted for 58% of outbreaks and is the most frequently reported etiology among drinking water systems. (Figure 2) In addition, the large proportion (78%) of illnesses observed in outbreaks involved distribution system deficiencies. (Figure 3) This data emphasizes the importance of protecting, maintaining and improving the public drinking water distribution system infrastructure because these deficiencies can lead to widespread illness. (CDC. MMWR, September 2013, Vol. 62, No. 35)

Figure 1. Number of waterborne disease outbreaks associated with drinking water (N = 851), by year and etiology – United States, 1971-2010.

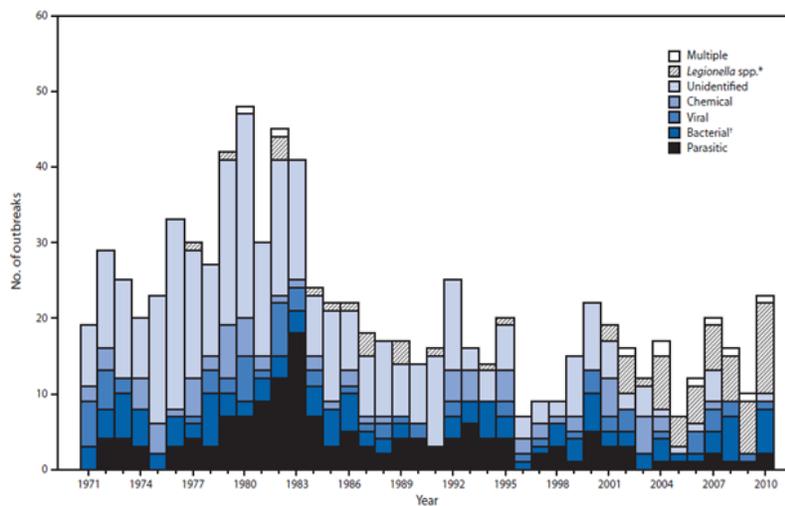


Figure 2. Etiology of Drinking Water Outbreaks (N = 33) and Outbreak-related Cases (N = 1,040), Waterborne Disease and Outbreak Surveillance System, 2009-2010.

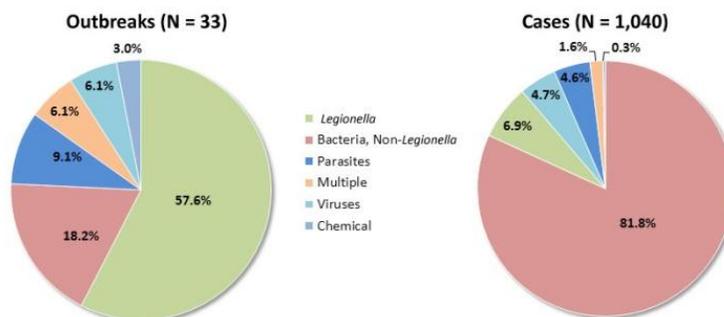
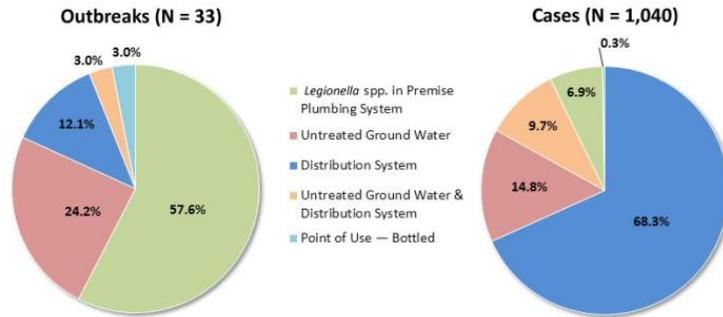
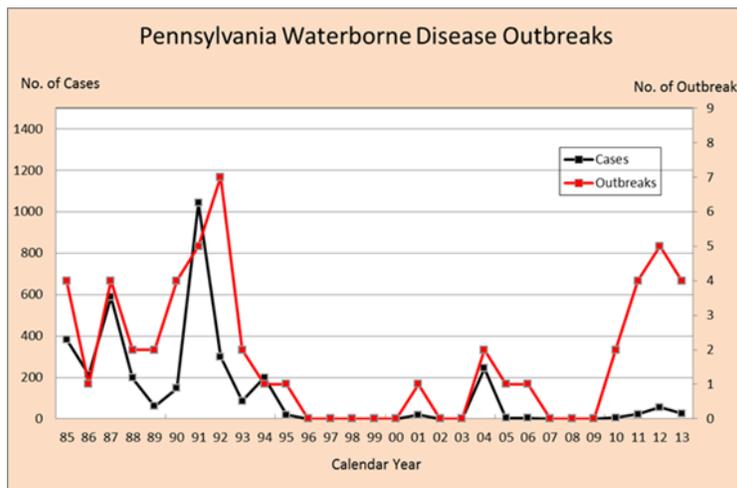


Figure 3. Deficiencies Assigned to Drinking Water Outbreaks (N = 33) and Outbreak-related Cases (N = 1,040), Waterborne Disease and Outbreak Surveillance System, 2009-2010.



Waterborne disease outbreaks in Pennsylvania have followed a similar trend in that all outbreaks since 2010 have been associated with *Legionella* and distribution system deficiencies.

Figure 4. Waterborne Disease Outbreaks in Pennsylvania Associated with Drinking Water, 1985-2013. (Source: Pennsylvania Public Water System Compliance Report - 2013)



There have been a total of 15 *Legionella* outbreaks in Pennsylvania since 2010. The outbreaks occurred at several types of facilities, including personal care homes, apartment buildings, long term care facilities, hotels, condominiums, correctional facilities, recreational parks and hospitals. The outbreaks resulted in 107 cases of illness, 68 hospitalizations, and 7 deaths.

The distribution system is the remaining component of public water supplies yet to be adequately addressed in national efforts to eradicate waterborne disease. This is evident from data indicating that although the number of waterborne disease outbreaks including those attributable to distribution systems is decreasing, the proportion of outbreaks attributable to distribution systems is increasing. (National Research Council (NRC). 2006. Drinking Water Distribution Systems: Assessing and Reducing Risks. The National Academies Press.)

Water quality may degrade during water distribution because of the way water is treated or not treated before it is distributed, chemical and biological reactions that take place in the water during distribution, reactions between the water and distribution materials, and contamination

from external sources that occurs because of main breaks, leaks coupled with hydraulic transients, improperly maintained storage facilities, and other factors. (NRC. 2005. Public Water Supply Distribution Systems: Assessing and Reducing Risks, First Report. The National Academies Press.)

Many different microbes have demonstrated the ability to survive in the distribution system, with some possessing the ability to grow and/or produce biofilms. Microbes that may be present include bacteria, viruses and protozoa. Microbial presence in the distribution system can result in colonization of the distribution system infrastructure. Once biofilm development begins, subsequent material, organisms and contamination introduced to the distribution system can become entrained in the biofilm. Contamination and material in the biofilm may subsequently be released into the flowing water under various circumstances. As a result, biofilms can act as a slow-release mechanism for persistent contamination of the water. (EPA. 2002. Health Risks from Microbial Growth and Biofilms in Drinking Water Distribution Systems.)

It is increasingly being recognized that water treatment and chemistry factors may play a role in downstream proliferation of opportunistic pathogens, and utilities therefore play some role in controlling outbreaks. (Water Research Foundation. 2013. State of the Science and Research Needs for Opportunistic Pathogens in Premise Plumbing.)

Factors that influence pathogen survival and growth in the distribution system include water chemistry (temperature, pH, etc.), presence of nutrients, system hydraulics, sediment accumulation, and presence (or absence) of disinfectant residual. Of these factors, maintenance of an adequate disinfectant residual throughout the distribution system plays a key role in controlling the growth of pathogens and biofilms and is a treatment technique that serves as one of the final barriers to protect public health. Lack of an adequate residual may increase the likelihood that disease-causing organisms are present.

A disinfectant residual serves as an indicator of distribution system contamination and the effectiveness of distribution system best management practices. Best management practices include flushing, storage tank maintenance, cross connection control, leak detection, and effective pipe replacement and repair practices. The effective implementation of best management practices will help water suppliers comply with the disinfectant residual treatment technique by lowering chlorine demand and maintaining an adequate disinfectant residual throughout the distribution system.

There is much debate in the scientific community regarding the appropriate level of disinfectant residuals in the distribution system. Higher residuals favor microbial inactivation. However, water suppliers must be concerned about simultaneous compliance with corrosion control and disinfection by-product formation. A study by Kuchta et al. looked at the susceptibility of *Legionella pneumophila* and *E. coli* to chlorine in tap water. The study found that under the standard conditions of pH 7.6, a temperature of 21°C, and a free chlorine residual of 0.1 mg/L, a 99% inactivation of *Legionella* did not occur until a contact time of between 30 and 60 minutes had elapsed. Increasing the chlorine concentration predictably enhanced the bactericidal effect. The study found that increasing the residual to 0.2 mg/L still required a fairly high contact time of 30 minutes. Contact times of 30 to 60 minutes are not expected to occur in most distribution

systems. However, inactivation rates improved above 0.2 mg/L, with a 99% inactivation of *Legionella* within the first five minutes at a concentration of 0.5 mg/L. *E. coli* was not detected in the samples within one minute of treatment with chlorine, indicating that *Legionella* are more resistant than coliform bacteria, which is consistent with other studies. (Kuchta, et al. 1983. Susceptibility of *Legionella pneumophila* to Chlorine in Tap Water. *Applied and Environmental Microbiology*, Vol. 46, No. 5.)

