

<h1 style="margin: 0;">Regulatory Analysis Form</h1> <p style="margin: 0;">(Completed by Promulgating Agency)</p>		<p><i>INDEPENDENT REGULATORY REVIEW COMMISSION</i></p>
<p>(All Comments submitted on this regulation will appear on IRRC's website)</p>		
<p>(1) Agency Department of Environmental Protection</p>		<p>IRRC Number: 3177</p>
<p>(2) Agency Number: Identification Number: 7-521</p>		
<p>(3) PA Code Cite: 25 Pa. Code, Chapter 109 (Safe Drinking Water)</p>		
<p>(4) Short Title: Safe Drinking Water General Update and Fees</p>		
<p>(5) Agency Contacts (List Telephone Number and Email Address): Primary Contact: Laura Edinger, 717.783.8727, ledinger@pa.gov Secondary Contact: Jessica Shirley, 717.783.8727, jessshirley@pa.gov</p>		
<p>(6) Type of Rulemaking (check applicable box):</p> <p><input type="checkbox"/> Proposed Regulation</p> <p><input checked="" type="checkbox"/> Final Regulation</p> <p><input type="checkbox"/> Final Omitted Regulation</p>		<p><input type="checkbox"/> Emergency Certification Regulation;</p> <p><input type="checkbox"/> Certification by the Governor</p> <p><input type="checkbox"/> Certification by the Attorney General</p>
<p>(7) Briefly explain the regulation in clear and nontechnical language. (100 words or less)</p> <p>The purpose of this final-form rulemaking is to:</p> <ol style="list-style-type: none"> 1. Incorporate the remaining general update provisions that were separated from the proposed Revised Total Coliform Rule (RTCR) as directed by the Environmental Quality Board (EQB) on April 21, 2015, including revisions to treatment technique requirements for pathogens, clarifications to permitting requirements, and new requirements for alarms, shutdown capabilities, and system service. 2. Amend existing permit fees and add new annual fees to supplement state costs and address the funding gap (\$7.5M). 3. Add new amendments to establish the regulatory basis for issuing general permits, clarify that noncommunity water systems (NCWS) require a permit or approval from the Department prior to construction and operation, and address concerns related to gaps in monitoring, reporting and tracking of back-up sources of supply. 		
<p>(8) State the statutory authority for the regulation. Include <u>specific</u> statutory citation.</p> <p>Section 4(a) of the Pennsylvania Safe Drinking Water Act (SDWA), 35 P.S. § 721.4(a), which authorizes the Environmental Quality Board (the Board) “. . .to adopt such rules and regulations of the department governing the provision of drinking water to the public, as it deems necessary for the implementation of the provisions of this act.” With respect to the fees set forth in Sections 109.1401 –</p>		

109.1409, Section 4(c) of the SDWA (35 P.S. § 721.4(c) authorizes and directs the Board to “establish fees for permit applications, laboratory certification and other services” and that such fees shall “bear a reasonable relationship to the actual cost of providing a service.” The rulemaking is also being made under the authority of section 1920-A of the Administrative Code of 1929, 71 P.S. § 510-20(b), which authorizes the Board to promulgate rules and regulations necessary for the performance of the work of the Department.

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

Section 1413 of the Federal Safe Drinking Water Act, 42 U.S.C. § 300g-2a, requires that, for the state to retain primary enforcement authority (primacy), the state must adopt drinking water regulations that are “no less stringent than” the national primary drinking water regulations. This section further requires states to adopt and implement a program that is consistent with federal requirements and meets minimum program elements. The Federal drinking water primacy regulations at 40 CFR Part 142, subpart B (relating to primary enforcement responsibility) set forth the program requirements that states must meet to retain primary enforcement responsibility. Furthermore, Section 5(a) of the Pennsylvania SDWA, 35 P.S. § 721.5(a), requires the Department of Environmental Protection (DEP or Department) to adopt and implement a public water supply program which includes those program elements necessary to assume state primary enforcement responsibility under the Federal act.

The U.S. Environmental Protection Agency (EPA) has evaluated the performance of the Department in meeting the requirements necessary to retain primacy. EPA’s findings were documented in a letter dated December 30, 2016. See attached letter. The findings included the following:

- Programmatic requirements are not being met in a complete and timely manner. Minimum program requirements must be met for states to maintain primacy for the Safe Drinking Water Program.
- The Department’s average of 149 public water systems (PWS) per sanitarian (field inspector) is more than double the Association of State Drinking Water Administrator’s (ASDWA) national average. EPA cautions the Department that this kind of excessive workload is not sustainable and program performance will continue to suffer.
- The Department failed to meet the federal requirement for sanitary surveys (full inspections). Not completing sanitary survey inspections in a timely manner can have serious public health implications as major violations could be going unidentified.
- In November 2016, EPA conducted a file review of the Department’s implementation of the Lead and Copper Rule. EPA is currently reviewing the information collected; EPA’s report intends to highlight insufficient program personnel in its findings and recommendations.
- EPA is encouraged by the Department’s proposed rulemaking to increase program funding and is hopeful that the Drinking Water Program will receive the necessary resources to improve program performance and reduce personnel shortfalls.

A written action plan was due to EPA within 60 days of the letter (by February 28, 2017) to address the concerns raised in the letter. The Department’s response was sent on February 24, 2017. See attached letter.

The Department has committed to sending routine updates to EPA with information about program performance and staffing levels until the final-form rulemaking is in place and new staff are hired and trained. Updates were sent on July 24, 2017 and January 18, 2018. Failure to meet minimum program elements may jeopardize primacy. See attached letters.

To retain primacy, the Department must ensure it receives the necessary resources to improve program performance and reduce personnel shortfalls. This regulation is necessary to address the funding gap.

Other updates to Chapter 109 are not mandated by Federal law. However, these updates are directly related to previously adopted Federal regulations and are, therefore, needed to improve compliance and provide better clarity.

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

Part I: General Updates

Source Water Protection and New Source Permitting Requirements

The Source Water Assessment and Protection Program amendments will support the protection of public drinking water sources, which will result in maintaining the highest source water quality available. Revisions include adding definitions relating to source water protection and requiring assessments for new sources as part of the permitting process. These revisions will not only protect public health but will also help to maintain, reduce or avoid drinking water treatment costs which occur when the best available source is not selected and protected.

Source water protection represents the first barrier to drinking water contamination. A vulnerable drinking water source 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 (CWS) source is costly for the water supplier and the public. For example, it is estimated that the total cost of the May 2000 Walkerton, Ontario *E. coli* contamination incident was \$64.5 million (*The Economic Costs of the Walkerton Water Crisis* by John Livernois, 2001). In addition to increased monitoring and treatment costs for the water system, there may be costs associated with containment or remediation, legal proceedings, adverse public health and environmental effects, reduced consumer confidence, diminished property values, and replacement of the contaminated source.

A case study in Texas showed that water suppliers in source water areas with chemical contaminants paid \$25 more per million gallons to treat drinking water than suppliers in areas with no chemical contaminant detections. Dearmont, D., et al. (1998), "Costs of Water Treatment Due to Diminished Water Quality: A Case Study in Texas," *Water Resources Research*, 34(4), 849—853. A study by The Trust for Public Land 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. The Trust for Public Land, (2002), "The Cost of Not Protecting Source Waters." A study by the Pennsylvania Legislative Budget and Finance Committee stated, "(r)educing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards." Legislative Budget and Finance Committee (2013), "A Cost Effective Alternative Approach to Meeting Pennsylvania's Chesapeake Bay Nutrient Reduction Targets." According to the Legislative Budget and Finance study, a study by the Brookings Institute suggested that a one percent decrease in sediment loading will lead to a 0.05 percent reduction in water treatment costs. Findings from 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 amendments related to new sources of supply in §109.503 (relating to PWS construction permits) will more clearly define the existing requirements regarding the proper order of the permitting process for developing a new PWS source. These clarifications are needed to help ensure that the proper level of treatment is designed and installed in a timely manner; thereby resulting in less delay for permitting a new source that may be needed to meet public health protection requirements, or providing redundancy in the event of contamination of existing sources. These amendments should result in cost savings due to the avoidance of expensive mistakes in the permitting process.

Surface Water and Groundwater Under the Direct Influence (GUDI) Filter Plants

EPA describes 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.” *National Primary Drinking Water Regulations*, EPA 816-F-09-004 (May 2009). These amendments will ensure that PWSs consistently produce water that meets turbidity standards and are able to deliver safe and potable water to all users.

The 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, as stated in the below-referenced article, 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. *Cost of illness in the 1993 Waterborne Cryptosporidium outbreak, Milwaukee, Wisconsin*. Corso, et al. *Emerging Infectious Diseases* [serial online] 2003 April. Available from: URL: <http://wwwnc.cdc.gov/eid/article/9/4/02-0417>.

Filter Plant Performance Requirements

Existing regulations at § 109.301(1)(i) (relating to general monitoring requirements) require turbidity monitoring of the combined filter effluent (CFE) once every four hours. This period of intermittent sample review allows the production of significant volumes of water that are not monitored for compliance with the maximum allowable turbidity limit. The final-form amendments for CFE turbidity monitoring will require continuous monitoring and recording of the results every 15 minutes. This will also enable operators to identify problematic water quality trends and respond more quickly with necessary process control adjustments.

Individual filter effluent (IFE) monitoring ensures that filter deficiencies are identified and corrected before a CFE turbidity exceedance occurs. Existing regulations require continuous IFE turbidity monitoring at conventional and direct filtration plants. The final-form amendments for IFE monitoring include all filtration types. In recent years, the Department has documented breakdowns in treatment of individual filters at filter plants not classified as conventional or direct. The likelihood of a breakdown in treatment or physical integrity of an individual filter is a concern regardless of the specific type of filter technology used. This explains the reason for proposed amendments to expand existing requirements.

Health effects associated with microbial contaminants tend to be due to short-term, single dose exposure rather than long-term exposure. Therefore, if a short duration single turbidity exceedance of the existing maximum allowable turbidity limit occurs and goes unnoticed, consumers are at risk of exposure to microbial pathogens. By requiring continuous monitoring and recording of the results at least every 15 minutes at both CFE and IFE locations for all filter plants, water suppliers will be better able to identify problems before an exceedance occurs and determine compliance with the maximum allowable turbidity limit at all times.

While the Department favors establishing more stringent IFE and CFE turbidity compliance and trigger levels of 0.30 NTU and 1.0 NTU for surface water filtration plants, in response to numerous comments from the Small Water Systems Technical Assistance Center Advisory Board (TAC) and public commentators, the Department is deferring such amendments to §§109.202(c)(1)(i)(A) and 109.701(a) until the EPA completes its six-year review of the Federal turbidity requirements established under the Surface Water Treatment Rules. This will allow the Department to consider EPA's proposed changes before moving forward with proposed modifications to applicable state regulatory requirements. Until that time, the Department encourages filter operators to voluntarily meet optimal water quality levels and respond to trends of increasing turbidity as quickly as possible. This can be accomplished through the use of the Department's existing programs, including the Area-Wide Optimization and Filter Plant Performance Evaluation and Partnership for Safe Water programs. Through these programs, the SDW program has always dedicated significant resources towards compliance assistance / violation prevention at surface water filtration plants.

Additionally, the proposed alarm and shutdown capability amendments under § 109.602 (relating to acceptable design) remain in this final-form rulemaking, which are also targeted at surface water filtration plants. The automated plant shut down requirements are intended to prevent poor quality water from reaching customers, which will protect public health, reduce PWS costs related to corrective actions and issuing public notice, reduce costs to the community, and maintain consumer confidence. Therefore, the improved alarm and shutdown capabilities that will occur as a result of systems complying with this final-form rulemaking are a very important interim public health protection measure which will be in place while the Department awaits EPA's future actions on potentially more stringent turbidity provisions.

Proposed modifications in § 109.202(c)(1)(i)(C) (relating to state MCLs, MRDLs and treatment technique requirements) remain unchanged and include specific treatment technique requirements for membrane filtration. These standards are consistent with the results of pilot testing conducted throughout this Commonwealth, recommendations by EPA in the Membrane Filtration Guidance Manual (EPA 815-R-06-009, November 2005), as well as recommendations made by equipment manufacturers. These standards were previously applied through special permit conditions. Certified operators have consistently maintained the proposed levels of performance at membrane filter plants throughout this Commonwealth; and when deviations from this performance have occurred, follow-up investigations revealed the need for repairs to this treatment barrier. The Membrane Filtration Guidance Manual may be found by typing the title of the document into the search box at <https://nepis.pa.gov> or at the following direct link: <https://goo.gl/horVd4>

An additional revision requires all surface water filtration plants to implement a filter bed evaluation program that assesses the overall integrity of each filter to identify and correct problems before a turbidity exceedance or catastrophic filter failure occurs. Filters are the final barrier for removal of acute pathogens, and are therefore critical to public health protection. For many systems in this

Commonwealth and across the country, this infrastructure is aging, and the revision to require a physical inspection once per year is a necessary minimum preventative action item.

All of these filter plant performance provisions are part of a multi-barrier approach to ensure treatment is adequate to provide safe and potable water to all users.

Automatic Alarms and Shutdown Capabilities

Filter plants are complex and dynamic. In response to many circumstances, the water plant operator must take an immediate action to protect public health, such as when source water quality changes, chemical feed pumps malfunction, filters require backwashing, or other unforeseen circumstances occur. Water plant operators are often required to perform other duties, which leaves the operation of the water plant unattended, and which limits the operator's ability to respond immediately to treatment needs.

Automated alarms and shutdown capabilities play an important role in modern water treatment and public health protection. Many water suppliers have already taken advantage of readily available technology to reduce personnel costs while still providing safe water to their customers. The amendments will ensure that all surface water filtration plants have the minimum controls in place to ensure that operators are immediately alerted to major treatment problems. The amendments will also ensure that unmanned filter plants are automatically shut down when the plant is producing water that is not safe to drink, which prevents contaminated water from being provided to customers for extended periods of time. These alarms and shutdown capabilities will allow operators at both attended and unattended filtration plants to promptly respond to the water quality problems and treatment needs of the plant. The automated plant shut down is intended to prevent poor quality water from reaching customers, which will protect public health, reduce PWS costs related to corrective actions and issuing public notice, reduce costs to the community, and maintain consumer confidence.