Other studies, such as Loret et al., have found that even higher residuals are needed to inactivate *Legionella* when the organisms are enmeshed in biofilms and amoebae. Thus, the challenge with balancing simultaneous compliance concerns. (Loret et al. 2005. Comparison of Disinfectants for Biofilm, Protozoa and *Legionella* Control. *Journal of Water and Health*, 03.4.)

In addition to reviewing numerous studies, the Department also reviewed the disinfectant residual requirements of other states. At least 19 states have promulgated more stringent requirements, including several nearby states. The table below includes a summary of other state's requirements.

State	Minimum Distribution System Residual (mg/L)
Alabama	0.2 (free)
California	0.2 (free)
Delaware	0.3 (free)
Florida	0.2 (free), 0.6 (total)
Georgia	0.2 (free)
Illinois	0.3 (free), 0.5 (total)
Indiana	0.2 (free), 0.5 (total)
Iowa	0.3 (free), 1.5 (total)
Kansas	0.2 (free), 1.0 (total)
Kentucky	0.2 (free), 0.5 (total)
Louisiana	0.5 (free or total)
Missouri	0.2 (total)
Nebraska	0.2 (free), 0.5 (total)
North Carolina	0.2 (free), 1.0 (total)
Ohio	0.2 (free), 1.0 (total)
Oklahoma	0.2 (free), 1.0 (total)
Tennessee	0.2 (free)
Texas	0.2 (free), 0.5 (total)
West Virginia	0.2 (total)

The Department also reviewed existing industry standards. The 2012 edition of The Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (also known as Ten States Standards) specifies that the minimum free chlorine residual in water distribution systems should be 0.2 mg/L, and the minimum chloramine residual, where chloramination is practiced, should be 1.0 mg/L at distant points in the distribution system. Finally, the Water Research Foundation recommends a free chlorine residual of 0.20

mg/L and a total chlorine residual of 0.50 mg/L for an optimized distribution system. (Water Research Foundation. 2010. Criteria for Optimized Distribution Systems.)

The Department believes that the proposed disinfectant residual requirements strike a balance between improving microbial inactivation while limiting adverse impacts on corrosion control and disinfection by-product formation. The proposed residuals should also help ensure that the water being delivered to large buildings within the distribution system provide an increased level of protection against downstream proliferation of *Legionella* and other opportunistic pathogens. Note: On a case-by-case basis, higher residuals may be needed based on site-specific water quality conditions, especially in situations where nitrification may be a concern.

The proposed amendments will affect and improve public health protection for all 1,982 community water systems (CWS), and 151 noncommunity water systems (NCWS) that have installed 4-log treatment for viruses under the Groundwater Rule. These 2,133 public water systems serve a total population of 10.6 million people.

The Department expects that the large majority of water systems will be able to comply with this requirement with little to no capital costs. According to Department records for the last three years (2012 – 2014):

- Based on almost 80,000 monthly average distribution system disinfectant residual values reported by 2,594 different water systems:
 - 92.4% of the average values already meet or exceed the increased minimum residual of 0.30 mg/L (free)
 - Only 7.6% of the average values are below the minimum residual.
- For the 34 systems that chloramine, based on more than 1,000 monthly average values reported:
 - 99.25% of the average values already meet or exceed the increased minimum residual of 0.50 mg/L (total)
 - Only 0.75% of the average values are below the minimum residual.

Systems may need to increase the frequency of or improve the effectiveness of existing operation and maintenance best management practices, such as flushing, storage tank maintenance, cross connection control, leak detection, and effective pipe replacement and repair practices, in order to lower chlorine demand and meet disinfectant residual requirements at all points in the distribution system.

The proposed rulemaking was presented to the Technical Assistance Center for Small Drinking Water Systems (TAC) on June 18, 2014. TAC met again on September 23, 2014 to review and revise their comments. TAC made several recommendations, some of which were incorporated into this proposed rulemaking. Other recommendations were incorporated into this preamble as a means to solicit further public comment. Refer to Section E for more information about TAC's recommendations.

E. Summary of Regulatory Requirements

§ 109.1. Definitions.

This section was amended to add the following EPA definitions: “Level 1 assessment”, “Level 2 assessment”, “Sanitary Defect”, and “Seasonal System”. These amendments reflect the new definitions of the Federal Revised Total Coliform Rule found in 40 CFR 141.2 (relating to definitions). New definitions for “source water assessment”, “Source water protection area”, “Source water protection program”, “surface water intake protection area”, and “surface water intake protection program” were added and the existing definitions for “Consecutive water system”, “Wellhead protection area” and “Wellhead protection program” were amended. These terms are vital to the clear interpretation of source water protection requirements in the Federal Safe Drinking Water Act.

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

The title of § 109.202(a) was amended to “*Primary MCLs, MRDLs, and treatment technique requirements*” to be consistent with the title of Subchapter B. “MCL’s, MRDLs or Treatment Technique Requirements.”

Sections 109.202(a)(1) & (2) were amended to add the language “*MRDLs, and treatment technique requirements*” following any mention of “MCLs”. These revisions were made to be consistent with the title of Subchapter B. which is “MCL’s, MRDLs or Treatment Technique Requirements.”

Sections 109.202(c)(1) and 109.202(c)(1)(i)(A) were amended to remove implementation dates that have passed and clearly identify current turbidity requirements.

Section 109.202(c)(1)(i)(D) was added to strengthen treatment requirements specific to membrane filtration, because health effects associated with microbial contaminants tend to be due to short-term, single dose exposure rather than long-term exposure. These amendments are part of a multi-barrier approach to ensure treatment is adequate to provide safe and potable water to all users.

Section 109.202(c)(1)(ii) was separated into two clauses, (A) & (B), to clarify disinfection requirements in filtration plants. Section 109.202(c)(1)(ii)(A) was added to clarify already existing log inactivation requirements. Section 109.202(c)(1)(ii)(B) was added to clarify the minimum residual disinfectant requirements at the entry point. These amendments do not modify existing requirements and are consistent with Federal requirements found in 40 CFR 141.72(b). In the Annex A presented to TAC on June 18, 2014, the Department proposed requiring minimum entry point disinfectant residual levels of 0.50 mg/L free chlorine and 1.00 mg/L total chlorine. TAC recommended that the Department reconsider these levels. The Department agrees and has removed them from Annex A to reflect the TAC comment.

Section 109.202(c)(1)(iii)(II)(-d-) was amended to account for the removal of clauses (A) & (B) from § 109.301(2)(i).

Section 109.202(c)(4) was added to clarify that disinfectant residual requirements specified in § 109.710 apply to community water systems using a chemical disinfectant or that deliver water that has been treated with a chemical disinfectant (i.e., a consecutive water system).

Section 109.202(c)(5) was added to clarify that nontransient noncommunity water systems or transient noncommunity water systems that have installed chemical disinfection treatment for the Groundwater Rule must comply with the disinfectant residual requirements specified in § 109.710.

Section 109.202(c)(6) was added to define the triggers which require a system to conduct a Level 1 or Level 2 assessment and to specify that failure to conduct an assessment or complete a corrective action is a treatment technique violation. This addition reflects the Federal requirements found in 40 CFR 141.859 and 141.860(b)(1). The TAC recommended that the Department provide examples of situations when DEP would require a water system to conduct an assessment. The Department agrees and revised § 109.202(c)(5)(iii) to clarify that the Department may direct a system to conduct an assessment if circumstances exist which may adversely affect drinking water system quality, including situations specified in § 109.701(a)(3)(iii).

Section 109.202(c)(7) was added to specify that failure by a seasonal water system to complete an approved start-up procedure prior to serving water to the public is a treatment technique violation. This addition reflects the Federal requirements found in 40 CFR 141.860(b)(2).

The misspelled word “community” was corrected in the first line of § 109.202(g).

§ 109.204. Disinfection profiling and benchmarking.

Section 109.204(b) was amended and § 109.204(d), (e), and (f) were added to clarify the disinfection benchmark requirements for public water systems using surface water or GUDI sources. These amendments and additions reflect the Federal requirements found in 40 CFR 141.172 and 141.709.

§ 109.301. General monitoring requirements.

Section 109.301(1) was amended to remove an unnecessary reference to the federal drinking water regulations.

Section 109.301(1)(i) was amended to remove a reference to § 109.301(1)(iii).

Existing § 109.301(1)(i)(C) was revised and moved to § 109.301(1)(vi).

Existing § 109.301(1)(i)(D) was moved to § 109.301(1)(ix).

Existing § 109.301(1)(ii) was deleted.

Existing § 109.301(1)(iii) was renumbered as § 109.301(1)(ii) and end dated to one year after the effective date of the regulation.

Existing § 109.301(1)(iv) was renumbered as § 109.301(1)(iii) and the existing language was deleted to remove implementation dates that have passed.

Existing § 109.301(1)(iv)(A) was moved to § 109.304(e).

Existing § 109.301(1)(iv)(B) – (D) were deleted.

Section 109.301(1)(iv) was added to require continuous monitoring and recording of combined filter effluent (CFE) turbidity for all filtration technologies beginning one year after the effective date of the regulation. This amendment is consistent with existing individual filter effluent (IFE) turbidity monitoring and recording requirements. Health effects associated with microbial contaminants tend to be due to short-term, single dose exposure rather than long-term exposure. These amendments are part of a multi-barrier approach to ensure treatment is adequate to provide safe and potable water to all users.