Regarding the alarm and shutdown capability requirements, TAC expressed concern with the wording in § 109.602(i)(2)(iv) of the proposal which read: "any other operational parameter determined by the Department as necessary for the system to maintain compliance." TAC believed that the wording was too broad. The language has been removed. The Department will rely on appropriate water system personnel (for example, properly certified operators and consulting engineers) to carefully evaluate what additional operational parameters may require alarms for their particular filter plant. Additionally, if lack of an alarm is linked to risk of treatment breakdown, the Department will address these issues via compliance and/or permit special conditions on a case by case basis. The provision requiring an alarm for "clearwell levels" was also modified, based on comments received from TAC, to requiring an alarm for "water levels necessary to maintain Giardia CT". This was necessary because not all filter plants rely solely on their clearwell to maintain 1 log (90%) inactivation of Giardia.

Filter-To-Waste

The Department's Filter Plant Performance Evaluation (FPPE) program has evaluated approximately 1,250 filters since 1999. The results of these evaluations show that 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 backwash and/or maintenance. The amendments require all filter plants that have the ability to filter-to-waste to do so following filter backwash and/or maintenance and before placing the filter into service. Filtering to waste will reduce the likelihood of pathogens passing through filters and into the finished drinking water. The amendments do not require water suppliers without filter-to-waste capabilities or with undersized filter-to-waste capabilities to make a capital improvement. In response to TAC comments, an additional option was included in the final-form rulemaking to allow

for implementation of extended terminal sub-fluidization backwash procedures, as long as this is implemented consistently and documented in operational records.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The amendments to system service and auxiliary power requirements will strengthen system resiliency and ensure that safe and potable water is continuously supplied to consumers and businesses. A continuous and adequate supply of safe drinking water is vital to maintaining healthy and sustainable communities.

PWS sources and treatment facilities in this Commonwealth are susceptible to emergency situations resulting from both natural and man-made disasters. Examples of emergencies from recent years include tropical storms, flooding, high winds, ice, snow, industrial chemical plant runoff, pipeline ruptures, and transportation corridor spills. These emergencies have resulted in significant impacts to consumers and businesses due to inadequate water quantity or quality, and the resulting water supply warnings and advisories. For example, in 2011, Hurricane Irene and Tropical Storm Lee caused flooding, water line ruptures, and power outages resulting in mandatory water restrictions and boil water advisories (BWA) at 32 PWSs in Pennsylvania. In 2012, Hurricane Sandy caused similar problems at 85 CWSs. Most of the impacted systems were small systems where redundancy and back-up systems were lacking. In comparison, systems with redundancy and adequate planning were able to maintain operations until the power was restored, with little negative impact to their customers. Countless incidents at individual CWSs have occurred due to localized emergencies, with interruptions in potable drinking water service that could have been prevented if adequate preparation and equipment were available.

In addition, numerous wastewater treatment plants were forced to send untreated sewage to waterways in this Commonwealth during these major weather events. PWSs that use these waterways as a source of supply for drinking water were at an increased risk due to extremely elevated turbidity levels and pathogen loading. Effectively treating drinking water during and after emergencies requires increased vigilance and operational control.

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

- Lack of water for basic sanitary purposes, such as bathing, hand-washing and flushing toilets.
- Increased risk to public health when water systems experience a sharp reduction in supply, which can result in low or no pressure situations within the distribution system. Low pressure can allow intrusion of contaminants into distribution system piping from leaks, and backflow from cross connections.
- Dewatering of the distribution system can result in physical damage to pipes when the system is re-pressurized. This situation is exacerbated due to the nationwide problem with aging infrastructure.

These amendments will improve the reliability of service provided to all consumers by requiring the development of a feasible plan to consistently supply an adequate quantity of safe and potable water during emergency situations. More specifically, water suppliers will need to provide on-site auxiliary power sources (specifically, generators), or connection to at least two independent power feeds from separate substations; or develop a plan for alternate provisions, such as interconnections with neighboring water systems or finished water storage capacity. Ideally, water systems will implement a combination of options to improve their redundancy and resiliency.

In response to TAC and other public comments, the Department has made several modifications to the proposed rulemaking in the final-form rulemaking. First, the Department has expanded the alternate provision options further to include “a combination of alternate provisions”, “portable generators”, and a category of “other” alternate provisions; within this category, system specific alternate provisions may be proposed to insure uninterrupted system service. Additionally, due to the variety of system-specific challenges, the Department has included in a new § 109.708(c) (relating to system service and auxiliary power) the option to submit a corrective action schedule for necessary improvements which have not been completed by the compliance deadlines specified in § 109.708(a) for submittal of the USSP. This new approach requires certification of completion of the USSP form created by the Department by the deadlines specified in § 109.708(a). However, if the USSP identifies that deficiencies exist which prevent a continuous supply of safe and potable water as specified in § 109.708(a), and the community water supplier has not addressed those deficiencies by the deadline for USSP submittal, a schedule must be submitted within six months which includes detailed corrective actions and corresponding completion dates. These modifications will help enable the PWS to spread out the cost for compliance with these provisions over a longer period of time. Additionally, these revisions will provide water suppliers with more flexibility in choosing the approach that best fits their particular water system, and adequate time to implement that plan in the most effective manner.

Part II: Amended Permit Fees and New Annual Fees

The second major component of the amendments includes new annual fees and amended permit fees to supplement State costs and help to fill the funding gap. These fees are expected to bring in \$7.5 million, which is half of the Commonwealth’s portion of Safe Drinking Water Program implementation costs.

These fees are necessary to ensure adequate funding for the Department to carry out its responsibilities under the Federal and State Safe Drinking Water acts. Pennsylvania is ranked third in the nation in terms of the number of PWSs, with 8,521 PWSs across this Commonwealth. The Department is responsible for regulating all PWSs in this Commonwealth and ensuring that safe and potable drinking water is continuously supplied to the 11.3 million customers the PWSs serve.

The Department’s appropriations from the General Fund for the Safe Drinking Water Program have steadily decreased in recent years while the cost of staff salaries and benefits, as well as other operation costs, have increased. The result has been an overall decrease in staffing for the Safe Drinking Water Program of 25% since 2009. As discussed in more detail below, these staff reductions have led to a steady decline in the Department’s ability to perform services necessary to ensure compliance with SDWA requirements. Based on the current funding level of \$19.7 million, approximately \$7.5 million in additional funding is necessary to increase staffing to adequate levels and to provide necessary services.

The minimum services that the Safe Drinking Water Program must provide to administer the SDWA and its regulations include:

- Conducting surveillance activities, such as sanitary surveys and other inspections.
- Collecting and analyzing drinking water samples.
- Determining compliance with the regulations, a permit or order.
- Taking appropriate enforcement actions to compel compliance.
- Reviewing applications, plans, reports, feasibility studies and special studies.

- Issuing permits.
- Conducting evaluations, such as filter plant performance evaluations and other site surveys.
- Tracking, updating and maintaining water supply inventory, sample file, and enforcement data in various data management systems.
- Meeting and assuring compliance with all State and Federal recordkeeping and reporting requirements.
- Conducting training.
- Providing technical assistance.
- Responding to water supply emergencies.

Failure to provide these services may result in an increased risk to public health as well as the loss of approval from EPA for the Department to serve as the primary enforcement agency for the administration of the Safe Drinking Water Program in Pennsylvania under Federal law. The loss of primacy would include the loss of all Federal funding, including the infrastructure funding under the State Revolving Fund.

The Board has the authority and is directed under Section 4(c) of the SDWA (35 P.S. § 721.4(c)) to establish fees for services that bear a reasonable relationship to the actual cost of providing the services. The Board must also consider the impacts of the proposed fees on small businesses as part of the regulatory analysis required by section 5 of the Regulatory Review Act (71 P.S. § 745.5). Sixty-eight percent of the water systems in this Commonwealth are considered small businesses.

The fees in this final-form rulemaking will provide the Department with funding necessary to properly administer the SDWA while bearing a reasonable relationship to the actual cost of services provided by the Department and in a manner that minimizes the adverse impact on water systems with fewer customers to bear the cost.

Recent Decline in Department Staff and Services

Program staffing and performance have steadily declined since 2009.

The number of sanitary surveys (full inspections) has steadily declined since 2009. The Federally mandated inspection frequency is every three years for CWSs and every five years for noncommunity water systems (NCWSs).

SDW Measure	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16
No. Sanitary Surveys	3,177	2,271	2,553	2,310	2,181	2,415	1,847

(Source: Governor’s Office Performance Measures, data source is Environment Facility Application Compliance Tracking System (eFACTS))

The number of overdue inspections has ranged from 448 to 703 per year in the last six years. Failure to conduct routine and timely inspections may mean that serious violations are not being identified. In 2015, all six DEP regions had overdue inspections. The range of overdue inspections was 2.4 % to 11.5 %. The total number of systems with overdue inspections was 542. The Federal Public Water System Supervision (PWSS) Grant and primacy measure for inspection frequency has not been met.

SDW Measure	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16
No. Overdue Inspections	703	551	458	448	492	542

(Source: eFACTS and Pennsylvania Drinking Water Information System (PADWIS))

The reduction in staffing levels and inability to conduct routine and timely inspections because of funding shortfalls may be contributing to the overall declining trend in PWS compliance rates. For the last four years, the percentage of CWSs that met health-based drinking water standards fell short of the goal of 95%.

SDW Measure:	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16
% of CWSs that Meet Health-based Drinking Water Standards	97%	97%	97%	91%	92%	92%	91%

(Source: Governor's Office Performance Measures, data source is PADWIS)

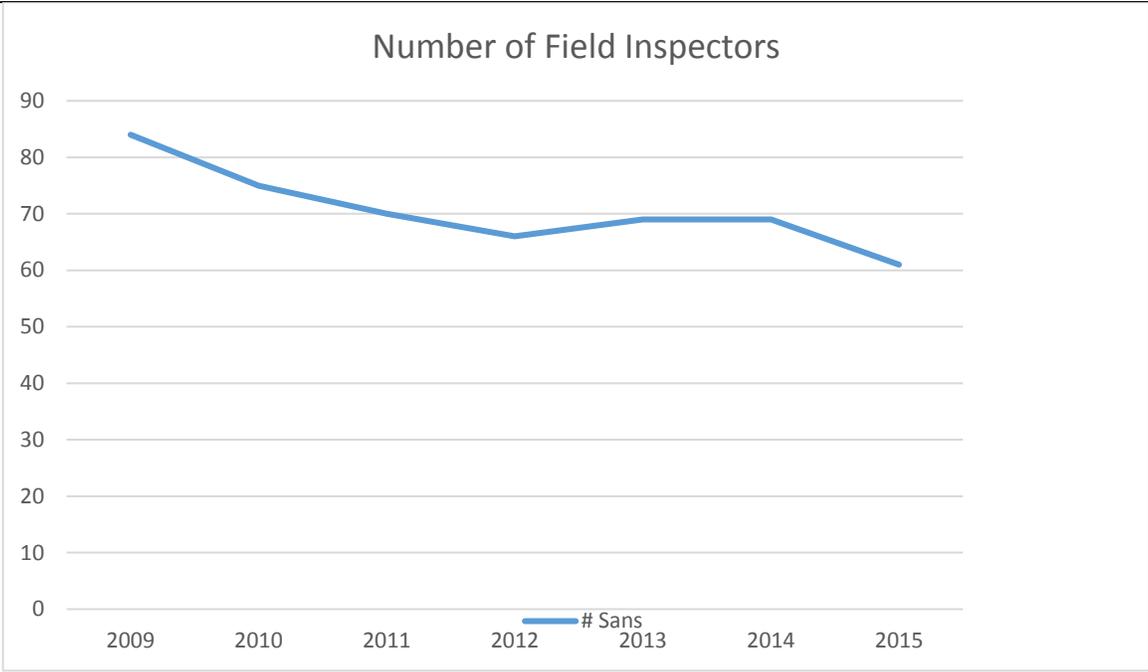
As set forth in the Department's Annual Compliance Report for 2015, PWSs continue to exceed health-based maximum contaminant levels (MCL), maximum residual disinfectant levels (MRDL), and treatment technique (TT) requirements for arsenic, radionuclides, volatile organic chemicals, disinfection byproducts, nitrate/nitrite and pathogens; and PWSs continue to fail to adequately treat drinking water for contaminants such as lead.

The number of unaddressed violations has also continued to increase. In 2015, three of six DEP regions had more than 500 violations that had not been returned to compliance within 180 days or addressed through formal enforcement. (Note: Unaddressed violations are tracked over a five-year period because it generally takes several years to return MCL violations to compliance.)

SDW Measure:	FY 05-10	FY 06-11	FY 07-12	FY 08-13	FY 09-14	FY 10-15
No. Unaddressed Violations	4,298	4,746	5,536	6,849	6,353	7,922

(Source: PADWIS)

Performance is directly tied to the mandated workload and available resources for the Safe Drinking Water Program. Overall, staffing levels are down by 25% since 2009.



Thus, the Department’s workload has steadily increased since 2009. As per a workload analysis, the recommended number of PWSs/per DEP sanitarian (inspector) was determined to be 100-125 to ensure completion of mandated inspections, review of PWS self-monitoring data, compliance and enforcement determinations, maintenance of PADWIS and eFACTS and review of monitoring plans, emergency response plans, assessments, and waivers. In 2009, the Department’s average workload was within the recommended range at 118 PWSs/per sanitarian. In 2015, five of six DEP regions exceeded the recommended workload. The recommended workload has been exceeded in at least four of six DEP regions for the last three years. As per a 2012 Association of Safe Drinking Water Administrators (ASDWA) survey, the national range and average of PWSs/per inspector is 45-140 and 67, respectively. All DEP regions far exceed the national average.