Section 109.301(1)(v) was added to require continuous monitoring and recording of the IFE turbidity for filtration technologies other than convention and direct beginning one year after the effective date of the regulation. This amendment ensures constancy among all filtration technologies.

Language in § 109.301(1)(vi) was moved from existing § 109.301(1)(i)(C).

Section 109.301(1)(vii) was added to clarify that all failures of continuous turbidity and residual disinfectant monitoring and recording equipment requires grab sampling and manual recording not to exceed 5 working days and that it applies to all PWS. This addition is based on existing language in § 109.301(1) and ensures consistency among all PWS. TAC recommended that 5 days be amended to 5 working days and also noted that this requirement is often difficult to meet. The Department agrees and amended Annex A to reflect the TAC comment.

Section 109.301(1)(viii) was added to ensure the treatment technique requirement specified in § 109.202(c)(1)(ii)(A) is met.

Language in § 109.301(1)(ix) was moved from existing § 109.301(1)(i)(D).

Section 109.301(2) was restructured for clarity.

Section 109.301(2)(i) was amended to change “fecal coliform” to “*E. coli*” to be consistent with Federal MCL specified under 40 CFR 141.63(c).

Existing § 109.301(2)(i)(B) was deleted.

Section 109.301(2)(ii) was amended to require continuous monitoring and recording of the source water turbidity and to clarify grab sample monitoring requirements. This amendment was added to be consistent with filtration monitoring and recording requirements because health effects associated with microbial contaminants tend to be due to short-term, single dose exposure rather than long-term exposure. TAC recommended that the 5 days allowed for grab sampling in the event of a failure of monitoring equipment be amended to 5 working days and also noted that this requirement is often difficult to meet. The Department agrees and amended Annex A to reflect the TAC comment.

Existing § 109.301(2)(i)(D) was moved to § 109.301(2)(iii).

Existing § 109.301(2)(i)(E) was moved to § 109.301(2)(iv).

Section 109.301(3) was amended to change “fecal coliform” to “*E. coli*” to be consistent with the Federal MCL specified under 40 CFR 141.63(c).

Section 109.301(3)(i) was amended to require all PWS to monitor on a monthly frequency. This amendment reflects federal requirements found in 40 CFR 141.854, 141.855, 141.856, and 141.857.

Monitoring frequency language under existing § 109.301(3)(i)(B) was deleted due to the new monthly monitoring requirement. Clause (B) now contains language from original clause (C) regarding coliform monitoring for unfiltered surface water systems. This clause was amended to include *E. coli* MCL and assessment language to clarify how compliance is determined for the RTRC. This amendment reflects federal requirements found in 40 CFR 141.63(c) and 141.859(a).

A new § 109.301(3)(i)(C) was added to require seasonal systems to collect coliform samples prior to serving water to the public each season. This requirement was added to ensure that water is safe for public consumption prior to a seasonal system serving water each year. This addition reflects the Federal requirements found in 40 CFR 141.854(i)(1).

Section 109.301(3)(i)(D) was added to clarify that a water system may only collect more than the required minimum amount of samples to be used for compliance during a monitoring period if those samples are included in the sample siting plan. In addition, these extra samples must be included in determining whether a Level 1 or Level 2 assessment has been triggered. These additions reflect Federal requirements found in 40 CFR 141.853(a)(4).

Section 109.301(3)(i)(E) was added to clarify that the Department may require community water systems with a population under 1,000 and noncommunity water systems to monitor on an alternate schedule. The Department would make this determination following a special monitoring evaluation. This addition reflects Federal requirements found in 40 CFR 141.854(c)(2).

Section 109.301(3)(ii) was amended to clarify when a public water supplier must conduct repeat monitoring by specifying each type of total coliform positive sample that would

require repeat monitoring. This amendment reflects Federal requirements found in 40 CFR 141.858. This subparagraph was also amended to change “certified” to “accredited” in reference to the type of laboratory acceptable to the Department. This amendment reflects the revised terminology in 25 Pa. Code Chapter 252 (relating to environmental laboratory accreditation).

Minor amendments were made to existing language in § 109.301(3)(ii)(A) in order to clarify repeat monitoring requirements for public water systems.

Existing language in § 109.301(3)(ii)(B) which required systems collecting only one routine coliform sample per monitoring period to collect four check samples was deleted. This deletion reflects the federal requirements found in 40 CFR 141.858(a)(1) which now requires all public water systems to collect a minimum of three check samples instead of four. TAC recommended the Department allow alternate check sample locations. The Department is specifically requesting public comment on TACs recommendation as noted in Section I of this preamble.

Existing § 109.301(3)(ii)(C) was renumbered as § 109.301(3)(ii)(B).

Existing § 109.301(3)(ii)(D) was renumbered as a new clause C. The existing language was amended to require all check samples to be collected consecutively within a 3-day period for systems that only have one service connection. This amendment reflects federal requirements found in 40 CFR 141.858(a)(2).

Existing § 109.301(3)(ii)(E) was renumbered as a new clause D. The existing language was amended to clarify repeat monitoring requirements following a positive check sample. The clause was also amended to clarify reporting requirements to the Department for when a system determines it has triggered an assessment. These amendments reflect federal requirements found in 40 CFR 141.858(a)(3).

Language in existing § 109.301(3)(ii)(F) was deleted to remove the requirement for a public water system which collects fewer than five routine coliform samples per month and has one or more valid total coliform positive samples to collect five routine samples the following month. This deletion reflects federal requirements that apply to PWS sampling at a frequency less than monthly found in 40 CFR 141.854(j) and 141.855(f). Since amended requirements in § 109.301(3)(i) specify all PWS must monitor on a monthly frequency, this provision no longer applies.

Language in existing § 109.301(3)(ii)(G) was renumbered as § 109.301(3)(ii)(E) and amended to require that all routine and check samples must be included in determining compliance with the *E. coli* MCL and whether a Level 1 or Level 2 assessment has been triggered. These additions reflect Federal requirements found in 40 CFR 141.859(a).

Section 109.301(3)(iii)(A)(III) was amended to include *E. coli* MCL and assessment language to clarify how compliance is determined for the revised total coliform rule. This amendment reflects federal requirements found in 40 CFR 141.63(c) and 141.859(a). This

subclause was also amended to include a requirement for the Department to document in writing any decision to invalidate a total coliform-positive sample. This amendment reflects federal requirements found in 40 CFR 141.853(c)(1)(iii).

Section 109.301(3)(iii)(B)(III) was added to specify an additional circumstance that would require a laboratory to invalidate a total coliform sample. This amendment reflects federal requirements found in 40 CFR 141.853(c)(2).

Section 109.301(3)(iii)(C) was amended to change “certified” to “accredited” in reference to the type of laboratory acceptable to the Department. This amendment reflects the revised terminology in 25 Pa. Code Chapter 252 (relating to environmental laboratory accreditation).

Language in existing § 109.301(3)(iv)(A) was replaced with language clarifying that the subclauses (I)-(IV) list conditions which would cause a water system to be out of compliance with the MCL for *E. coli*.

Language in existing § 109.301(3)(iv)(A)(I) & (II) was replaced and new subclauses (III) and (IV) were added to specify the four conditions which would cause a water system to be out of compliance with the MCL for *E. coli*. These amendments reflect federal requirements found in 40 CFR 141.860(a).

The language in existing § 109.301(3)(iv)(C) was amended to replace total coliforms with *E. coli* and moved to clause (B). Existing clause (B) is to be deleted.

Language in § 109.301(3)(v) was amended to clarify under what situations a sample would be considered special purpose. This paragraph was also amended to clarify that special purpose samples may not be used to determine the MCL for *E. coli* or whether an assessment has been triggered. This amendment reflects federal requirements found in 40 CFR 141.853(b).

Sections 109.301(5)(iii)(B) and 109.301(6)(ii)(B) were amended to clarify monitoring requirements after the initial detection of a VOC or SOC. These amendments are consistent with federal requirements found in 40 CFR 141.24.

Section 109.301(6)(vii) was amended to include a cross reference relating to submission requirements for waiver requests and renewals set forth in clause (D).

Section 109.301(6)(vii)(A) was amended to clarify that dioxin and PCBs are included in the waiver process. This amendment reflects federal requirements found in 40 CFR 141.24.

Section 109.301(6)(vii)(A)(II) was amended to clarify that the vulnerability assessment area for surface water entry points consists of Zones A and B as described in the new definition for surface water intake protection area.

Section 109.301(6)(vii)(E) was deleted to reflect federal requirements found in 40 CFR 141.24.

Section 109.301(7)(i)(A) was deleted to reflect federal requirements found in 40 CFR 141.23.

Existing § 109.301(7)(i)(B) was renumbered as § 109.301(7)(i)(A) and was retitled to reflect the federal requirements found in 40 CFR 141.23.

A new § 109.301(7)(i)(B) was added to clarify sampling point location requirements for asbestos monitoring. This addition reflects federal requirements found in 40 CFR 141.23.

Section 109.301(7)(i)(C) was amended to include a cross reference to the new waiver language found in § 109.301(7)(i)(F).

Section 109.301(7)(i)(F) was added to clarify asbestos monitoring waiver requirements. This addition reflects federal requirements found in 40 CFR 141.23.

Section 109.301(7)(iii)(C)(II) was amended to clarify repeat monitoring requirements for IOC monitoring.

Section 109.301(12)(iv)(B)(II) was amended to reflect federal analytical requirements for bromate found in 40 CFR 141.132(b)(3)(ii)(B).