Region	No. PWSs			No. Sanitarians			Sanitarian Workload (No. PWSs/San)		
	2009	2014	2015	2009	2014	2015	2009	2014	2015
1 SERO	1,062	911	911	9	7	6	118	130	152
2 NERO	2,973	2,555	2,559	23	20	19	129	128	135
3 SCRO	2,596	2,400	2,408	21	14	13	124	171	185
4 NCRO	1,115	937	941	10	7	6	112	134	157
5 SWRO	879	680	694	10	8	6	88	78	105
6 NWRO	1,302	1,211	1,205	11	9	7	118	117	158
Totals	9,927	8,694	8,718	84	65	57	118 Avg.	134 Avg.	153 Avg.

Performance issues and concerns have been well documented by EPA. Please refer to Question 8 for additional information about EPA’s concerns and the Department’s responses.

Part III: New General Updates

General Permits

These amendments establish the regulatory basis for the issuance of general permits for high volume, low risk modifications or activities to streamline the permitting process.

Requirements for NCWSs

These amendments clarify that noncommunity water systems (NCWS) that are not required to obtain a permit must still obtain Department approval of the facilities prior to construction and operation.

Address Gaps in Monitoring, Reporting and Tracking Back-up Sources

These amendments address concerns related to gaps in the monitoring, reporting and tracking of back-up water sources and entry points. As per Federal and Commonwealth regulations, 40 CFR 141.23(a), 141.24(f) and (h) and 141.26(a) and 25 Pa. Code §§ 109.301 and 109.303, respectively, all sources and entry points must be included in routine compliance monitoring to ensure water quality meets safe drinking water standards. Sources and entry points that do not provide water continuously are required to be monitored when used. However, monitoring requirements for back-up sources are not currently tracked, which means verifiable controls are not in place to ensure that all sources and entry points meet safe drinking water standards. Some of these sources have not been used in at least five years, and, therefore, the Department does not know the water quality for these sources. In addition, the treatment facilities and other appurtenances associated with these sources may have gone unused as well, and may no longer be in good working order. These amendments will ensure that all sources and entry points are monitored at least annually, or when in use. PWSs will also be required to document in a comprehensive monitoring plan how routine compliance monitoring will include all sources and entry points.

These concerns were most recently highlighted in a 2010 report from EPA's Office of Inspector General entitled "*EPA Lacks Internal Controls to Prevent Misuse of Emergency Drinking Water Facilities*" (Report No. 11-P-0001). Note: The term "emergency" is often used to describe sources other than permanent sources. In this Commonwealth, some of these back-up sources have not been used in at least five years, and, therefore, the Department does not know the water quality for these sources.

In order to better understand the scope of the problem in this Commonwealth, the following data was retrieved from PADWIS.

Entry Points (EP)				
PWS Type	Total No. EPs	No. Permanent EPs	No. Non-Permanent EPs	% Non-Permanent EPs
CWSs	3,330	3,003	327	10%
Others	7,880	7,760	120	2%
Total	11,210	10,763	447	4%

An entry point is the place at which finished water representative of each source enters the distribution system. Routine compliance monitoring is not tracked at non-permanent entry points. Non-permanent entry points include the existing categories of seasonal, interim, reserve, and emergency entry points.

Based on the data, CWSs provide finished water to consumers through a total of 3,330 entry points, 327 (or 10%) of which are non-permanent. Therefore, as many as 10% of all entry points may not be included in all required monitoring prior to serving water to consumers.

The numbers are even higher at the individual source level.

Water Supply Sources (wells, springs, surface water intakes, etc.)				
PWS Type	Total No. Sources	No. Permanent Sources	No. Non-Permanent Sources	% Non-Permanent Sources
CWSs	5,252	4,634	618	12%
Others	8,604	8,297	307	4%
Total	13,856	12,931	925	7%

For CWSs, as many as 12% of all sources may not be included in routine compliance monitoring, yet these sources can be used at any time.

The Department also reviewed the monitoring history of the 447 non-permanent entry points mentioned above.

Non-Permanent Entry Points (EP)			
PWS Type	No. EPs	No. & % of EPs with <u>No</u> Monitoring Data (Since 1992)	No. of EPs with <u>Some</u> Monitoring Data
CWSs	327	143 (44%)	184 (of these EPs, 47 were sampled in 2016, 37 were sampled during the 2012 – 2015 monitoring period, and the remaining 101 were sampled prior to 2012.
Others	120	7 (6%)	113 (55 EPs have recent data (2016)).
Total	447	150 (34%)	

For CWSs, 143 (or 44%) of all non-permanent entry points have **no** monitoring data since 1992. Of the 184 entry points with some data, most of the data is 5 to 10 years old.

The use of unmonitored sources and entry points could adversely impact basic water quality, including pH, alkalinity, turbidity, corrosivity and lead solubility, dissolved inorganic carbon, and natural organic matter. Water suppliers may have limited information about how these sources or entry points will impact treatment efficacy and distribution system water quality. In addition, back-up or emergency sources may have poor water quality or MCL exceedances. The use of these sources without proper monitoring and verifiable controls could lead to an increased risk to public health.

Finally, treatment facilities and other appurtenances associated with these sources may also have gone unused, and may no longer be in good working order. Back-up sources and entry points with unknown water quality or that have not been used or are no longer in good working order provide a false sense of security in terms of system resiliency and emergency response. While the Department understands that many facilities are not used on a “24/7” basis, these amendments will ensure that all permitted sources and entry points are monitored at least annually, or when in use.

In response to public comments, the final-form rulemaking allows the use of the “reserve” designation for select sources and entry points, without conducting routine annual compliance monitoring, if documentation is provided to the Department that supports the use of this designation. Selected sources and entry points that meet these criteria will be covered by a special condition in the permit that requires Department notification and completion of compliance monitoring prior to use.

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

There are several provisions in this final-form rulemaking that are more stringent than Federal requirements. The Department developed these provisions to better protect public health and to be consistent with existing Pennsylvania drinking water regulations.

The additional state provisions included in this regulation are designed to help reduce the occurrence of violations, treatment breakdowns, and water supply emergencies; thereby improving system resiliency and reliability, and reducing the need for staff resources to respond to these emergency situations. The provisions were developed with Department staff input and are intended to address the highest priority issues of concern. Establishing proper safeguards under specific regulatory requirements that clearly outline violation prevention expectations for the regulated community is a critical means to improve public health protection.

Turbidity and Filtration Requirements

- Amendments to Sections 109.202(c)(1)(i)(C), 109.301(1)(i) - (iv), 109.301(2)(i), 109.602(f) and (g), 109.701(a)(2) (relating to reporting and recordkeeping), 109.703(b)(1) (relating to facilities operation), and 109.703(b)(5), strengthen turbidity requirements and filtration monitoring and reporting requirements. These amendments are based on Department inspections and the evaluation of more than 1,250 filters through the Department's FPPE program. These evaluations have documented that existing requirements are not sufficient to prevent short duration turbidity spikes or the shedding of particles and microbial pathogens into the finished water, which puts consumers at risk of exposure to microbial pathogens. These amendments are part of a multi-barrier approach to ensure treatment is adequate to provide safe and potable water to all users.
- Amendments to §§109.301(1)(iv), 109.301(2)(i)(D) and 109.1305(a)(1)(iii) (relating to compliance monitoring) require systems to notify the Department within 24 hours of the failure of continuous monitoring equipment and to repair/replace continuous monitoring equipment, regardless of system size, within five working days of equipment failure. These provisions will ensure timely repair and restoration of continuous monitoring equipment necessary to maintain adequate treatment of drinking water for public health protection.

Comprehensive Monitoring Plan Requirements

The comprehensive monitoring plan requirements under §§109.303(i) (relating to sampling requirements) and 109.717 (relating to comprehensive monitoring plan) are more stringent than Federal requirements. However, the Federal requirements under 40 CFR 141.23 and 141.24 (relating to inorganic and organic chemical sampling; and analytical requirements) require water systems to ensure that monitoring is representative of each source after treatment. The Department is simply using the comprehensive monitoring plan as the means to ensure that all sources are included in routine compliance monitoring.

System Resiliency Requirements

Amendments to § 109.708(a) through (c) concerning auxiliary power are more stringent provisions that improve system resiliency and strengthen existing requirements related to the need for up-to-date and feasible emergency response plans. The frequency of unpredictable and erratic weather emergencies continues to increase. These amendments will protect customers by improving the ability of their water supplier to provide a consistent supply of safe and potable water during the various emergency situations that have occurred in the past and which will inevitably arise at some point in the future. Note that

wastewater treatment plants have been required to have a back-up power supply for many years. These amendments will provide consistency in both the drinking water and wastewater industries.

Requirements for Responding to Significant Deficiencies

Section 109.716 (relating to significant deficiencies) includes amendments to requirements for responding to significant deficiencies. This section is more stringent than Federal requirements because it combines the separate notification and corrective action requirements for surface water and ground water systems into one consistent protocol. These amendments are intended to simplify the requirements for responding to significant deficiencies, especially for systems with both surface water and groundwater sources. These amendments are also intended to ensure that corrective actions are taken as soon as possible to protect public health.

Please note, as well, that the Department amended several provisions in response to TAC and public comments. Several provisions that are more stringent were either modified or deleted, including the turbidity requirements under §§ 109.202 and 109.701, the monitoring and reporting requirements for “back-up” sources and entry points under §§ 109.301, 109.303, 109.703 and 109.717, and the system service and auxiliary power requirements under § 109.708.

(12) How does this regulation compare with those of the other states? How will this affect Pennsylvania’s ability to compete with other states?

Source Water Protection and New Source Permitting Requirements

Two other states in EPA Region III, West Virginia and Virginia, also require source water assessments for new sources. In Virginia, the goal is to have a source water assessment completed by Virginia drinking water program staff before the operations permit is issued (Virginia Department of Health, November 2017, Working Memo 852 - Source Water Assessment Program Implementation). Under West Virginia’s new statute on source water protection, an assessment is included as part of a local source water protection plan and must be completed by the water supplier prior to operation for a surface water source or a surface water influenced ground water source (West Virginia Senate Bill 373 of 2014 – Source Water Protection, as codified in Code of West Virginia § 16-1-9c(b)(8) (relating to required update or completion of source water protection plans)).

Regarding the development of local source water *protection* programs, Delaware and more recently, West Virginia, have requirements for source water protection by statute (Delaware Source Water Protection Law of 2001 – 7 Del. C. §§ 6081, 6082, 6083 [relating to reporting on source water protection; adoption of source water assessment, wellhead protection, and excellent groundwater recharge potential areas by counties and municipalities; and adoption of source water assessment, wellhead protection, and excellent groundwater recharge potential areas by the Governor’s Cabinet Committee on State Planning Issues]; and Code of West Virginia § 16-1-9c(b)(8)). Under this final-form rulemaking, the development of a local source water protection program will remain voluntary in Pennsylvania.

The source water aspects of the final-form rulemaking should not affect this Commonwealth’s ability to compete with other states.

The Commonwealth has had a permitting program in place for many years and the permitting aspects of the final-form rulemaking should not affect this Commonwealth’s ability to compete with other states.

Surface Water and GUDI Filter Plants

Turbidity Monitoring, Recording, and Reporting

Thirty states responded to a survey conducted by ASDWA on behalf of this Commonwealth. Twenty states require continuous turbidity monitoring and recording of CFE and fourteen states require continuous IFE monitoring and recording for all filtration types.

Automatic Alarms and Shutdown Capabilities

Based on the ASDWA survey, twelve states responded that they require filter plants to be attended at all times while in operation. Of the twelve states that require attended operation, seven have regulations that establish standards for plant automation, alarms and shutdowns. The Commonwealth's amendments are less stringent than the twelve other states since attended operation is not being required. In addition, the amendments related to plant automation, alarms, and shutdown capabilities are less stringent than those standards suggested by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (also known as the 10 States Standards).

Annual Filter Inspection Program

All thirty states responding to the ASDWA survey require some of their filter plants to implement an annual filter inspection program. This amendment is not expected to negatively affect this Commonwealth's ability to compete with other states because most PWSs have in-house filter inspection capabilities through their existing maintenance staff or certified water operator(s).

Filter-To-Waste

All thirty states responding to the ASDWA survey require some of their filter plants to filter-to-waste. This amendment is not expected to negatively affect this Commonwealth because implementation is not expected to require any capital improvements.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The Department surveyed neighboring states regarding their requirements for system resiliency. Three nearby states, New Jersey, New York, and Connecticut, provided information regarding similar regulations and/or design standards they have in place. Department staff communicated with staff from these states when developing proposed regulatory language. These amendments are not expected to negatively affect this Commonwealth's ability to compete with other states because they will help ensure adequate quantity and quality are consistently provided to homeowners and businesses in this Commonwealth during emergency situations.

New Annual Fees and Amended Permit Fees

At least 26 states charge annual fees to augment the cost of their Drinking Water Programs, including the nearby states of Delaware, New Jersey, Ohio and Virginia. Some of these states charge a flat fee based on the PWS type and size. Other states charge a fee based on population served or the number of service connections.

Annual fees for these states range from \$25 to \$160,000 and are summarized below. The Commonwealth's fees range from \$50 to \$40,000.