Section 109.301(13) was rewritten for clarity and amended to require transient noncommunity water systems with 4-log treatment under subchapter M to conduct disinfectant residual monitoring consistent with requirements of this paragraph and § 109.710.

§ 109.302. Special monitoring requirements

Section 109.302(a) was amended to allow the department to require special monitoring if the Department has reason to believe that a system is not in compliance with an action level for lead or copper.

§ 109.303. Sampling requirements

Section 109.303(a)(2) was amended to include the *E. coli* MCL and assessment language to clarify how compliance is determined for the revised total coliform rule. This amendment reflects federal requirements found in 40 CFR 141.63(c) and 141.859(a). In addition, the words “an approved” were deleted from the existing language to clarify that the Department is not required to approve sample siting plans. This amendment reflects federal requirements found in 40 CFR 142.16(q)(2)(i).

Sections 109.303(a)(2)(i) through (vi) were added to clarify what type of monitoring locations are considered to be representative of water throughout the distribution system. These additions include existing language that was moved from § 109.701(a)(5) and additional examples of representative locations.

Section 109.303(e) was amended to correct a federal citation relating to monitoring requirements for unregulated contaminants and to remove another federal citation, which citation no longer exists.

§ 109.304. Analytical requirements

Section 109.304(c)(2) was amended to clarify that an individual conducting analysis using a standard operating procedure must do so following not only the Water and Wastewater Systems Operators' Certification Act but also the regulations promulgated under that Act.

Section 109.304(e) was added to clarify turbidimeter calibration requirements. This was existing language moved from § 109.301(1)(iv)(A).

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

Section 109.408(a)(1) was amended to clarify that an exceedance of the *E. coli* MCL is a situation that requires a Tier 1 public notice to be provided. This amendment reflects federal requirements found in 40 CFR 141.202(a).

Section 109.408(a)(2) was amended to correct a Chapter 109 cross-reference.

Section 109.408(a)(6) was amended to add two violations that would require Tier 1 public notice: failure to meet log inactivation requirements for more than 4 hours and a failure to maintain minimum entry point disinfectant residuals for more than 4 hours.

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

Section 109.409(a)(1) was amended to include Subchapter C in the list of subchapters which contain situations requiring a Tier 2 public notice to be provided.

New § 109.409(a)(3) was added to require a Tier 2 public notice for any failure to report an *E. coli* MCL violation or *E. coli*-positive routine or check sample. Since *E. coli* is an acute contaminant, failure to report an *E. coli* MCL violation or positive sample is a greater threat to public health than other reporting violations.

The existing § 109.409(a)(3) & (4) were renumbered as 109.409(a)(4) & (5) due to the addition of the language in new § 109.409(a)(3).

Section 109.409(b)(3) was amended to remove a reference to a violation which no longer exists. This amendment reflects federal requirements found in 40 CFR 141.203.

§ 109.416. *CCR Requirements.*

Section 109.416(4)(ii) was added to require a public water system to provide a paper copy of the Consumer Confidence Report (CCR) to the Department. The remaining subparagraphs of this paragraph were renumbered to reflect this addition.

§ 109.503. *Public water system construction permits.*

Section 109.503(a) was amended to correct the Department's Drinking Water Bureau name and mailing address.

Section 109.503(a)(1)(iii) was amended to add the requirement to submit a source water assessment and pre-drilling plan as part of a new source permit application. In addition the clauses under this subparagraph were reorganized for clarity. These amendments will ensure that public water systems obtain the highest source water quality available, which will not only protect public health but also help to maintain, reduce or avoid drinking water treatment costs. These amendments are consistent with existing Department guidance.

§ 109.505. *Requirements for noncommunity water systems.*

Section 109.505(a)(3)(ii) was amended to correct a Chapter 109 cross reference to reflect amendments to § 109.503(a)(1)(iii).

§ 109.602. *Acceptable design.*

Section 109.602(a) was amended to include Subchapter K (relating to lead and copper) to clarify that a public water system must be designed to be able to comply with standards established in that chapter.

Section 109.602(e) was amended to clarify that point-of-use devices are not acceptable treatment to comply with an MRDL. The addition of "MRDL" was to remain consistent with regulatory language in Subchapter F.

Sections 109.602(f), (g), (h), and (i) were added to define new requirements for alarm and shutdown capabilities. Alarm and shutdown capabilities are intended to prevent unsafe water from reaching customers. TAC noted that including the clearwell water levels as a parameter needing alarm and/or shutdown capabilities is confusing. The Department disagrees, since failure to maintain the minimum clearwell level necessary to achieve log inactivation as required in § 109.202(c) could result in an acute violation and should therefore trigger an alarm or plant shutdown. TAC commented that a PWS that is manned while in operation does not need automatic shutdown capability. The Department agrees and amended Annex A to reflect the TAC comment. In addition, TAC recommended that the Department provide additional cost information on alarm and automatic shutdown systems. The Department agrees and has provided this information in the following table.

Cost to Add Alarms, Phone Dialers and Automated Shutdown

Items	Initial Cost	Estimated Annual Calibration and Maintenance Cost
8 channel autodialer	\$2,350.00	
Installation	\$1,000.00	
Surge Protector	\$ 80.00	
Shutdown Options	\$1,000.00	
Cellular option for remote locations	\$1,000.00	
Landline or cellular service		\$600.00
Total	\$5,430.00	\$600.00

§ 109.606. Chemicals, materials and equipment.

Section 109.606(a) was amended to clarify that equipment which may come into contact with water or affect the quality of the water may not be used unless the equipment is acceptable to the Department.

Section 109.606(c) was amended to clarify that equipment, including, but not limited to, mechanical devices and drinking water treatment equipment which are certified for conformance with ANSI/NSF Standard 61 are deemed acceptable to the Department.

New § 109.606(d) was added to clarify that drinking water treatment equipment shall be certified for inactivation, reduction or removal performance and to allow equipment which is certified for conformance with the NSF Guidelines for Public Drinking Water Equipment Performance (PDWEP) to be acceptable for use in public water system construction or modification.

Existing § 109.606(d) was renumbered as § 109.606(e) and amended to add reference to new subsection (d) and PDWEP.

New § 109.606(e)(2) and § 109.606(e)(3)(iv) were amended to add references to new subsection (d) and PDWEP.

Section 109.606(e)(3)(v) was added to require American National Standards Institute (ANSI) equivalent accreditation for the QA/QC of equipment claimed to remove or reduce a contaminant.

Section 109.606(e) was renumbered as § 109.606(f).

§ 109.612. POE devices.

Section 109.612(b) was amended to update reference to a subsection that was amended in § 109.606.

§ 109.701. *Reporting and recordkeeping.*

Section 109.701(a)(2) was amended to clarify that water systems must follow reporting requirements under § 109.701(a)(1) in addition to the requirements specified under § 109.701(a)(2). This change is consistent with existing language contained in § 109.701(a)(8).

Section 109.701(a)(2)(i)(A) was amended to change CFE turbidity standards to reflect amendments in § 109.202(c)(1)(i) and remove implementation dates that have passed. Subclauses under clause (A) were renumbered.

Section 109.701(a)(2)(i)(C)(III) and (IV) were amended to reflect changes to residual disinfectant requirements specified in § 109.710.

Section 109.701(a)(2)(i)(D) & (E) were added to define log inactivation performance monitoring reporting requirements for systems using surface water or GUDI sources.

Section 109.701(a)(2)(ii)(A) was amended to clarify the turbidity reporting requirements for systems using unfiltered surface water sources.

Section 109.701(a)(2)(ii)(C)(III) and (IV) were amended to reflect changes to residual disinfectant requirements specified in § 109.710.

Section 109.701(a)(2)(iv) was deleted because the requirement to collect Heterotrophic Plate Count measurements is being deleted from § 109.710(b). This provision is no longer necessary due to the changes to residual disinfectant requirements specified in § 109.710

Section 109.701(a)(3)(iii)(B) & (C) were amended to clarify what situations would require one hour reporting to the Department.

Section 109.701(a)(3)(iv) was added to clarify that an *E. coli*-positive sample result requires a public water supplier to report to the Department within one hour. TAC recommended that notification occur by the end of the day. The Department disagrees, since one hour reporting is consistent with existing regulations.

Section 109.701(a)(5) was amended to clarify that repeat coliform monitoring locations must be included in a sample siting plan. This amendment reflects federal requirements found in 40 CFR 141.853(a)(1). This paragraph was also amended to require water systems currently operating to submit a sample siting plan to the Department by the effective date of the regulation and for water systems which begin operation after the effective date of the regulation to submit a sample siting plan to the Department prior to serving water to the public. This requirement is being added to allow the Department to meet the special primacy requirement found in 40 CFR 142.16(q)(2)(i). TAC noted that PWS would be negatively impacted by being able to use a routine sample location only once per month. The Department agrees and amended Annex A to reflect the TAC comment.

Existing language in § 109.701(a)(5)(i)(A) was deleted and moved to § 109.303(a)(2) which explains the types of monitoring locations that are considered to be representative of water throughout the distribution system. The cross reference to § 109.303(a)(2) was added to help clarify what types of sample site locations should be included in the sample siting plan. TAC recommended not deleting the word “available” from the existing language. The Department disagrees since this amendment reflects federal requirements found in 40 CFR 141.853(a)(5).

Section 109.701(a)(5)(i)(C) was amended to clarify that a sample collection schedule should be included in the sample siting plan. This amendment reflects federal requirements found in 40 CFR 141.853(a)(1).

Section 109.701(a)(5)(i)(D) was added to clarify that repeat coliform monitoring locations must be included in sample siting plans. This amendment reflects federal requirements found in 40 CFR 141.853(a)(1). TAC noted that identifying specific addresses for check samples is unworkable for some water systems. However, this amendment reflects federal requirements found in 40 CFR 141.853(a)(1).

Section 109.701(a)(5)(i)(E) was added to clarify that triggered source water monitoring locations must be added if representative monitoring has been approved by the Department and in order to confirm systems are collecting samples at the correct location. This amendment reflects federal requirements found in 40 CFR 141.853(a)(1).

Section 109.701(a)(5)(i)(F) was moved from existing § 109.701(a)(5)(ii)(A) to clarify that the population served by the system should be included in the sample siting plan.

Section 109.701(a)(5)(i)(G) was moved from existing § 109.701(a)(5)(ii)(B) to clarify that a description of the accessibility of sample sites should be included in the sample siting plan.

Section 109.701(a)(5)(i)(H) was added to clarify that seasonal systems must include the beginning and ending dates of each operating season in the sample siting plan.

Existing language in § 109.701(a)(5)(ii) was moved to § 109.701(a)(5)(i) or 109.303(a)(2).

Existing § 109.701(a)(5)(iii) and (iv) were renumbered as § 109.701(a)(5)(ii) and (iii) respectively.

Section 109.701(a)(8) was revised to clarify that public water systems are to report minimum disinfectant residuals monitoring data in the same manner as they report MRDLs.

Section 109.701(a)(8)(ii)(C) was added to define the reporting requirements for minimum distribution system residual.

Existing § 109.701(a)(9) was renumbered as § 109.701(a)(11).

In addition to the reporting requirements found under § 109.701(a)(1), a new § 109.701(a)(9) was added to require water systems to report individual constituents for total trihalomethanes

(TTHM) and haloacetic acids (HAA5). The required data is already determined by laboratories and has been voluntarily reported since 2011. Having this data will help public water systems to identify trends in disinfectant byproduct formation and better manage their disinfection practices. This is consistent with federal reporting requirements.

Section 109.701(a)(10) was added to clarify reporting requirements for Level 1 and Level 2 assessments. The addition of § 109.701(a)(10)(i) reflects the federal requirement found in 40 CFR 141.859 for systems to notify the state when an assessment has been triggered and has a timeframe consistent with the Noncompliance Report requirements in existing § 109.701(a)(9). The addition of subparagraphs (ii) and (iii) reflect federal requirements found in 40 CFR 141.859.

Section 109.701(b)(1) was amended to require water suppliers to maintain water-level monitoring data for 12 years. This amendment will assist the water systems with managing their water resources.

Section 109.701(d)(9) was added to require public water suppliers to maintain a copy of assessment forms and corrective action documentation for at least 5 years after completion of the assessment or corrective action. This addition reflects federal requirements found in 40 CFR 141.861(b)(1).

Section 109.701(e)(2) was amended to add a citation to clarify which systems are required to report individual filter turbidity monitoring.

Section 109.701(e)(2)(i) – (iv) were amended to lower the trigger levels for IFE reporting requirements for all filtration technologies. These turbidity reporting requirements are being strengthened because health effects associated with microbial contaminants tend to be due to short-term, single dose exposure rather than long-term exposure. These amendments are part of a multi-barrier approach to ensure treatment is adequate to provide safe and potable water to all users.

§ 109.702. Operation and maintenance plan.

Section 109.702(a) was amended to clarify that a water system must have an operation and maintenance plan that follows guidelines in the Public Water Supply Manual and contain the information contained in § 109.702(a)(1)-(14).

Section 109.702(a)(9) was amended to be consistent with term changes made in § 109.705.

Section 109.702(a)(13) was amended to require that information regarding alarm and shutdown and an auxiliary power equipment exercise and testing program be included in the operation and maintenance plan. This requirement was added because testing of all critical water system components is consistent with § 109.4(3) and (4).

§ 109.703. Facilities operation.

Section 109.703(b)(1)-(3) were amended to remove implementation dates that have already passed.

Section 109.703(b)(1) was also amended to strengthen filter to waste requirements. Filters are most likely to shed turbidity, particles, and microbial organisms at the beginning of a filter run when the filter is first placed into service following filter backwashing and/or maintenance. Filter-to-waste following filter backwashing and/or maintenance and prior to placing a filter into service will reduce the likelihood of pathogens passing through filters and into the finished drinking water.

Existing § 109.703(b)(5) was renumbered as § 109.703(b)(6).

New § 109.703(b)(5) was added to define filter to waste requirements for membrane filtration plants. This paragraph was added to be consistent with new requirements specified in § 109.703(b)(1) and to ensure that membrane plants are being operated at a level consistent with other filtration technologies. Filters are most likely to shed turbidity, particles, and microbial organisms at the beginning of a filter run when the filter is first placed into service following filter backwashing and/or maintenance. Filter-to-waste following filter backwashing and/or maintenance and prior to placing a filter into service will reduce the likelihood of pathogens passing through filters and into the finished drinking water.

Section 109.703(b)(6) was amended clarify the requirements of the filter bed evaluation program and to ensure that all plants are evaluating their filters. A filter bed evaluation program assesses the overall health of each filter to identify and correct problems before a turbidity exceedance occurs. TAC recommended that the language regarding a filter bed evaluation program be revised to further clarify this requirement. The Department agrees and amended Annex A to reflect the TAC comment.

Section 109.703(c) was added to require a water supplier to test alarm and shutdown capabilities at the filter plant and to outline the procedures to be followed in the event of a failure of alarm or shutdown equipment. This paragraph was added because testing of all critical water system components is consistent with § 109.4(3) and (4). TAC recommended that during quarterly tests of plant shutdown capabilities, the Department allow for simulation of a shutdown but not require the disruption of an actual shutdown. The Department agrees and Annex A does not specify an actual shutdown during testing.

§ 109.704. Operator certification.

Section 109.704(a) was amended to clarify that community and nontransient noncommunity water systems have personnel certified under, not only the Water and Wastewater Systems Operators' Certification Act but also the regulations promulgated under that Act to operate and maintain a public water system.

§ 109.705. *Sanitary surveys.*

Section 109.705 was retitled “System Evaluations and Assessments” from “Sanitary surveys” to avoid confusion with the sanitary surveys that are conducted by Department personnel.

Section 109.705(a) was amended to replace “a sanitary survey” with “an evaluation” to be consistent with the new title and terminology of the section.

Section 109.705(a)(1) was amended by separating all existing language following the first sentence of the paragraph into three subparagraphs (i)-(iii). The first sentence of existing § 109.705(a)(1) was amended to replace “draining area of wellhead protection area” to incorporate the new term “source water protection area” as defined in § 109.1.

Section 109.705(a)(1)(i) was added using language from existing § 109.705(a)(1). This language was amended to replace “wellhead protection area” with the new term “source water protection area” as defined in § 109.1. Section 109.705(a)(1)(ii) was added using language from existing § 109.705(a)(1).

Section 109.705(a)(1)(iii) was added to require revisions to the source water assessment if a system evaluation identified any changes to actual or probable sources of contamination. This addition was made to fulfill the Environmental Protection Agency’s expectation that source water assessments are routinely updated.

Section 109.705(a)(2) was amended to remove the requirement for an evaluation of “source protection” since a community water system will be required to inspect portions of a source water protection area as part of an evaluation conducted under § 109.705(a)(1).

Section 109.705(a)(6) was added to require the system evaluation be documented and made available to the Department upon request in lieu of requiring the water system to submit the evaluation.

Existing language in § 109.705(b) was removed and new language was added to clarify a public water system’s requirement to conduct Level 1 and Level 2 Assessments. This subsection also requires a public water system to comply with actions required by the Department in the case of an *E. coli* MCL violation or other violations that require one hour reporting to the Department. These amendments reflect federal requirements found in 40 CFR 141.859(b)(4).

Existing language in § 109.705(b)(1) was replaced with language relating to the minimum elements required for Level 1 and Level 2 Assessments. The elements are identified in § 109.705(b)(1)(i) – (v). These amendments reflect federal requirements found in 40 CFR 141.859(b)(2).

Existing language in § 109.705(b)(2) was replaced with language requiring a public water system to complete a Level 1 or a Level 2 assessment and submit it to the Department within

30 days of triggering the assessment. This amendment reflects federal requirements found in 40 CFR 141.859(b)(3)(i).

Section 109.705(b)(3) was added to clarify who is required to conduct a Level 1 Assessment. Language in this paragraph is consistent with language from § 109.704(b) to ensure competent personnel are used to conduct the assessment.

Section 109.705(b)(4) was added to clarify who is required to conduct a Level 2 Assessment. This addition reflects federal requirements found in 40 CFR 141.859(b)(1) and 141.859(b)(4)(ii).

Section 109.705(b)(5) was added to clarify that the Department may conduct a Level 1 or Level 2 Assessment in addition to the assessment conducted by the water system. This addition reflects federal requirements found in 40 CFR 141.859(b).

Section 109.705(b)(6) was added to clarify that a public water system must describe sanitary defects identified, corrective actions completed and a proposed timetable for corrective actions not completed in each assessment report. This paragraph also specifies that an assessment report may note that no sanitary defects were identified. This addition reflects federal requirements found in 40 CFR 141.859(b)(3)(i) and 141.859(b)(4)(i).