Summary of PWS Fees Levied by Other States	
State	Fee
Alaska	18 AAC § 80.1910 Type: Fee for Service Examples: Sanitary survey - \$398 to \$585 for 1 st source + \$117 for each additional source, other inspections - \$64/hour
Arkansas *	AC § 20-28-104(a) Type: Annual Fee CWSs and Nontransient NCWSs: Based on # connections \$0.30/connection/month, minimum fee = \$250 Transient NCWSs: \$125
California	Title 22 CCR, Division 4, Chapter 14.5, § 64305 Type: Annual Fee CWSs: minimum \$250 or \$6/connection (fee per connection on declining tiered scale from \$6 to \$1.35) NTNCWSs: minimum \$456 or \$2/person TNCWSs: \$800
Colorado	CRS § 25-1.5-209 Type: Annual Fee CWSs: Based on population Surface Water: ranges from \$75 - \$21,630 Ground Water: ranges from \$75 - \$4,450 Nontransient NCWSs: ranges from \$75 - \$4,450 Transient NCWSs: ranges from \$75 - \$3,960
Delaware *	16 Del. Code § 135(b)(1) Type: Annual Fee CWSs: Based on # service connections, ranges from \$50 - \$3,000 Nontransient NCWSs: \$50 Transient NCWSs: \$25
Florida	FAC § 62-4.053 Type: Annual Fee CWSs: Based on permitted design capacity Ranges from \$100 – \$6,000 Nontransient NCWSs: \$100 Transient NCWSs: \$50
Idaho	IAC § 58.01.08-010 Type: Annual Fee CWSs and Nontransient NCWSs: Based on # connections 1-20 \$100 21-184 \$5/connection, max. \$735 185-3,663 \$4/connection, max. \$10,988 >3,664 \$3/connection Transient NCWSs: \$25

Indiana	IC § 13-18-20.5-2 Type: Annual Fee CWSs: Based on # connections - < 400 connections \$350 ≥ 400 connections \$0.95/connection Nontransient NCWSs: Based on population – ranges from \$150 - \$300 Transient NCWSs: Based on source water type – ranges from \$100 - \$200
Kansas	K.A.R. 28-15-12 Type: Annual Fee CWSs: Capped at \$0.002 per 1,000 gallons of water sold
Louisiana *	Act 605 of 2016 Type: Annual Fee CWSs: Based on # connections, \$12/connection
Maine	§ 10-144, CMR Chapter 231, § 1-A Type: Annual Fee Base Fee (\$75) + (\$0.45 (per capita rate) x (pop)) Cap = \$30,000
Massachusetts	MGL, Chapter 21A, Section 18A Type: Annual Fee PWSs: Metered – minimum \$20, \$8.50/million gallons used Unmetered – \$50 - \$250 based on population
Michigan	MI SDWA, 1976, PA 399 Type: Annual Fee CWSs: Based on population, ranges from \$400 - \$134,000 Nontransient NCWSs: \$575 Transient NCWSs: \$135
Minnesota *	Minnesota Statutes 2009, § 144.3831 Type: Annual Fee CWSs: Based on # connections, \$6.36/connection
Mississippi *	MS ST § 41-26-23 Type: Annual Fee CWSs: Based on # connections, \$3.00/connection, cap = \$40,000
Missouri *	RSMO § 640.100.8 Type: Annual Fee CWSs only: Based on # connections, whether connections are metered, and the size of the meters. \$1.08 - \$3.24/connection
Montana	ARM § 17.38.248 Type: Annual Fee CWSs: Based on # connections – \$2.00/connection, Minimum fee = \$100 Nontransient NCWSs: \$100 Transient NCWSs: \$50

New Jersey	<p>NJAC § 7:10-15 Type: Annual Fee CWSs only: Based on population, and whether system has treatment.</p> <table> <tr> <td></td> <td>w/o treatment</td> <td>w/t</td> </tr> <tr> <td>25-999</td> <td>\$60</td> <td>\$120</td> </tr> <tr> <td>1,000-9,999</td> <td>\$360</td> <td>\$720</td> </tr> <tr> <td>10,000-49,999</td> <td>\$790</td> <td>\$1,580</td> </tr> <tr> <td>>50,000</td> <td>\$1,640</td> <td>\$3,280</td> </tr> </table>		w/o treatment	w/t	25-999	\$60	\$120	1,000-9,999	\$360	\$720	10,000-49,999	\$790	\$1,580	>50,000	\$1,640	\$3,280
	w/o treatment	w/t														
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>50,000	\$1,640	\$3,280														
North Carolina	<p>NC ST § 130A-328 Type: Annual Fee CWSs: Based on population, fee ranges from \$255 - \$5,950 Nontransient NCWSs: \$150</p>															
Ohio	<p>R.C. § 3745.11 Type: Annual Fee CWSs: Based on sliding scale of # connections, min. \$112 For 100 or more connections, fee ranges from \$0.76 - \$1.92/connection</p> <table> <tr> <td colspan="2"># Connections</td> </tr> <tr> <td>278 (pop=750)</td> <td>\$534</td> </tr> <tr> <td>1,222 (pop=3,300)</td> <td>\$2,346</td> </tr> <tr> <td>3,704 (pop=10,000)</td> <td>\$5,482</td> </tr> <tr> <td>18,518 (pop=50,000)</td> <td>\$20,370</td> </tr> <tr> <td>92,592 (pop=250,000)</td> <td>\$85,185</td> </tr> </table> <p>Nontransient NCWSs: ranges from \$112 - \$16,820 Transient NCWSs: ranges from \$112 - \$792</p>	# Connections		278 (pop=750)	\$534	1,222 (pop=3,300)	\$2,346	3,704 (pop=10,000)	\$5,482	18,518 (pop=50,000)	\$20,370	92,592 (pop=250,000)	\$85,185			
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Oklahoma	<p>OAC § 631-3-21 Type: Annual Fee All PWSs:</p> <table> <tr> <td colspan="4">Flat fee for inspections + Flat fee for SDWA activities + Lab costs</td> </tr> <tr> <td>GW</td> <td>\$100</td> <td>+</td> <td>\$1,600</td> <td>+</td> </tr> <tr> <td>SW</td> <td>\$200</td> <td>+</td> <td>\$6,800</td> <td>+</td> </tr> </table>	Flat fee for inspections + Flat fee for SDWA activities + Lab costs				GW	\$100	+	\$1,600	+	SW	\$200	+	\$6,800	+	
Flat fee for inspections + Flat fee for SDWA activities + Lab costs																
GW	\$100	+	\$1,600	+												
SW	\$200	+	\$6,800	+												
Rhode Island	<p>R46-13-DWQ Type: Annual License Fee CWSs: Based on # connections – \$1.50 per connection, ranges from \$330 - \$32,500 Nontransient NCWSs: \$330 Transient NCWSs: \$200</p>															
South Carolina	<p>S.C. Code of Regulations R. 61-30.G(2) Type: Annual Fee CWSs and Nontransient NCWSs: 3 Components: Administration + Distribution Monitoring + Source Monitoring Costs for Admin only:</p> <table> <tr> <td># Connections</td> <td>Base amount + rate/tap</td> <td>Total Fee</td> </tr> <tr> <td>278 (pop=750)</td> <td>\$769 + \$3.85/tap</td> <td>\$1,839</td> </tr> <tr> <td>1,222 (pop=3,300)</td> <td>\$3,749 + \$1.96/tap</td> <td>\$6,144</td> </tr> <tr> <td>18,518 (pop=50,000)</td> <td>\$23,389 + \$0.46/tap</td> <td>\$31,907</td> </tr> <tr> <td>92,592 (pop=250,000)</td> <td>\$35,239 + \$0.17/tap</td> <td>\$50,979</td> </tr> </table> <p>Transient NCWSs: \$275</p>	# Connections	Base amount + rate/tap	Total Fee	278 (pop=750)	\$769 + \$3.85/tap	\$1,839	1,222 (pop=3,300)	\$3,749 + \$1.96/tap	\$6,144	18,518 (pop=50,000)	\$23,389 + \$0.46/tap	\$31,907	92,592 (pop=250,000)	\$35,239 + \$0.17/tap	\$50,979
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92,592 (pop=250,000)	\$35,239 + \$0.17/tap	\$50,979														

Texas	30 TAC § 290.51 Type: Annual Fee CWSs and Nontransient NCWSs: Based on # connections – <25 \$200 25-160 \$300 ≥161 \$4/connection Transient NCWSs: \$100
Virginia	12VAC5-600-50 to 110 Type: Annual Fee CWSs: Based on # connections –\$3/connection, cap = \$160,000 # Connections 278 (pop=750) \$834 1,222 (pop=3,300) \$3,666 18,518 (pop=50,000) \$55,554 92,592 (pop=250,000) \$160,000 Nontransient NCWSs: \$90
Washington	WAC 246-290-070 Type: Annual Fee Based on # connections – cap = \$100,000 Base Fee + Per Connection Fee \$100 + \$1.05 to \$1.30

* Indicates States where a portion of the annual fee goes towards monitoring costs in addition to administrative costs to run the drinking water program.

Overall, the final-form rulemaking should not put this Commonwealth at a competitive disadvantage with any other state. Water service for residential customers is generally not susceptible to competition from other states. Rather, the amendments should enhance this Commonwealth’s ability to compete with other states in attracting new businesses by improving public health protection, providing a consistent supply of high quality water, and promoting healthy and sustainable communities.

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

The amendments will be incorporated into the existing language of Chapter 109. Other than this incorporation, the amendments should not affect any existing or proposed regulations of DEP or any other state agency.

(14) Describe the communications with and solicitation of input from the public, any advisory council/group, small businesses and groups representing small businesses in the development and drafting of the regulation. List the specific persons and/or groups who were involved. (“Small business” is defined in Section 3 of the Regulatory Review Act, Act 76 of 2012.)

The draft proposed rulemaking was provided to the TAC Advisory Board for review and discussion on November 14, 2016 and January 5, 2017. Comments and recommendations were received from TAC on January 23, 2017. The proposed rulemaking was also presented to stakeholders through a webinar on December 8, 2016. Email invitations to this webinar were sent to 6,248 water system owners and operators (all PWSs with an email address in PADWIS), and it was advertised on various Department

and water industry websites. 325 registered attendees participated in the webinar, with some viewing the webinar with a group of other individuals. Therefore, total attendee participation was greater than 325 individuals. The proposed rulemaking was published in the *Pennsylvania Bulletin* on August 26, 2017 with a 30-day comment period.

Revisions were made to the draft final-form rulemaking in response to the comments received. The draft final-form rulemaking was presented to the TAC on December 7, 2017. Final comments were received from TAC on December 22, 2017. The TAC Board made ten recommendations, five of which were incorporated into this final-form rulemaking:

- TAC recommended that electronic submission of Consumer Confidence Reports (CCR) to DEP be allowed as an environmentally prudent option. The Department continues to investigate options for water suppliers to submit reports electronically, and intends to move forward with promulgating a regulation to implement this recommendation as soon as a system is available to accept electronic submissions.
- TAC made three recommendations regarding NSF International (NSF) certification requirements under § 109.606 (relating to chemicals, materials and equipment). These recommendations were not incorporated because NSF certification is an existing requirement. NSF certification has been a long-standing requirement to ensure the safety and efficacy of materials and equipment. NSF certification ensures that harmful metals such as cadmium, chromium and lead do not leech from materials and equipment. NSF certification also ensures that water treatment devices can meet manufacturers' claims and effectively treat the water. However, the Department clarified in the final-form rulemaking that NSF-certification requirements apply to materials and equipment that come in contact with water. In other words, these requirements apply to the wetted parts of materials and equipment, and exclude motors, casings and the like which do not come into contact with the water. Finally, § 109.606 allows the use of other standards to meet these criteria. For example, the use of materials, such as concrete and stainless steel, which meet American Water Works Association (AWWA) standards, would be acceptable to the Department.
- TAC made recommendations regarding the elimination of the fees and whether the fees bear a reasonable relationship to the cost of services. These recommendations are addressed in Section E of the preamble.

Section E of the preamble includes more information about the TAC Board's recommendations.

(15) Identify the types and number of persons, businesses, small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012) and organizations which will be affected by the regulation. How are they affected?

One or more of these amendments will affect all PWSs as well as the people to whom they provide water. Currently, there are 8,521 PWS that serve a total population of over 11.3 million people in this Commonwealth. Of the 8,521 PWSs, approximately 2,641 are owned by a municipality, an authority, the Commonwealth, the Federal government, or another not-for-profit entity. The other 5,880 PWSs are either privately or investor owned.

A review of the U.S. Small Business Size Regulations under 13 CFR Part 121 provides a standard for determining what constitutes a small business for the NAICS category relating to PWSs. A PWS falls within NAICS category 221310, Water Supply and Irrigation Systems, which comprises establishments

primarily engaged in operating water treatment plants and/or operating water supply systems. The small size standard for this NAICS category is annual receipts of not more than \$27.5 million.

For the 5,880 privately or investor owned PWSs, the Department has no way to estimate annual receipts. Therefore, the Department used the federal definition of a small water system in 40 CFR 141.2, which states that a small water system is “a water system that serves 3,300 persons or fewer”. Under this regulatory package, a PWS owned by a private individual or investor serving less than or equal to 3,300 persons was considered to be a small business. In this Commonwealth, there are approximately 5,780 PWSs meeting these criteria and can be considered as a small business. 924 of these are CWSs.

The persons served by these PWSs will benefit from the amendments, because strengthened turbidity, filtration and source water protection requirements will reduce the potential risk to human health, improved resiliency will ensure a continuous supply of safe and potable water, and collectively, the amendments will enable communities and businesses to plan and build future capacity for economic growth.

Some PWSs will be affected by the need to change operations or make capital improvements to comply with some of the proposed provisions. See responses to questions (17) – (21) for more information about costs.

(16) List the persons, groups or entities, including small businesses, that will be required to comply with the regulation. Approximate the number that will be required to comply.

Source Water Protection and New Source Permitting Requirements

Regarding the amendments to the permitting requirements for new sources, based on historical permit submissions, approximately 30 CWSs per year will be required to comply.

Surface Water and GUDI Filter Plants

The 353 filter plants in this Commonwealth which are operated by 319 water systems will be required to comply with one or more of these amendments.