Section 109.705(b)(7) was added to clarify that a public water system must consult with the Department within 14 days of receiving written notification of an insufficient assessment and submit a revised assessment within 30 days. The 14 day requirement has been added to ensure that a public water system completes a sufficient assessment in a timely manner and the 30 day timeframe reflects federal requirements found in 40 CFR 141.859(b)(3)(ii) and 141.859(b)(4)(iii).

Section 109.705(b)(8) was added to clarify corrective action requirements for sanitary defects found through a Level 1 or Level 2 Assessment. This addition reflects federal requirements found in 40 CFR 141.859(c).

Section 109.705(b)(9) was added to provide that the public water system or Department may request consultation with the other party at any time during the assessment process. This addition reflects federal requirements found in 40 CFR 141.859(d).

Existing language in § 109.705(c) was removed because there are no longer additional requirements for noncommunity water systems that do not collect five or more routine coliform samples per month.

Existing language in § 109.705(d) & (e) was removed and replaced by language in a new § 109.715.

§ 109.706. System distribution map.

The title of § 109.706 was retitled to “System map” to be consistent with changes to the map requirements listed in the section.

Section 109.706(a) was amended to require all public water systems to prepare and maintain a system map. This amendment was made to ensure that public water suppliers “[p]rovide and effectively operate and maintain public water system facilities” to be consistent with § 109.4(3).

Section 109.706(b) and (c) were amended to clarify system map requirements.

§ 109.710. Disinfectant residual in the distribution system.

Section 109.710(a) and (b) were amended to strengthen minimum distribution system disinfectant residual requirements for community water systems and any noncommunity water system with filtration or 4-log treatment of viruses. These amendments will assist water systems to maintain compliance with the requirement of § 109.4(2) that treatment is adequate to protect the public health. TAC noted that maintaining 0.30 mg/L free chlorine or 1.0 mg/L total chlorine residual levels in the distribution system will be difficult for some water systems. After considering this comment, the Department has retained the 0.30 mg/L level for free chlorine, but has lowered the proposed level for total chlorine for systems using chloramines from 1.0 mg/L to 0.50 mg/L. Refer to Section D., Background and Purpose, for additional justification regarding this amendment.

The Department is also seeking comment on whether a deferred effective date of 6 months after final promulgation is warranted in order to provide water systems with additional time to make any necessary operational changes.

Existing § 109.710(c) was renumbered as § 109.710(d).

New § 109.710(c) was added to clarify that a treatment technique violation occurs when the minimum disinfectant residual is not maintained in the distribution system. In addition, this subsection defines the water system’s obligation to respond to this situation.

§ 109.713. Wellhead protection program.

The title of § 109.713 was retitled to “Source water protection program.” to be consistent with the new definition of “source water protection program” specified in §109.1.

Section 109.713(a)(1) – (2) were amended to change “wellhead” to “source water” to remain consistent with the new definition of “source water protection program” specified in §109.1, which encompasses both a surface water intake protection program and a wellhead protection program.

Section 109.713(a)(3) and (4) were rewritten to remain consistent with the new definitions of “source water protection area” and “source water assessment” specified in §109.1.

Section 109.713(a)(5) was amended to change all references of “wellhead” to “source water” to remain consistent with the new definition of “source water protection program” specified in §109.1, which encompasses both a surface water intake protection program and a wellhead protection program.

Section 109.713(a)(6) was amended to make the contingency planning for the provision of alternate water supplies relate to all sources, not just groundwater. This amendment is consistent with the definition of a “source water protection program” which encompasses both surface and ground water sources.

Section 109.713(a)(7) was amended to make the provisions for protection of new source sites applicable to all source types. This amendment is consistent with the definition of a “source water protection program” which encompasses both surface and ground water sources.

Section 109.713(b) was added to require water suppliers with an approved source water protection program to conduct an annual review of the program. This addition was made to clarify an existing program requirement which fulfills the Environmental Protection Agency’s expectation that source water assessments are routinely updated.

§ 109.715. Significant deficiencies.

Language contained in this new section was compiled from existing § 109.705 and 109.1302 to provide implementation consistency in identifying and responding to significant deficiencies by systems using surface and ground water sources. This section will ensure that all federal requirements are met.

§ 109.716. Seasonal systems.

New § 109.716 was added to clarify start-up procedure requirements for seasonal systems which are defined in § 109.1. These additions reflect federal requirements found in 40 CFR 141.854(i)(1), 141.856(4)(i), 141.857(4)(i), and 141.861(5).

Sections 109.716(a) - (d) were added to require seasonal systems to submit a start-up procedure to the Department for approval. These additions reflect federal requirements found in 40 CFR 141.854(i)(1), 141.856(4)(i), and 141.857(4)(i).

Section 109.716(e) was added to require seasonal systems to demonstrate completion of a Department-approved start-up procedure by submitting a written certification prior to serving water to the public each season. This addition reflects federal requirements found in 40 CFR 141.861(5).

§ 109.810. *Reporting and notification requirements.*

Section 109.810(b) was amended to clarify laboratory reporting and notification requirements.

Section 109.810(b)(1)(ii) was amended to change “certified” to “accredited” in reference to the type of laboratory acceptable to the Department. This amendment reflects the revised terminology in 25 Pa. Code Chapter 252 (relating to environmental laboratory accreditation).

§ 109.901. *Requirements for a variance.*

Section 109.901(b) was amended to change “total coliform” to “*E. coli*” to be consistent with the new federal *E. coli* MCL specified under 40 CFR 141.63(c).

§ 109.903. *Requirements for an exemption.*

Section 109.901(b) was amended to change “total coliform” to “*E. coli*” to be consistent with the new federal *E. coli* MCL specified under 40 CFR 141.63(c).

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

Section 109.1002(a) was amended to clarify that disinfection profiling & benchmarking requirements in § 109.204 apply to BVRBs. These changes were made in response to EPA comments and are required to obtain primacy for LT2.

Section 109.1002(c) was amended to correct the name of subchapter L in the relating to language to make it consistent with the actual name of subchapter L which is the “Long-term 2 enhanced surface water treatment rule”.

§ 109.1003. *Monitoring requirements.*

Section 109.1003(a) was amended in response to EPA comments to obtain primacy for LT2.

Sections 109.1003(a)(1)(i) and (a)(2)(i) were amended to clarify coliform and *E. coli* monitoring requirements for bottled, vended, bulk and retail water systems. This amendment reflects federal requirements found in 40 CFR 141.854, 141.855, 141.856, 141.857 and 141.858(a).

Section 109.1003(a)(1)(xi) was amended to clarify chlorine dioxide monitoring requirements for bottled, vended, bulk and retail water systems.

Existing § 109.1003(a)(1)(xi) was renumbered as § 109.1003(a)(1)(xii) due to the new language added to the paragraph above.

Section 109.1003(b)(2) was amended to change “certified” to “accredited” in reference to the type of laboratory acceptable to the Department. This amendment reflects the revised terminology in 25 Pa. Code Chapter 252 (relating to environmental laboratory accreditation).

Section 109.1003(b)(3) was amended to clarify sampling and analysis requirements in order to be consistent with § 109.304(a) and is necessary to maintain primacy in response to EPA comments.

Minor amendments were made to existing language in § 109.1003(c)(1)(ii) in order to clarify repeat monitoring requirements for vended, retail, and bulk water hauling water systems. This change reflects the federal requirements found in 40 CFR 141.858(a)(1) which now requires all public water systems to collect a minimum of three check samples instead of four.

Section 109.1003(c)(3) was amended to clarify repeat monitoring requirements following a positive check sample. This amendment reflects federal requirements found in 40 CFR 141.858(a).

Section 109.1003(e) was amended to require retail water facilities to follow the requirements set forth in that subsection. These amendments were made in response to EPA comments and are required in order to maintain primacy.

Section 109.1003(h) was moved from § 109.1003(a) for clarification of compliance determinations. This change was in response to EPA comments and is necessary to maintain primacy.

Section 109.1003(i) was added to be consistent with existing language in § 109.302.

§ 109.1004. Public notification.

Section 109.1004(a) was amended to correct terminology for bottled, vended, retail and bulk public water systems in response to EPA comments in order to maintain primacy.

§ 109.1005. Permit Requirements.

Section 109.1005(c)(5)(ii) was amended to correct a Chapter 109 citation.

Section 109.1005(e) was amended to correct the Department’s Drinking Water Bureau name.

§ 109.1008. System management responsibilities.

Section 109.1008(b) was amended to correct the Department’s Drinking Water Bureau name.

Section 109.1008(d) was retitled “Annual system evaluation requirements” from “Sanitary survey requirements” to avoid confusion with the sanitary surveys that are conducted by

Department personnel. This subsection was also amended to replace “survey” with “evaluation” to be consistent with the new title of the subsection.

Section 109.1008(g) was added to require bottled, vended, retail, and bulk hauling water systems to comply with the significant deficiencies requirements specified in new § 109.715.

Section 109.1008(h) was added to clarify Stage 2 DBPR monitoring plan and operational evaluation level requirements. These amendments are necessary to maintain primacy in response to EPA comments.

Section 109.1008(i) was added to require bottled, vended, retail, and bulk hauling water systems to comply with the Level 1 and Level 2 Assessment requirements specified in § 109.705(b). This addition reflects federal requirements found in 40 CFR 141.859.

Section 109.1008(j) was added to require bottled, vended, retail, and bulk hauling water systems to comply with the seasonal system requirements specified in new § 109.716. This addition reflects federal requirements found in 40 CFR 141.854, 141.856, 141.857, and 141.861.