The approximate number of filter plants by ownership type is shown below:

- 181 Authorities
- 85 Investors
- 57 Municipalities
- 15 State Agencies
- 6 Water Associations
- 4 Other
- 3 Private Individuals
- 2 Federal Agencies

Of the 353 filter plants, 22 are considered to be small businesses. For purposes of this regulatory package, a PWS owned by a private individual or investor serving less than or equal to 3,300 persons was identified as a small business. Revisions made between the proposed and final-form rulemaking have not reduced the number of filter plants that must comply; however, deletions of proposed more stringent turbidity requirements described in the response to Question 10, have significantly reduced the extent of regulatory impacts.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The 1,952 CWSs in this Commonwealth will be required to comply with one or more of these amendments.

The approximate number of CWSs by ownership type is shown below:

- 476 Authorities
- 886 Investors
- 261 Municipalities
- 21 State Agencies
- 129 Water Associations
- 67 Other
- 106 Private Individuals
- 6 Federal Agencies

Of the 1,952 CWSs, 924 are considered to be small businesses. For purposes of this regulatory package, a PWS owned by a private individual or investor serving less than or equal to 3,300 persons was identified as a small business.

- 1,618 CWSs serving fewer than 3300 customers will have 12 months to comply
- 186 CWSs serving from 3,301 – 10,000 customers will have 24 months to comply
- 148 CWSs serving greater than 10,000 customers will have 36 months to comply

Revisions made between the proposed and final-form rulemaking have not reduced the number of CWSs required to comply; however, as described in response to question 10, significant modifications regarding the compliance implementation approach will help enable the cost for compliance with these provisions to be spread out over a longer period of time.

New Annual Fees and Amended Permit Fees

All 8,521 PWSs will be required to comply with one or more of these amendments. Of the 8,521 PWSs, approximately 5,780 may be considered to be small businesses. For purposes of this regulatory package, a PWS owned by a private individual or investor serving less than or equal to 3,300 persons was identified as a small business.

(17) Identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor communities and other public and private organizations. Evaluate the benefits expected as a result of the regulation.

The expected benefits of this final-form rulemaking are (1) the avoidance of a full range of adverse health effects from the consumption of contaminated drinking water such as acute and chronic illness, endemic and epidemic disease, waterborne disease outbreaks, and death; and (2) healthy and sustainable communities.

This final-form rulemaking will provide a positive economic impact to individuals, small businesses and businesses that provide services to the drinking water industry.

Source Water Protection and New Source Permitting Requirements

PWSs will incur a cost when completing the source water assessment portion of the permitting process for new sources. However, the initial cost is minor compared to the ongoing costs that would result if the best available source were not developed or inadequate treatment is installed.

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 CWS source is costly for the water supplier and the public. For example, it is estimated that the total cost of an *E. coli* contamination incident in Walkerton, Ontario was \$64.5 million (*The Economic Costs of the Walkerton Water Crisis* by John Livernois, 2001). 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 case study in Texas showed that water suppliers in source water areas with chemical contaminants paid \$25 more per million gallons to treat drinking water than suppliers in areas with no chemical contaminant detections. Dearmont, D., et al. (1998), "Costs of Water Treatment Due to Diminished Water Quality: A Case Study in Texas," *Water Resources Research*, 34(4), 849—853. A study by The Trust for Public Land 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. The Trust for Public Land, (2002) "The Cost of Not Protecting Source Waters." A study by the Pennsylvania Legislative Budget and Finance Committee stated, "(r)educing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards". Legislative Budget and Finance Committee (2013), "A Cost Effective Alternative Approach to Meeting Pennsylvania's Chesapeake Bay Nutrient Reduction Targets." According to the Legislative Budget and Finance study, a study by the Brookings Institute suggested that a one 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.

Surface Water and GUDI Filter Plants

The financial impact to PWSs with filter plants includes the cost associated with installation of continuous monitoring equipment, installation of alarm and shutdown capabilities, implementation of a filter bed inspection program, and the cost associated with filtering to waste.

The amendments are intended to reduce the public health risks and associated costs related to waterborne pathogens and waterborne disease outbreaks. Costs related to waterborne disease outbreaks are extremely high. For example, as stated in the below-referenced article, 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. *Cost of illness in the 1993 Waterborne Cryptosporidium outbreak, Milwaukee, Wisconsin.* Corso PS, Kramer MH, Blair KA, Addiss DG, Davis JP, Haddix AC. *Emerg Infect Dis* [serial online] 2003 April. Available from: URL: <http://wwwnc.cdc.gov/eid/article/9/4/02-0417>

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The financial impact to CWSs will depend on which option they determine to be most feasible to comply with this rulemaking. This may include the cost associated with installation of an emergency generator, developing an independent power feed from an alternate substation, developing interconnections with neighboring water systems, or designing and/or constructing additional finished water storage. Furthermore, cost estimates for each specific action will vary significantly depending on the size of the water system, as well as the level of deficiency of their existing capability to consistently provide an adequate quantity and quality of water.

These amendments will help reduce or avoid the significant impacts to consumers that result from inadequate water quantity or quality and the associated cost of consumption advisories and/or bulk water hauling. For example, in 2011 Hurricane Irene and Tropical Storm Lee caused flooding, water line ruptures, and power outages resulting in mandatory water restrictions and BWAs at 32 PWSs in Pennsylvania. In 2012, Hurricane Sandy caused similar problems at 85 CWSs. Most of the impacted systems were small systems where redundancy and back-up systems were lacking. In comparison, systems with redundancy and adequate planning were able to maintain operations until the power was restored, with little negative impact to their customers. Countless smaller incidents at individual CWSs have occurred due to localized emergencies, such as flooding, with interruptions in potable drinking water service that could have been prevented if adequate preparation and equipment were available.

Of the 1,952 CWSs expected to comply with the final-form rulemaking, 1,618 serve less than 3,300 customers, and are therefore considered small businesses.

Cost savings of avoiding interruption of continuous supply of safe and potable water were evaluated using the Water Health and Economic Analysis Tool (WHEAT) software developed by EPA. The Department ran the model for a scenario of a water system serving 2,500 customers and experiencing a water outage for two days. The model outcomes regarding economic consequences are summarized as follows:

- The value of water sales that would have occurred if there was no disruption in water service is estimated to be \$2,891.
- The value of additional operating costs incurred during the event, which may include bottled/replacement water, equipment, other remediation, or miscellaneous costs is estimated at \$24,775.
- Total economic impact on the water utility due to the two-day outage (sum of the above losses) is estimated at \$27,666.
- Regional economic consequences for this same event are estimated at \$926,486. This is the total value of economic activity lost among businesses directly affected by the water service disruption, due to the contraction in business activity during the two-day event.

If the water utility complies with the revisions, the potential cost savings for this two-day outage, offsetting the costs to install additional auxiliary power, emergency interconnections with neighboring water systems, and/or finished water storage, are summarized above. These costs would increase with each additional day that the water outage continues.

Additional costs savings to water systems and customers will be the prevention of dewatering of the distribution system piping and protection from damage to collapsed water lines (due to lack of ability to provide adequate quantity water to maintain positive pressure).

It is estimated that 250 boil water advisories (BWA) occur in Pennsylvania each year and that 25% or 63 BWAs are caused by water supply disruptions. The total annual cost savings to the regulated water systems is estimated at \$1,742,958. However, the regional economic cost savings to businesses is estimated at more than \$58 million. These cost savings will offset the costs of improving system resiliency.

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

Source Water Protection and New Source Permitting Requirements

The amendments will support the protection of public drinking water sources resulting in maintaining the highest source water quality available. Protected source water reduces or avoids drinking water treatment costs.

Surface Water and GUDI Filter Plants

The amended filtration requirements are designed to identify and correct problems at the plant before a CFE turbidity exceedance occurs or escalates. The alarm and shutdown capability amendments will ensure that operators are immediately alerted to major treatment problems. A plant producing water that is not safe to drink will automatically shut down when an operator is not immediately available. These requirements will prevent violations, which will protect public health, avoid PWS costs related to correcting violations, and reduce costs to the community.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The amendments to system service and auxiliary power requirements will strengthen system resiliency and ensure that safe and potable water is continuously supplied to consumers and businesses. A continuous and adequate supply of safe drinking water is vital to maintaining healthy and sustainable communities.

This Commonwealth's PWS sources and treatment facilities are susceptible to emergency situations resulting from both natural and man-made disasters. Examples of emergencies from recent years include tropical storms, flooding, high winds, ice, snow, industrial chemical plant runoff, pipeline ruptures, and transportation corridor spills. These emergencies have resulted in significant impacts to consumers and businesses due to inadequate water quantity or quality, and in water supply warnings and advisories.

Please refer to Question 17 for additional information.

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

Source Water Protection and New Source Permitting Requirements

The Department's records show that approximately 30 new CWS sources are permitted each year. The Department estimates that an additional eight hours of work completed by a professional geologist on behalf of the CWS will be needed to comply with the new source permitting requirements. This additional work will amount to approximately \$1,176 per source permitted, based on current hourly rates charged by consulting firms. The total estimated cost is \$35,280 (\$1,176 x 30 new sources).

Surface Water and GUDI Filter Plants

Turbidity Monitoring, Recording, and Reporting

Costs have been derived from vendors of HACH brand turbidimeters; the most commonly used turbidimeter in this Commonwealth. If the water supplier prefers a different brand of equipment, the cost may change. There could be some per instrument cost savings when multiple instruments are purchased. The following table, provided for illustrative purposes, shows costs related to installing and maintaining one HACH continuous monitoring and recording device:

White Light Turbidimeter (analog) and Chart Recorder (analog)

Items	Initial Cost for First Turbidimeter and Recorder	Estimated Annual Calibration and Maintenance Cost	Additional Turbidimeter and Recorder
HACH 1720E and SC200 (analog signal)	\$2,881		\$2,881
Calibration Cylinder	\$ 89		
20 NTU StablCal x (4) Calibrations		\$556	
Lamp Assembly Replacement		\$ 62	
Chart Recorder- Duel Pen	\$1,657		\$1,657
Chart Recorder Paper		\$ 60	
Chart Recorder Replacement Pens		\$ 79	
Installation	\$1,000		
Total (not including tax and shipping)	\$5,627	\$757	\$4,538

Laser Turbidimeter (digital) and Chart Recorder (analog)

Items	Initial Cost for First Laser Turbidimeter and Recorder	Estimated Annual Calibration and Maintenance Cost	Additional Turbidimeter and Recorder
HACH TU5400 Laser Turbidimeter (includes flow sensor RFID, and System Check)	\$6,142		\$6,142
HACH SC200 (includes flow sensor input, RFID, and Modbus))	\$2,596		\$2,596
Maintenance/Calibration Kit (includes primary standards)		\$1,100 (\$349 to replace the primary standards that are included in the kit)	
Replacement Desiccant Cartridge		\$ 17	

Chart Recorder- Duel Pen	\$1,657		\$1,657
Chart Recorder Paper		\$ 60	
Chart Recorder Replacement Pens		\$ 79	
Installation	\$1,000		
Total (not including tax and shipping)	\$11,395	\$1,256 (1st year) \$ 505 (subsequent year)	\$10,395

Individual Filter Effluent (IFE) Monitoring

There are 353 filter plants in this Commonwealth of which 263 are currently required to continuously monitor and record their IFE and already have instrumentation installed. The amendments require the remaining 90 filter plants to comply with the IFE monitoring requirements of which 69 already have the needed instrumentation. Therefore, 21 filter plants will need to install one or more monitoring and recording device. The majority of these 21 filter plants only have two filters. The estimated cost, for a water supplier having two filters, to install IFE monitoring and recording equipment is expected to be \$10,165 for white light turbidimeters or \$21,790 for laser turbidimeters. The annual maintenance cost for the monitoring and recording equipment on two filters is estimated to be \$757 for the white light turbidimeters or \$505 for laser turbidimeters. The cumulative cost for the installation of the IFE monitoring and recording equipment at all 21 filter plants is estimated to be \$213,465 for white light turbidimeters or \$457,590 for laser turbidimeters, for an average cost of \$335,527. The cumulative cost for maintaining the monitoring and recording equipment at all 21 filter plants is estimated to be \$15,897 per year for white light turbidimeters and \$10,605 per year for laser turbidimeters, for an average annual cost of \$13,251. (Note: Significant regulatory proposals relating to turbidity monitoring were deleted between proposed and final rulemaking, as described in responses to Questions 10 and 11. As a result, the number of additional PWSs that will be required to install IFE turbidimeters is reduced further to only those PWSs that do not currently have IFE turbidimeters and are unattended during operation.)

Combined Filter Effluent (CFE) Monitoring

The majority of filter plants in this Commonwealth already continuously monitor and record their CFE. The exact number of filtration plants without this capability is not known, but based on a review of 90 filtration plants, it is estimated to be 15% of the 353 filter plants in this Commonwealth. The estimated cost to install CFE monitoring and recording equipment is \$5,627 per plant for white light turbidimeters and recorders or \$11,395 per plant for laser turbidimeters and recorders. The annual maintenance cost for the monitoring and recording equipment is estimated to be \$757 for the white light turbidimeters or \$505 for laser turbidimeters. The cumulative cost for an estimated 52 filter plants to install continuous monitoring and recording equipment is estimated to be \$292,604 for white light or \$592,540 for laser turbidimeters, for an average cost of \$442,572. The cumulative cost for maintaining the monitoring and recording equipment at all 52 filter plants is estimated to be \$39,364 per year for white light turbidimeters or \$26,260 per year for laser turbidimeters, for an average annual cumulative cost of \$32,812.

Annual Filter Inspection Program

No additional costs are expected to be associated with implementation of a filter inspection program as this will be included in the duties of existing PWS staff.

Filter-To-Waste

No expected costs are associated with the proposed filtering to waste amendments.

Automatic Alarms and Shutdown Capabilities

The following information is provided as example cost estimates related to adding automated alarm and shutdown capabilities at a small surface/GUDI water filtration plant. The costs include the monitor/controller and alarm dial-out system. It is assumed that the existing filtration plant will already have the chlorine residual analyzer, turbidity analyzer and clearwell level transmitter. An estimated cost for the equipment installation is provided. However, systems could save costs if they install using in-house staff or local contract electrician.

The controller/monitor will include adjustable alarm set-points with time delay for a relay output which can be wired to the plant for shut down of the filter system upon the following conditions:

- High or Low Clear Well Level
- High or Low Entry Point Chlorine Residual
- High CFE Turbidity

The monitor/controller can be configured to send a pre-shut down warning to allow operators the opportunity to go to the plant to try to resolve the problem before reaching the shut-down set-point. If the process value reaches the shut-down set-point, the filter plant shut-down command will occur and a shut-down alarm message will be sent to the plant operator by text message, email or voice message. If the facility already has an alarm dialer with capacity for three additional alarm inputs, the alarm dialer can be eliminated from the package. A deduction is shown for this on each equipment option. If the system is staffed continuously, then only alarm capabilities are necessary. This can be accomplished for a lower cost, possibly no additional cost depending on the capability of existing filter plant supervisory control and data acquisition (SCADA) equipment. A description of the options follows, with associated estimated costs.

Option A – Monitor/Alarm System with Standard Dialup Phone Line and Phonetics Alarm Dialer

1) One alarm control device with analog inputs for the following:

- EP Chlorine Residual
- CFE and IFE Turbidity
- Water Levels Needed to Maintain Adequate Giardia CT

2) One Phonetics eight-channel alarm auto-dialer with power supply and battery backup. Requires standard dial-up telephone line connected to alarm dialer. Provides voice message alarm only.

3) One System Wiring Diagram – custom wiring diagram for specific analyzer types in use at Owners site. Exact terminal numbers will be provided based on Owners equipment to allow installation by local electrical contractor.

4) Furnish onsite calibration, programming and alarm configuration for all equipment and provide full onsite testing for all equipment including alarm testing and dial-out for plant designated phone numbers and/or pager numbers.

5) Provide onsite operator training on maintenance and standardization of above equipment.

6) Four Operation and Maintenance (O&M) Manuals with complete Instruction Manuals for the above system.

Total System Price: \$8,860

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000

Deduct for use of Owner Furnished Alarm Dialer: (\$1,400)

Option B – Monitor/Alarm System with Standard Dialup Phone Line and Alarm Dialer

1) One alarm control device with analog inputs for the following:

- EP Chlorine Residual
- CFE and IFE Turbidity
- Water Levels Needed to Maintain Adequate Giardia CT

2) One eight-channel alarm auto-dialer with power supply and battery backup. Requires standard dial-up telephone line connected to alarm dialer. Provides voice message alarm only.

3) One System Wiring Diagram – custom wiring diagram for specific analyzer types in use at Owners site. Exact terminal numbers will be provided based on Owners equipment to allow installation by local electrical contractor.

4) Furnish onsite calibration, programming and alarm configuration for all equipment and provide full onsite testing for all equipment including alarm testing and dial-out for plant designated phone numbers and/or pager numbers.

5) Provide onsite operator training on maintenance and standardization of above equipment.

6) Four O&M Manuals with complete Instruction Manuals for the above system.

Total System Price: \$9,980

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000

Deduct for use of Owner Furnished Alarm Dialer: (\$2,500)

Option C – Monitor/Alarm System with Cellular Alarm Dialer

1) One alarm control device with analog inputs for the following:

- EP Chlorine Residual
- CFE and IFE Turbidity
- Water Levels Needed to Maintain Adequate Giardia CT

2) One cellular alarm notification system with eight-channel alarm input with power supply and battery backup. No dial-up telephone line is required. Provides text and email alarm notification.

3) One System Wiring Diagram – custom wiring diagram for specific analyzer types in use at Owners site. Exact terminal numbers will be provided based on Owners equipment to allow installation by local electrical contractor.

- 4) Furnish onsite calibration, programming and alarm configuration for all equipment and provide full onsite testing for all equipment including alarm testing and dial-out for plant designated phone numbers and/or pager numbers.
- 5) Provide onsite operator training on maintenance and standardization of above equipment.
- 6) Four O&M Manuals with complete Instruction Manuals for the above system.

Total System Price: \$9,700

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000

The Department estimates that 10% of the 353 filter plants in this Commonwealth will need to install a controller. The cumulative installation cost for an estimated 35 filter plants to comply with automated alarms and shutdown capability is estimated to be between \$380,100 and \$419,300.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

All CWSs will be expected to review their existing emergency response plan and equipment to specifically develop an Uninterrupted System Service Plan (USSP) using the form developed by the Department to provide a consistent supply of adequate quantity and quality of water during emergency situations. The Department estimates that 400 CWSs do not have an updated emergency response plan. CWSs that do not have a functional generator or do not have existing capability to meet this requirement using the alternate provision options may need to purchase a generator. The generator should be adequately sized such that it can supply power to critical treatment components necessary to supply safe and potable water. Therefore, the cost of the generator will be proportional to the size of the system (in other words, less expensive for small systems). It is difficult to predict system specific costs because of the various options to comply with the amendments. Estimates for small systems are \$3,000 - \$4,000 per system for the installation of a transfer switch, generator and concrete pad. With revisions made in response to comments, small systems may also explore the lower cost option to rent a portable generator for the following costs: Compact portable generator = \$70/per day for single day use or \$35/day for a weekly rental cost; Mobile towable generator = \$320/per day for single day use or \$140/day for a weekly rental cost. Costs for medium and large systems could range from \$50,000 - \$200,000 per treatment plant. Not all systems will require auxiliary power. Some systems may already meet reliability criteria through storage or interconnections. Several mid-Atlantic states have already moved forward with mandatory requirements for auxiliary power supply including New Jersey, New York and Connecticut.

In order to accommodate the variety of system specific differences that must be addressed in this provision, the Department has included the option for the submission of a schedule for necessary improvements which have not been completed by the compliance deadlines specified in § 109.708(a) for submittal of the USSP. More specifically, this new approach requires certification of completion of the USSP form created by the Department by the deadlines specified in § 109.708(a). However, if the USSP identifies that deficiencies exist which prevent a continuous supply of safe and potable water as specified in § 109.708(a), and the community water supplier has not addressed those deficiencies by the deadline for USSP submittal, a schedule will need to be submitted within six months which includes detailed corrective actions and corresponding completion dates. These significant regulatory modifications will help enable the cost for compliance with these provisions to be spread out over a longer period of time. Additionally, these revisions will provide water suppliers with even more

flexibility in choosing the approach that best suits their particular water system, and adequate time to implement that plan in the most effective manner.

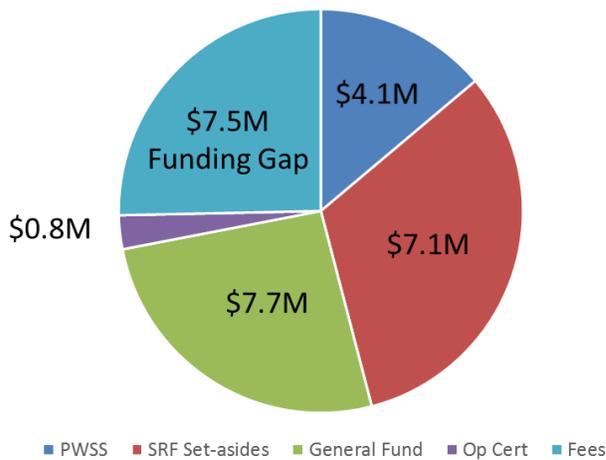
An estimated 30% of small systems (<3,300) or 485 systems may need to use rental services for a portable generator, or install a back-up power supply. Assuming that 50% of these small systems will rent a generator and 50% will install their own equipment, the cumulative cost is estimated to be \$1,115,620. The estimate for medium and large systems is that 20% or 65 systems may need to install a back-up power supply at a cumulative cost of \$8,125,000. Between proposed and final rulemaking, the Department expanded the combination of alternate provisions systems may use, and included more flexibility to potentially spread the cost of compliance over a longer period of time. As such, the costs have been spread out over an anticipated five-year period.

Please see Question 17 for additional information, including information related to potential cost savings.

New Annual Fees and Increased Permit Fees

The current funding available to administer the Safe Drinking Water Program from State and Federal sources is \$19.7 million (see chart below). The new fees will generate approximately \$7.5 million, which would allow the Safe Drinking Water Program to restore staffing levels and reverse the decline in services that has occurred since 2009. The new fees will provide nearly 50% of the Commonwealth's share of funding for the Safe Drinking Water Program. The remaining portion of the Commonwealth's share (\$7.7 million) is expected to be provided through annual General Fund appropriations. If appropriations from the General Fund do not keep pace with program costs, a funding gap could remain even with this final-form rulemaking regulation.

SDW Program Costs and Funding



Federal sources currently provide approximately \$11.2 million to fund the Pennsylvania Safe Drinking Water Program, including:

- Public Water System Supervision (PWSS) grant (\$4.1 million) – used for personnel costs; lab costs; staff training
- State Revolving Fund Set-asides grant (\$7.1 million) – used for personnel costs; capability enhancement programs (training, technical assistance, optimization programs); source water assessment and protection; PADWIS; assistance grants/contracts

The Commonwealth currently provides approximately \$8.5 million to fund the program through the following sources:

- General Fund appropriations (~\$7.7 million) – used for personnel costs
- Operator Certification fees (\$0.8 million) – used for Operator Certification Program implementation costs

With the addition of the \$7.5 million expected to be generated from this final-form rulemaking, the funds available for the Safe Drinking Water Program should total \$27.2 million.

The new fees apply to all 8,521 PWSs, which include 1,952 CWSs, 6,397 noncommunity water systems (NCWSs) and 172 bottled and vended water systems, retail water facilities, and bulk water hauling systems (BVRBs). The new annual fees range from \$250 - \$40,000 for CWSs, \$50 - \$1,000 for NCWSs, and \$1,000 - \$2,500 for BVRBs. If passed on to their customers, these annual fees would result in an increase in cost ranging from \$0.35 to \$10 per person per year, depending on the water system size. These new annual fees, as well as the increases in permit fees (explained further below), are expected to generate the \$7.5 million necessary to restore staffing levels and to provide services required under the SDWA to the 8,521 public water systems in the Commonwealth and the 11.3 million customers they serve.

Section 109.1413 (relating to evaluation of fees) of the final-form rulemaking provides for a review of the fee structure every three years to ensure that the fees continue to adequately supplement the cost of maintaining the program.

As provided in section 14 of the SDWA (35 P.S. § 721.14), all fees would be paid into the State Treasury into a special restricted revenue account in the General Fund known as the Safe Drinking Water Account administered by the Department. The funds may only be used for such purposes as are authorized under the SDWA.

Annual Fees for CWSs

The following table summarizes the annual fees for CWSs, which are based on population and range from \$250 to \$40,000. The per-person costs range from \$0.35 to \$10/person/year.

CWS Annual Fees (Based on Population)		
Population Served	Annual Fee	Cost/Person/Year
100 or less	\$250	\$2.50 - \$10.00
101 – 500	\$500	\$1.00 - \$4.95
501 – 1,000	\$1,000	\$1.00 - \$2.00
1,001 – 2,000	\$2,000	\$1.00 - \$2.00
2,001 – 3,300	\$4,000	\$1.21 - \$2.00
3,301 – 5,000	\$6,500	\$1.30 - \$1.97
5,001 – 10,000	\$10,000	\$1.00 - \$2.00
10,001 – 25,000	\$20,000	\$0.80 - \$2.00
25,001 – 50,000	\$25,000	\$0.50 - \$1.00
50,001 – 75,000	\$30,000	\$0.40 - \$0.60
75,001 – 100,000	\$35,000	\$0.35 - \$0.47
100,001 or more	\$40,000	≤ \$0.40

The Department analyzed the cost of providing services to administer the SDWA and its regulations. The cost of some services can be estimated, while the cost of other services depends on the specific

circumstances and will vary widely. The table below summarizes the Department’s costs of providing those services that can be estimated for CWSs serving various populations. The hourly rate was provided by the Department’s fiscal office and includes salary, benefits, and in-direct costs (such as supplies).

DEP Cost of Services That Can Be Estimated				
Activity	Hours/Activity/Year for CWSs Serving the Following Population			
	<750	750-5,000	5,000-50,000	>50,000
Conduct sanitary surveys	7.5	10	25	37.5
Conduct other inspections	2.5	3.3	5	10
Determine compliance	12	12	15	15
Maintain PADWIS/eFACTS	7.5	7.5	10	10
Review plans/reports	7.5	10	15	15
Provide technical assistance/ training	7.5	7.5	10	10
Total Hours	44.5	50.3	80	97.5
@ \$49/hr =	\$2,180	\$2,465	\$3,920	\$4,778

Examples of other services and costs that involve variable circumstances and preclude a single estimate for the services include the following:

- Sanitary surveys that take longer to conduct due to the complexity or size of the water system. Examples of actual hours expended and costs to complete more complicated sanitary surveys at large water systems (namely, those serving populations > 50,000) are as follows:
 - System A (population = 57,000): 40.5 hours at a cost of \$1,984
 - System B (population = 66,500): 40 hours at a cost of \$1,960
 - System C (population = 87,000): 49 hours at a cost of \$2,401
 - System D (population = 105,000): 60 hours at a cost of \$2,940
 - System E (population = 120,000): 60 hours at a cost of \$2,940
 - System F (population = 747,500): 103 hours at a cost of \$5,047
 - System G (population = 1.6 million): 124 hours at a cost of \$6,076
- Additional follow-up actions taken by the Department in response to a violation. When a drinking water standard is exceeded, Department staff are responsible for consulting with and providing direction to the water system; ensuring that public notice is complete, timely and repeated as needed; tracking, reviewing and approving follow-up and corrective actions (such as collecting confirmation or additional samples, repairing/replacing/installing water treatment, or taking contaminated sources off line); and determining when the system has returned to compliance.