§ 109.1103. Monitoring requirements.

Section 109.1103(c)(1)(ii) was amended to clarify the period within which a small or medium water system that exceeded an action level is required to conduct additional lead and copper monitoring. This amendment was made to be consistent with federal requirements found in 40 CFR 141.86

Section 109.1103(d) was amended to clarify lead service line replacement requirements. This amendment reflects federal requirements found in 40 CFR 141.84.

Section 109.1103(e)(3)(i)(C) was amended to clarify that the requirements specified in that clause relate to a water system that exceeded the action level for either lead or copper. This amendment was made to be consistent with existing language in § 109.1103(e)(3).

Section 109.1103(g)(2)(v) was amended to clarify the original intent of the subparagraph, which is to require that 50% of the total samples being collected for lead and copper shall be taken from sites served by a lead service line.

Section 109.1103(k)(6)(ii) was amended to clarify that a system must monitor in accordance with all of the requirements specified in subsection (e), including the frequency and timing of such monitoring, not just the number of sample sites.

§ 109.1105. Permit requirements.

Section 109.1105(b)(1) & (2) were amended to clarify that community and nontransient noncommunity water systems should follow the requirements specified in those paragraphs

only until the effective date of the regulation. After that time they should follow the requirements specified in new paragraph (3).

Section 109.1105(b)(3) was added to require all community and nontransient noncommunity water systems to obtain a construction and operations permit for new corrosion control treatment beginning the effective date of the regulation. This paragraph was added to be consistent with existing permitting requirements in subchapter E.

§ 109.1107. System management responsibilities.

Section 109.1107(d)(4) was amended to clarify that a water system is not required to pay for replacement of privately owned lead service line.

§ 109.1202. Monitoring requirements.

Section 109.1202(a)(4)(i) & (ii) were amended to change the annual mean *E. coli* concentration triggers for monitoring to be greater than 100 *E. coli*/100 mL. These amendments were made to be consistent with federal guidance.

Section 109.1202(i) was amended to correct a Chapter 109 citation.

The title of § 109.1202(l) was amended to clarify that the paragraph applies to source water sample locations for plants with chemical treatment. This amendment is consistent with the existing title of § 109.1202(k) & (m).

The title of § 109.1202(n) was amended to clarify that the paragraph applies to source water sample locations for plants with bank filtration. This amendment is consistent with the existing title of § 109.1202(k) & (m).

The title of § 109.1202(o) was amended to clarify that the paragraph applies to source water sample locations for plants with multiple sources. This amendment is consistent with the existing title of § 109.1202(k) & (m).

§ 109.1203. Bin classification and treatment technique requirements.

Section 109.1203(f)(2) was amended to correct a citation relating to requirements for microbial toolbox components.

Section 109.1203(g) was amended to correct a citation relating to requirements for microbial toolbox components.

§ 109.1204. Requirements for microbial toolbox components.

Section 109.1204(h) was amended to correct a citation relating to general monitoring requirements.

§ 109.1206. Reporting and recordkeeping requirements.

Section 109.1206(e)(1) was amended to correct a citation to account for the addition of a subparagraph.

A new § 109.1206(e)(1)(viii) was added to require a system to report the concentration of oocysts per Liter when reporting the results of each *Cryptosporidium* analysis.

Existing § 109.1206(e)(1)(viii)-(x) were renumbered to account for the addition of new § 109.1206(e)(1)(viii).

§ 109.1302. Treatment technique requirements.

Section 109.1302(a) was amended to correct a citation relating to state MCLs, MRDLs and treatment technique requirements.

The title of § 109.1302(c) was amended to improve readability.

Section 109.1302(c)(1) was amended to remove significant deficiency language that is now incorporated in § 109.715.

Section 109.1302(c)(2)(iii) was deleted to remove a provision providing that a groundwater system with an *E. Coli*-positive groundwater source sample will receive direction from the Department that it needs correction. This clarifies that all *E. coli*-positive source water samples require corrective action under § 109.715.

Section 109.1302(c)(3) was amended to remove significant deficiency language that is now incorporated in § 109.715 and to include a citation directing the PWS to that section.

§ 109.1303. Triggered monitoring requirements for groundwater sources.

Section 109.1303(h) was amended to clarify that a system must comply with Tier 1 public notice requirements any time it has an *E. coli*-positive source water sample.

Section 109.1302(h)(1)-(3) were deleted to remove significant deficiency language that is now incorporated in § 109.715.

§ 109.1305. Compliance monitoring.

Section 109.1305(a)(1)(iii) was amended to clarify reporting and grab sample and manual recording requirements in the case of a failure of continuous monitoring equipment. These amendments are consistent with revised language contained in § 109.301. TAC recommended that 5 days be amended to 5 working days and also noted that the 5 day requirement is often difficult to meet. The Department agrees and amended Annex A to reflect the TAC comment.

§ 109.1306. Information describing 4-log treatment and compliance monitoring.

Section 109.1306(b)(3) was amended to correct the Department's Drinking Water Bureau name.

§ 109.1307. System management responsibilities.

Section 109.1307(a)(1)(ii) was amended to further clarify the time period which constitutes a breakdown in treatment.

Additional TAC Comments

TAC recommended the Department define "significant land use change" in reference to source protection in the draft presented to TAC on June 18, 2014. The Department considered the TAC comment and deleted this provision.

TAC recommended a 90 day comment period on the proposed regulations. The Department considered the TAC comment and agrees that the standard 30 day comment period is not adequate. However, the Department is recommending a 60 day comment period.

TAC requested that DEP provide written notification *to the PWS* within 30 days of receiving a complete/adequate assessment from a water system. This comment will be considered when developing staff guidance.

TAC recommended that the Department consider alternative methods of delivery for both submission and receipt of assessments. This comment will be considered when developing staff guidance.

TAC requested that DEP provide written notification within 30 days of receiving required disinfection profiles. This comment will be considered when developing staff guidance.

F. Benefits, Costs and Compliance

Benefits

The proposed amendments will affect all 8,868 PWSs serving approximately 12.75 million Pennsylvanians. The residents of the Commonwealth will benefit from: (1) the avoidance of a full range of health effects from the consumption of contaminated drinking water such as, acute and chronic illness, endemic and epidemic disease, waterborne disease outbreaks, and death; (2) the continuity of a safe and adequate supply of potable water; and (3) the protection of public drinking water sources, which will result in maintaining the highest source water quality available, thereby minimizing drinking water treatment costs.

As discussed by EPA in the preamble to the federal RTCR, the benefits of the federal rule are largely unquantifiable but include the potential for decreased incidence of endemic illness from fecal contamination and other waterborne pathogens, increased knowledge regarding system operation, accelerated maintenance and repair, avoided costs of outbreaks, and reductions in averting behavior. (78 FR 10308 – 10320, February 13, 2013).

Compliance Costs

For provisions related to the RTCR, costs were derived from EPA's economic analysis. National costs were adjusted to represent the ratio of Pennsylvania PWS compared to the number of PWS nationwide. It is estimated that water systems in this Commonwealth will bear nearly \$1.72 million of this total annual cost. The following figures represent estimated annual cost by system type:

- Community Water Systems: \$126.77 per system/year
- Nontransient Noncommunity Water Systems: \$128.90 per system/year
- Transient Noncommunity Water Systems: \$229.31 per system/year

This estimate includes costs for all PWS being required to monitor for total coliform monthly. It is important to note that mandating monthly monitoring for all PWS will eliminate the Federal requirement to collect 3 additional samples in the month following a total coliform positive sample. Based on a five year average of approximately 580 positive samples per year, regulated noncommunity water systems (NCWS) are expected to not incur approximately \$40,000 per year in these extra sampling costs.

All other costs associated with this regulatory package have been derived by Department research. Not every PWS will have to comply with all of the proposed provisions. The Department estimates the costs to comply with specific requirements as follows:

- Source Water Protection permitting costs = \$1,176.00 per new source
- IFE and CFE Monitoring = \$3,267.25 per monitoring and reporting device with annual maintenance costs = \$554.00 per monitoring and reporting device. Note: Many filter plants already meet these provisions and therefore will not incur these costs.
- Alarms and Shutdown Controls = \$5,430.00 per treatment plant with annual maintenance costs = \$600.00. Note: Many filter plants already meet these provisions and therefore will not incur these costs.
- Disinfection - The Department expects that the large majority of water systems will be able to comply with this requirement with little to no capital costs. According to Department records for the last three years (2012 – 2014):
 - Based on almost 80,000 monthly average distribution system disinfectant residual values reported by 2,594 different water systems:
 - 92.4% of the average values already meet or exceed the increased minimum residual of 0.30 mg/L (free)
 - Only 7.6% of the average values are below the minimum residual.
 - For the 34 systems that chloramine, based on more than 1,000 monthly average values reported:
 - 99.25% of the average values already meet or exceed the increased minimum residual of 0.50 mg/L (total)
 - Only 0.75% of the average values are below the minimum residual.
 - Systems may need to increase the frequency of or improve the effectiveness of existing operation and maintenance best management practices to lower chlorine

demand, such as flushing, storage tank maintenance, cross connection control, leak detection, and effective pipe replacement and repair practices, in order to meet disinfectant residual requirements at all points in the distribution system.

Compliance Assistance Plan

The Safe Drinking Water Program utilizes the Commonwealth's PENNVEST Program to offer financial assistance to eligible PWS. This assistance is in the form of a low-interest loan, with some augmenting grant funds for hardship cases. Eligibility is based upon factors such as public health impact, compliance necessity and project/operational affordability.