For example, in 2016, monitoring results for a large Pennsylvania water system indicated the 90th percentile lead value exceeded the action level established in the Lead and Copper Rule. This triggered lead service line replacement actions. Department staff spent at least 116.5 hours working to address this important issue. Services provided by the Department to achieve compliance included meetings, file reviews, drafting compliance documents, follow up action reviews and letters. The approximate cost for these services was \$5,708.

- Additional follow-up, corrective and emergency actions taken by the Department in response to a water supply emergency. Water supply emergencies occur each year and require substantial

resources from the Department. The following are examples of emergencies and associated costs for services provided by the Department:

- In the Spring of 2011, unexpected damage to a very large water main resulted in a major leak, loss of significant water quantity and pressure. The result was closure of multiple businesses and government agencies in a large city within this Commonwealth for three days due to lack of a potable water supply. This emergency spanned approximately five consecutive days with approximately 66,500 customers impacted. The Department provided a variety of onsite support services at the site of the break, and at the drinking water filtration plant. Department cost for services provided during this event equates to approximately 160 hours of staff time and a cost of \$7,840.
- During the Summer of 2012, significant construction delays in completing critical renovations and upgrades to a water filter plant threatened the ability to provide an adequate quantity of drinking water to approximately 210,000 customers. Department staff provided a variety of specialized engineering and operational support services over the course of several weeks. Total cost estimate of Department services provided during this event includes 600 hours of staff time costing approximately \$29,400.
- In the Summer of 2015, runoff from a large fire at an industrial facility severely contaminated the intakes for two PWSs thereby rendering their normal source of surface water untreatable for almost three months. Together, the two public water suppliers impacted provided drinking water to approximately 43,000 customers. Several Department staff were involved in providing a wide variety of emergency support services, over the course of several months, to the water suppliers affected. Department cost estimates for this event include 515 staff hours (\$25,235) and emergency sampling costs (\$17,818). The total cost of Department services provided was approximately \$43,053.
- In the winter of 2016, an equipment failure resulted in flooding at a surface water filtration plant which provides water to approximately 20,000 customers. This immobilized treatment and pumping capabilities for six consecutive days. The filter plant did not resume normal operations for approximately two weeks. Without combined efforts by the water system, the Department and neighboring water systems, 20,000 customers could have endured consecutive days without an adequate supply of water. Department services included coordination with neighboring water systems to identify alternate sources of water, emergency permit considerations, site assessments, engineering and operational support. Additionally, the Department loaned the public water system critical water quality monitoring equipment (valued at approximately \$24,000) for approximately 10 weeks to help verify that safe water was consistently provided. The total cost estimate of Department services provided during this event also includes 300 hours of staff time, which cost approximately \$14,700.
- The cost of samples collected by the Department during inspections and FPPEs, in response to complaint investigations, and to assess water quality and protect public health during water supply emergencies. These sampling costs range from \$30 for inorganic analyses to \$400 for pesticides to \$1,200 for analysis of *Cryptosporidium* and *Giardia* to \$2,968 for a complete emergency sampling suite. Total Department lab costs average approximately \$680,000 per year.
- The costs associated with additional training when new regulations are promulgated. One example is the numerous training sessions that were developed and delivered in 2015 - 2016 to

roll-out implementation of the Revised Total Coliform Rule (RTCR) adopted to conform to Federal requirements. This training included eight different training courses, workshops and webinars; that were presented 160 times across the Commonwealth; for a total of 482 hours of training. The cost to deliver 482 hours of training was \$23,618.

- The costs associated with specific follow-up actions established in new regulations. The Federal RTCR became effective on April 1, 2016, and the Department and EPA shared enforcement of the Federal rule until the Commonwealth's regulations were published as final on September 24, 2016. As part of the Department's enforcement responsibilities during this interim period, staff conducted Level 2 assessments at public water systems. A Level 2 assessment is triggered when a public water supply has an *E. coli* MCL violation or when two total coliform triggers occur during a 12-month period. During this interim period, Department staff completed 94 Level 2 Assessments at more than 85 regulated public water systems. These assessments identified over 400 defects that have already been, or are being, corrected, thereby improving public health protection. Estimated costs for services provided by the Department were approximately \$3,000 per assessment for a total cost of \$282,000.

The additional costs described in the first four bulleted items above are more evident in medium and large water systems due to their size, age, complexity, and number of customers at risk. Because these additional costs are variable, it is not possible to establish an average cost for these services. However, these additional costs were considered when determining the annual fees for the medium and large water systems because these costs are for services that the Department provides as part of its administration of the Safe Drinking Water Program.

The annual fees could have been based solely on the costs for the services that could be estimated above. However, that approach would have resulted in a disproportionate impact on the smallest CWSs and would have failed to account for the additional costs incurred by the Department to provide services that cannot be readily estimated, such as those described above, which result in substantially higher costs for medium and large water systems. Thus, the annual fees were developed to bear a reasonable relationship to the actual costs of the services provided while achieving a reasonable cost to the 11.3 million customers served.

Other Annual Fees

Regarding the other annual fees, fees for nontransient noncommunity water systems (NTNCWS) range from \$100 to \$1,000; annual fees for transient noncommunity water systems (TNCWS) range from \$50 to \$500; annual fees for bottled water systems are \$2,500; and annual fees for BVRBs are \$1,000.

These fees were determined using the same criteria as discussed above and are illustrated in the following table. The total hours for services that can be estimated were as follows:

- For NTNCWSs, the total hours ranged from 16 to 22 hours.
- For TNCWSs, the total hours ranged from 8 to 13 hours.
- For BVRBs, the total hours ranged from 21 to 26 hours.

Annual Fees vs. Cost Per Person Per Year				
Population Served	Annual Fee	Cost Per Person Per Year	Estimated Cost of Services	Cost Per Person Per Year
NTNCWSs:				
-100 or less	\$100	\$1.00 - \$4.00	\$784	\$7.84 - \$31.36
101 – 500	\$250	\$0.50 - \$2.48	\$784	\$1.57 - \$7.76
501 – 1,000	\$500	\$0.50 - \$1.00	\$784	\$0.78 - \$1.56
1,001 – 3,300	\$750	\$0.23 - \$0.75	\$1,078	\$0.33 - \$1.08
3,301 or more	\$1,000	\$0.30 or less	\$1,078	\$0.33 or less
TNCWSs:				
100 or less	\$50	\$0.50 - \$2.00	\$392	\$3.92 - \$15.68
101 – 500	\$100	\$0.20 - \$0.99	\$392	\$0.78 - \$3.88
501 – 1,000	\$200	\$0.20 - \$0.40	\$392	\$0.39 - \$0.78
1,001 or more	\$500	\$0.50 or less	\$392	\$0.39 or less
BVRBs:				
Bottled	\$2,500	N/A	\$1,274	N/A
Vended	\$1,000	N/A	\$1,029	N/A
Retail	\$1,000	N/A	\$1,029	N/A
Bulk	\$1,000	N/A	\$1,029	N/A

The number of customers served is based on the Department’s public water system inventory, PADWIS, at the time of billing for annual fees.

The Department will allow quarterly payments for fees of \$6,500 or more.

Permitting Fees for Community and Noncommunity Water System and for BVRBs

The increased permit fees range from \$100 to \$10,000 depending on the population served and whether the permit is for major or minor construction.

The permitting fees were determined using a workload analysis. Costs were assigned based on the relative complexity of the permit review. Permit fees have not been increased since they were originally adopted in 1984.

The Department used the following milestones or steps in the permit review process (with time ranges in hours) to calculate the fees in the final-form rulemaking:

- Administrative completeness review (1 hour)
- Technical review (range of 1 – 153 hours, average of 32 hours)
- Preparation of the construction permit (2 hours)
- Pre-operational inspection (1 – 3 hours)
- Preparation of the operation permit (1 hour)

A figure of \$64 per hour was used for technical staff time.

The amended permit fees are indicated below:

Title	Permit Fees
Permitting Fees (CWSs and NCWSs):	
Permit/Major Amendment	\$300 - \$10,000
Minor Amendment	\$100 - \$5,000
Operations Permit	\$50
Emergency Permit	\$100
Change in Legal Status	\$100
Permitting Fees (BVRBs):	
Permit/Major Amendment	\$500 - \$10,000
Minor Amendment	\$100 - \$1,000
Operations Permit	\$50
Change in Legal Status	\$100
Out-of-State Bottled Water	\$1,000
Emergency Permit	\$100
Noncommunity Water System	
Application for Approval	\$50
4-log Permit	\$50
Feasibility Study Fees:	
Feasibility Study	\$300 - \$10,000
Monitoring Waiver Fees/Source:	
VOC Use	\$100
SOC Use	\$100
SOC Susceptibility	\$300
IOC	\$100

Permitting Fees for General Permits

Fees for general permits will be established in the general permit and will not exceed \$500. The fee for each general permit will be based on a workload analysis prepared prior to issuance of a draft of the general permit for public comment and will reflect the Department’s estimated cost for reviewing and approving coverage under the general permit.

Failure to Remit Fees

As requested by TAC, 6% interest will be added for systems that do not pay their annual fees in a timely manner.

The interest charges are extra costs associated with the collection of overdue fees. Section 4(c) of the SDWA provides that Department fees are to “. . . bear a reasonable relationship to the actual cost of providing a service.” The interest charges relate to extra services necessary to collect overdue fees such as reminder notice mailings, NOV mailings, phone calls and emails to delinquent payers. The amount of interest actually charged will depend on how long it takes for the PWS to pay the overdue amount. The longer it takes to collect the fee, more services will be required of the Department to collect the overdue fee and the interest charges associated with that service.

This regulation also allows the Department to suspend technical services, such as issuing monitoring waivers, plan approvals or permits, for water systems with delinquent fees in excess of 180 days.

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

The only costs to local government will be costs incurred by systems that are owned and/or operated by local government. The cost estimates are based on the figures in Question 19.

Source Water Protection and Permitting

Of the 30 new sources permitted each year, approximately 19 are expected to occur at local-government-owned systems. The cumulative cost paid by the 19 systems to professional geologists will amount to approximately \$22,344 per year. These amendments should result in cost savings due to the avoidance of unnecessary water treatment (when sources are adequately protected), and the avoidance of costly mistakes in the permitting process.

Surface Water and GUDI Filter Plants

Approximately two-thirds of all filter plants are owned and/or operated by local governments. The total cost to local government for the revisions associated with filter plants are as follows:

- There are approximately nine plants that need to add equipment to comply with the IFE requirements. The initial expected cumulative cost for the nine plants is \$91,485, or \$10,165 per plant with a cumulative annual maintenance cost of \$6,813, or \$757 per plant.
- There are approximately 35 plants that need to add equipment to comply with the CFE requirements. The initial expected cumulative cost for the 35 plants is \$196,945, or \$5,627 per plant with a cumulative annual maintenance cost of \$26,495, or \$757 per plant.
- There are approximately 24 plants that need to add equipment to comply with the alarm and shutdown requirements. The initial expected cumulative cost for the 24 plants is \$260,640, or \$10,860 per plant.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

All 1,952 CWSs are expected to review their existing emergency response plans to determine the adequacy of consistently providing adequate quantity and quality of water during emergency situations. Approximately 737 CWSs are owned and operated by local governments.

Please see Question 17 for additional information.

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

The costs to state government will be those incurred by systems that are owned and/or operated by state government and the costs to the Department associated with implementing and administering the rule. The cost estimates are based on the figures in Question 19.

Source Water Protection and New Source Permitting Requirements

State costs associated with administering these revisions are not expected to substantially increase or decrease.

Of the 30 new sources permitted each year, no more than one is expected to occur at any state-owned system. The approximate cost paid to a professional geologist will amount to approximately \$1,176 per year.

Surface Water and GUDI Filter Plants

State costs associated with administering these revisions are not expected to substantially increase or decrease. The amendments are intended to identify Tier 1 violations that previously would have gone unnoticed. As a result, staff time related to compliance and enforcement could increase. However, the amendments are also intended to identify and correct water system deficiencies before they worsen to the point of a Tier 1 violation, which would result in a reduction of staff time spent on compliance and enforcement. Overall, the amendments are expected to result in more efficient use of staff time.

Fifteen filter plants are owned and/or operated by the Commonwealth. The total cost to the Commonwealth for these systems is estimated as follows:

- There are no IFE costs, because all state-owned filter plants already have IFE instrumentation.
- There are approximately three plants that need to add equipment to comply with the CFE requirements. The initial expected cost is \$16,881, or \$5,627 per plant with an annual maintenance cost of \$2,271, or \$757 per plant.
- There are approximately two plants that need to add equipment to comply with the alarm and shutdown requirements. The initial expected cost is \$21,720, or \$10,860 per plant.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

After evaluation of both state costs and savings associated with administering these revisions, costs are not expected to substantially increase or decrease. The amendments are intended to strengthen the capability of a water supplier to consistently provide an adequate quantity and quality of water during emergency situations. As a result, staff time related to reviewing the revised portion of emergency response plans related to this requirement may increase during the initial inspection cycle following the rule. However, by reducing the frequency and duration of emergency situations and associated health advisories, the amendments should also decrease staff time responding to these types of events in the long run.

Approximately 21 CWSs are owned and/or operated by the Commonwealth, 18 of which serve less than 3,300 customers.

(22) For each of the groups and entities identified in items (19)-(21) above, submit a statement of legal, accounting or consulting procedures and additional reporting, recordkeeping or other paperwork, including copies of forms or reports, which will be required for implementation of the regulation and an explanation of measures which have been taken to minimize these requirements.

Source Water Protection and New Source Permitting Requirements

CWSs will only be required to update their source water assessment report if the annual water system evaluation identifies changes to actual or potential sources of contamination. To minimize the reporting burden, these reports are not required to be submitted to the Department. Also, wherever possible, modifications to existing report forms were used as a method to comply rather than creation of additional report forms.