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 either program staff or the regulated community.

In addition to this network of training staff, the Bureau of Safe Drinking Water has staff dedicated to providing both training and outreach support services to PWS operators. The DEP website also provides timely and useful information for treatment plant operators.

Paperwork Requirements

Paperwork requirements include:

- Completion of a Level 1 and/or Level 2 Assessment form when sample results indicate the presence of total coliform and/or *E. coli* in a sufficient number of samples as designated by the rule.
- Submission of a seasonal system start-up plan for PWS that operate seasonally.
- Annual submission of a form to the Department certifying that a seasonal system start-up plan was implemented prior to opening for the season.
- Updating of a source water assessment report when a community water system's annual evaluation identifies changes to actual or probable sources of contamination.
- Additional reporting requirements for PWS that exceed the lower IFE triggers.
- Reporting of log inactivation values on a monthly basis using existing forms.
- Reporting a failure of alarm or shutdown equipment.
- Reporting additional disinfection residual levels measured in the distribution system.
- Development and maintenance of a distribution map for noncommunity water systems.

G. Sunset Review

This regulation 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.

H. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P. S. § 745.5(a)), on <<*Insert Date*>>, the Department submitted a copy of these proposed amendments to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental

Resources and Energy Committees (Committees). In addition to submitting the proposed amendments, the Department has provided IRRC and the Committees with a copy of a detailed Regulatory Analysis Form prepared by the Department. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed amendments within 30 days of the close of the public comment period. The comments, recommendations or objections shall specify the regulatory review criteria that have not been met. The Regulatory Review Act specifies detailed procedures for review of these issues by the Department, the General Assembly and the Governor prior to final publication of the regulations.

I. Public Comments

The Department is particularly interested in comments regarding the following topics.

Alternative Sampling Locations for the RTCR

The federal rule gives States an option to allow alternative sampling locations for repeat monitoring in lieu of the requirement to collect at least one repeat sample within five taps upstream or downstream of the original site. Under this provision, if alternative locations are allowed, PWS may propose repeat monitoring locations to the State that the PWS believes to represent a pathway for contamination to the distribution system. The Department is interested in comments regarding:

- a. Why alternative repeat monitoring locations should be allowed.
- b. How a PWS would demonstrate that an alternative repeat monitoring location represents the pathway for contamination that led to the original coliform-positive sample in the distribution system.
- c. Whether only fixed alternative repeat monitoring locations should be allowed or if a standard operating procedure for choosing locations may also be allowed and why.
- d. Whether alternative repeat monitoring locations must be submitted under the signature of a certified operator.
- e. Whether alternative repeat monitoring locations must be submitted under the seal of a professional engineer.
- f. Whether alternative locations should only be allowed for systems serving greater than 9,999 people.

Electronic Reporting of Assessment Forms

When a PWS is required to conduct an assessment under the RTCR, they must submit a form to the Department demonstrating that they have properly completed an assessment of their water system.

The Department would like to receive comments regarding PWS interest in submitting these forms electronically.

System Service and Auxiliary Power

The Department proposed, in the May 12, 2014 pre-draft version of this rulemaking, amendments to Chapter 109 regarding system service and auxiliary power. The pre-draft language is included below:

§ 109.708. [Planned] System service [interruptions] and auxiliary power.

(a) System service. No later than the dates specified in paragraphs (1) – (3), a community water supplier shall ensure operation of the sources, treatment and pumping facilities necessary to ensure that safe and potable water is continuously supplied to users in accordance with the requirements of subsection (b) or (c) or both. A continuous supply of safe and potable water meets all applicable MCLs, MRDLs and treatment techniques specified in § 109.202 (relating to state MCLs, MRDLs and treatment technique requirements) and is sufficient to maintain system pressure as specified in § 109.607 (relating to pressures) throughout the distribution system.

(1) By (insert date 12 months after effective date of the regulation) for systems serving 3,300 or fewer persons.

(2) By (insert date 24 months after effective date of the regulation) for systems serving 3,301-10,000 persons.

(3) by (insert date 36 months after effective date of the regulation) for systems serving greater than 10,000 persons.

(b) Auxiliary power. System service must be provided through one or more of the following methods:

(1) Connection to at least two independent power feeds from separate substations.

(i) The power feeds may be located in the same conduit or supported from the same utility pole.

(ii) If overhead power feeds are used, the power feeds may not cross or be located in an area where a single plausible occurrence (e.g., a fallen tree) could disrupt both power feeds.

(2) On-site auxiliary power sources (i.e. generators or engines).

(c) Alternate provisions. The Department may approve alternate provisions, such as finished water storage capacity or interconnections with another public water system, to meet the requirements of subsection (a).

(d) Planned service interruptions. The public water supplier shall give reasonable notice to the affected customers prior to a planned service interruption affecting quantity or quality of the water delivered to the customer. If the interruption is scheduled to exceed 8 hours and affect 15 or more service connections the water supplier shall also notify the Department.

The Department has decided to seek further comment before moving forward with these amendments. Specifically, the Department would like to receive comments on the following:

- a. What actual costs have been incurred by water systems that have already installed an auxiliary power supply or other resiliency measures?
- b. Which facilities should be considered a primary component of a water system, meaning the facilities are indispensable to the effective operation of the water system?
- c. Costs vary considerably for portable versus fixed generators. The type of fuel supply also impacts costs. What are the pros and cons of these various options?
- d. Do additional alternatives exist to meet the requirements of subsection (a)?
- e. Considering the information below, how are water systems assuring that safe and potable water is continuously provided to the users when auxiliary power is not available?

When answering these questions consider that Pennsylvania is susceptible to natural disasters, such as ice storms, tropical storms and hurricanes, which can lead to massive and extended flooding and/or power outages. Recent events include the following:

- In 2011, Hurricane Irene and Tropical Storm Lee caused the following impacts:
 - Numerous wastewater treatment plants were impacted (i.e., being operated in bypass mode), which led to increased pathogen loading in source water.
 - Statewide, 32 public water systems were impacted by the storms.
 - Impacts included flooded sources, intakes, pump stations and treatment plants; line ruptures and breaks; power outages; mandatory water restrictions; adverse impacts to source water quality (i.e., increased turbidity, pathogen and contaminant loading) that led to a breakdown in treatment; and resulting boil water advisories.
- In 2012, Hurricane Sandy caused the following impacts:
 - Nearly 1.3 million Pennsylvanian's lost power.
 - Statewide, 85 community water systems were impacted. Impacts included total or partial loss of operations due to power outages, and resulting boil water advisories.
 - Most of the impacted water systems were small systems, where redundancy and back-up systems are lacking.
 - Systems with redundancy and back-up systems (including dual power feeds and back-up generators) were able to maintain operations until the power was restored.
 - Maintaining potable water quality during and after flooding was challenging. The storm caused an increase in pathogens and contaminant loading into the source water, breakdowns in treatment, and a loss of positive pressure in the distribution system. Effectively treating drinking water during and after the storm required increased vigilance and operational control.

Water outages caused by power failures can cause additional adverse effects including:

- Lack of water for basic sanitary purposes, such as potable water use and flushing toilets.

- Increased risk to public health due to intrusion of contaminants into the distribution system from leaks and breaks, and backflow from cross-connections.
- Dewatering of the distribution system and resulting physical damage to pipes when they are re-pressurized. This problem is compounded due to an aging infrastructure.

Several other mid-Atlantic and Northeastern states are considering or have already promulgated regulations for auxiliary power. Both New Jersey and New York have existing design standards for auxiliary power. New York requires standby power through incorporation of Ten States Standards. New Jersey's requirements can be found at N.J.S.A. 58:12A-4(c) and N.J.A.C. 7:10-11.6(i). New Jersey recently evaluated its regulations and issued additional guidance and best management practices regarding auxiliary power. This document is available on their website at <http://www.nj.gov/dep/watersupply/pdf/guidance-ap.pdf> . Finally, Connecticut is in the process of updating its regulations to incorporate generator and emergency contingency and response plan requirements. Connecticut's proposed regulations can be found on their website at http://www.ct.gov/dph/lib/dph/public_health_code/pending_regulations/proposed_regulation--generators.pdf .

Interested persons are invited to submit written comments, suggestions or objections regarding the proposed rulemaking to the Environmental Quality Board. Comments, suggestions or objections must be received by the Board by DATE. In addition to the submission of comments, interested persons may also submit a summary of their comments to the Board. The summary may not exceed one page in length and must also be received by the Board by DATE. The one-page summary will be distributed to the Board and available publicly prior to the meeting when the final-form rulemaking will be considered.

Comments including the submission of a one-page summary of comments may be submitted to the Board online, by e-mail, by mail or express mail as follows. If an acknowledgement of comments submitted online or by e-mail is not received by the sender within 2 working days, the comments should be retransmitted to the Board to ensure receipt. Comments submitted by facsimile will not be accepted.

Comments may be submitted to the Board by accessing the Board's online comment system at <http://www.ahs.dep.pa.gov/RegComments>. Comments may be submitted to the Board by e-mail at RegComments@pa.gov. A subject heading of the proposed rulemaking and a return name and address must be included in each transmission.

Written comments should be mailed to the Environmental Quality Board, P. O. Box 8477, Harrisburg, PA 17105-8477. Express mail should be sent to the Environmental Quality Board, Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17101-2301.

John Quigley
Acting Chairperson
Environmental Quality Board