Surface Water and GUDI Filter Plants

- PWSs that exceed the lower IFE triggers will have additional reporting requirements using existing forms.
- PWSs that experience a failure of alarm or shutdown equipment will be required to report the failure to the Department within 24 hours. This can be done verbally and using existing forms.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

CWSs will be required to update their existing emergency response plans to include specific information on how they will meet the resiliency requirements. To minimize the reporting burden and for maintaining security of sensitive documents, the system specific plans for providing a continuous supply of safe and potable water (Uninterrupted System Service Plan – USSP) will not be required to be reported to the Department; rather, this information will be kept onsite for Department review during inspections and/or emergencies. A USSP template will be provided which water suppliers must complete. Water suppliers must also submit a certification form (also provided by the Department) to verify that the USSP has been completed and is available for Department review upon request.

Comprehensive Monitoring Plan

PWSs will be required to submit a comprehensive monitoring plan using a template provided by the Department or an equivalent form.

(22a) Are forms required for implementation of the regulation?

Yes.

(22b) If forms are required for implementation of the regulation, **attach copies of the forms here**. If your agency uses electronic forms, provide links to each form or a detailed description of the information required to be reported. **Failure to attach forms, provide links, or provide a detailed description of the information to be reported will constitute a faulty delivery of the regulation.**

In most cases, information necessary for this regulation will not need to be reported using forms. Rather, systems will need to maintain information on-site for Department review during inspections. In the cases where new information will need to be reported, existing forms (already required) will be modified wherever possible to reduce reporting burden, as opposed to creating new forms.

§109.503(a)(1)(iii)(A) - Requires source water assessment of each new raw water source. Reporting forms will not be required. Source water assessment information will be included in a technical report (existing requirement) submitted as part of the permit application.

§109.503(a)(1)(iii)(B) – Requires pre-drilling plan for new groundwater sources. Reporting forms will not be required. Submittal of the individual components of a pre-drilling plan is an existing requirement (per § 109.503(a)(1)(iii) and Module 3 of the permit application) to obtain a permit. The modification in the final-form rulemaking simply clarifies when this information will need to be reported—prior to drilling the well.

§109.503(a)(1)(iii)(E) – Requires a hydrogeologic report for new groundwater sources. Reporting forms will not be required. A hydrogeologic report is an existing requirement of the permit application process. The modification simply clarifies when this information will need to be reported.

§109.705(a)(1)(iii) (relating to system evaluations and assessments) – Requires revision of the source water assessment if inspection of a source water protection area identifies changes to actual/potential

sources of contamination. In order to reduce the reporting burden, water suppliers will not have to report information to the Department on a routine basis but would retain the information on-site for review during inspections.

§109.713(b) (relating to source water protection program) – Requires submission of annual update for any CWS electing to obtain DEP approval of a voluntary local source water protection program. This does require a form. The existing form, Annual Wellhead Protection Program Update, will be revised for use with surface-water systems. An updated draft is attached.

The Uninterrupted System Service Plan (USSP) draft template is attached.

The Comprehensive Monitoring Plan draft template is attached.

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

	Current FY 2017/18	FY +1 2018/19	FY +2 2019/20	FY +3 2020/21	FY +4 2021/22	FY +5 2022/23
SAVINGS:	\$	\$	\$	\$	\$	\$
Regulated Community	\$00.00	\$1,742,958	\$1,742,958	\$1,742,958	\$1,742,958	\$1,742,958
Local Government	See note #1	See note #1	See note #1	See note #1	See note #1	See note #1
State Government	See note #1	See note #1	See note #1	See note #1	See note #1	See note #1
Total Savings	\$00.00	\$1,742,958	\$1,742,958	\$1,742,958	\$1,742,958	\$1,742,958
COSTS:						
Regulated Community	\$00.00	\$3,126,866	\$1,929,467	\$1,927,467	\$1,929,467	\$1,929,467
Local Government	\$00.00	\$1,188,209	\$733,198	\$733,198	\$733,198	\$733,198
State Government	\$00.00	\$31,268	\$19,295	\$19,295	\$19,295	\$19,295
Total Costs	\$00.00	\$3,126,866	\$1,929,467	\$1,929,467	\$1,929,467	\$1,929,467
REVENUE LOSSES:						
Regulated Community	\$0	\$0	\$0	\$0	\$0	\$0
Local Government	\$0	\$0	\$0	\$0	\$0	\$0
State Government	\$0	\$0	\$0	\$0	\$0	\$0
Total Revenue Losses	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Cost savings include the potential water outages and/or boil water advisories (BWA) that may be avoided through increased system resiliency (installation of back-up power supply or other measures). The regional economic cost savings would be more than \$58 million annually, and include the total value of economic activity lost among businesses directly affected by the water service disruption, due to contraction in business activity during the water outage and/or BWA.

Cost savings to the regulated community include PWSs that are owned/operated by local or state government. Please refer to Question 17 for additional information about cost savings.

2. These provisions will not affect all systems every year. For the purposes of the table above, the one-time capital improvement/installation costs are included in the year in which installation is expected. For example, the back-up power supply costs are spread out over years FY +1 to FY +5. FY +1 year includes all other one-time costs. Annual costs are included for each FY.
3. The new annual fees are not included in this table. The annual fees are expected to be passed on to consumers as a user fee.
4. Costs for the regulated community are the costs for all PWSs, which include the cost to local and state government PWSs.
5. State government costs are the portion of the total costs for state government-owned PWSs (1% of all PWSs).
6. Local government costs are the portion of the total costs for local government-owned PWSs (38% of all PWSs).

(23a) Provide the past three-year expenditure history for programs affected by the regulation.

Program	FY -3 2014/15	FY -2 2015/16	FY -1 2016/17	Current FY 2017/18
Environmental Program Operations	\$6,972,000	\$6,803,000	\$7,079,000	\$2,525,000
Environmental Program Management	\$296,000	\$334,000	\$366,000	\$208,000
General Government Operations	\$0	\$0	\$0	\$0
Safe Drinking Water Act	\$51,000	\$62,000	\$55,000	\$50,000

(24) For any regulation that may have an adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), provide an economic impact statement that includes the following:

- (a) An identification and estimate of the number of small businesses subject to the regulation.
- (b) The projected reporting, recordkeeping and other administrative costs required for compliance with the proposed regulation, including the type of professional skills necessary for preparation of the report or record.
- (c) A statement of probable effect on impacted small businesses.
- (d) A description of any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation.

Source Water Protection and New Source Permitting Requirements

- (a) Of the 30 CWSs expected to permit at least one new source each year, 13 may be considered as being owned by a small business (as defined in Question 15).
- (b) Administrative costs associated with these revisions are not expected to substantially increase.
- (c) It is estimated to cost an additional \$1,176.00 per source to be permitted.

- (d) For the source water protection and permitting provisions, no alternative regulatory schemes were considered because the amendments are being made to clarify existing requirements.

Surface Water and GUDI Filter Plants

- (a) Of the 353 filter plants, 22 plants are considered as being owned by a small business (as defined in Question 15).
- (b) Administrative costs associated with these revisions are not expected to substantially increase. Existing certified operators currently employed by these small systems can comply with the requirements.
- (c) Most small systems with filter plants in this Commonwealth already have the instrumentation being required in these provisions. It is estimated that 3 plants will need to install some equipment to monitor for IFE and/or CFE or to meet the alarm requirements. If a system must install equipment for each of these requirements, the cost would equal \$25,563 and have an annual maintenance cost of \$757.
- (d) For the surface water and GUDI provisions, no alternative regulatory schemes were considered because the amendments are being made to clarify existing requirements.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

- (a) Of the 1,952 CWSs within this Commonwealth, 924 are considered to be owned by a small business (as defined in Question 15).
- (b) Administrative costs associated with these revisions are not expected to substantially increase.
- (c) All small CWSs will be expected to review their existing emergency response plan and equipment to specifically develop a plan to provide a consistent supply of adequate quantity and quality of water during emergency situations. CWSs that do not have a functional generator or do not have existing capability to meet this requirement under the alternate provision options, will need to rent or purchase a generator. The generator should be adequately sized such that it can supply power to critical treatment components necessary to supply safe and potable water. Therefore, the cost of the generator will be proportional to the size of the system (namely, less expensive for small systems). It is difficult to predict system specific costs because of the various options to comply with the revisions. Estimates for small systems are \$3,000 - \$4,000 per system for the installation of a transfer switch, generator and concrete pad. Small systems may also be able to rent a portable generator at the following costs: Compact portable generator = \$70/day for single use day or \$35/day for a weekly rental cost; Mobile towable generator = \$320/day for single use day or \$140/day for a weekly rental cost. Not all systems will require auxiliary power. Some systems may already meet reliability criteria through storage or interconnections.
- (d) The final-form regulation includes alternative regulatory schemes based on TAC and other public comments. In order to accommodate the variety of system specific differences that must be addressed in this provision, the Department has included the option to submit a schedule for necessary improvements that have not been completed by the compliance deadlines specified in § 109.708(a) for submittal of the USSP. More specifically, this new approach requires certification of completion of the USSP form created by the Department by the deadlines specified in § 109.708(a). However, if the USSP identifies that deficiencies exist which prevent a continuous supply of safe and potable water as specified in § 109.708(a), and the CWS has not addressed those deficiencies by the deadline for USSP submittal. The CWS must submit to DEP a schedule within six months which includes detailed corrective actions and corresponding completion dates. These significant regulatory modifications will help enable the PWS to spread out the costs for compliance with these provisions over a longer period of time. Additionally, these revisions will provide water suppliers with even more flexibility in choosing the approach

that best suits their particular water system, and adequate time to implement that plan in the most effective manner. Other lower cost alternatives were added, such as the use of rental generators.

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

The amendments should have no effects on one particular group relative to another since it will apply to most of this Commonwealth's population served by PWSs. However, the Safe Drinking Water Program is prepared to develop special provisions or provide special services to accommodate any such group as the need arises.

The Department offers many technical assistance programs that are targeted towards small systems and disadvantaged communities. The Department's Capability Enhancement (CE) program helps small drinking water systems operate more effectively and efficiently by improving the technical, managerial and financial capability of the water system. The CE program provides a mechanism to address the needs of small drinking water systems by evaluating a system's current needs, and then developing an assistance plan to meet those needs. The CE program provides facilitation among all of the parties needed to implement the assistance plan. CE program staff deliver this free on-site assistance through facilitators in conjunction with wage payroll peer water operators employed by the Department. These assistance providers are practicing operators and administrators in local water systems. This program is designed to:

- Enhance the capabilities of system operators to operate their systems in the most professional, effective and efficient manner.
- Enhance the financial and managerial expertise of system owners and operators.
- Empower PWS personnel by providing them with knowledge or access to information that allows them to address any factor that limits the PWS's capability to produce quality and quantity of water in a reliable and efficient manner.
- Ensure that this Commonwealth's water systems are sustainable and are able to meet current and future drinking water demand while protecting public health and the environment and ensuring continued economic growth and development.

For more information about the Department's CE program, please visit DEP's website at:

<http://www.dep.pa.gov/Business/Water/BureauSafeDrinkingWater/CapabilityEnhancement/Pages/default.aspx>

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

Annual Fees - Other Alternatives Considered

One approach considered, based on how some other states have established annual fees, is establishing the fee based on the number of service connections associated with the CWS. The two options considered were:

1. Option #1: Annual fee based on the number of service connections (estimating the number of service connections, using a flat rate per connection, and no minimum or maximum fees).

2. Option #2: Annual fee based on the number of service connections (estimating the number of service connections, using a sliding scale rate per connection, and a minimum fee).

Alternate Option #1: Annual Fees Based on Flat Rate Per Number of Connections

The Department does not currently have accurate data on the number of service connections in PWSs in this Commonwealth. This is not a required field in the Federal or Commonwealth databases. To estimate the number of service connections, the population served by the CWS was divided by 2.7 persons per household. The estimated number of connections associated with CWSs within the Commonwealth range from 9 to almost 600,000 per PWS, with total connections estimated to exceed 4.4 million. To base an annual fee on the number of connections, the \$7.5 million needed was divided by the estimated number of total connections to derive a per connection fee of \$1.70. This per connection fee would equate to an estimated per person cost of \$0.63. When the per connection fee was multiplied by the estimated number of CWS connections, the total annual fee paid by CWSs would range from \$15.30 to over \$1 million (see table below). While this approach may have achieved approximately the same cost per person, the annual fees would not bear a reasonable relationship to the actual cost of providing services to the CWSs. Therefore, this alternative approach to developing the proposed annual fee was not recommended.

Option #1: Annual Fees Based on Flat Rate/Connection vs. Cost of Providing Services				
Population Served	# Service Connections	Annual Fee	Minimum Cost of Services	% of Cost of Minimum Services
25	9	\$15.30	\$2,180	<1 %
125	46	\$78.20	\$2,180	4 %
750	278	\$472.60	\$2,180	22 %
3,300	1,222	\$2,077.40	\$2,465	84 %
10,000	3,704	\$6,296.80	\$3,920	160 %
50,000	18,518	\$31,480.60	\$3,920	803 %
100,000	37,037	\$62,962.90	\$4,778	1,318 %
120,000	45,052	\$76,588.40	\$4,778	1,603 %
160,000	59,259	\$100,740.30	\$4,778	2,108 %
250,000	92,592	\$157,406.40	\$4,778	3,294 %
660,000	244,444	\$415,554.80	\$4,778	8,697 %
820,000	303,704	\$516,296.80	\$4,778	10,806 %
1,600,000	592,593	\$1,007,408.10	\$4,778	21,084 %

Alternate Option #2: Annual Fees Based on Sliding Rate with Minimum Fee

A second per connection option considered was to use a sliding scale fee per connection. As illustrated in the table below, the annual fees generated using a sliding scale would not bear a reasonable relationship to the actual costs of the services provided. Therefore, this alternative approach to developing the proposed annual fees was not recommended.

Option #2: Annual Fees Based on Sliding Scale/Connection vs. Cost of Providing Services					
Population Served	# Service Connections	Sliding Scale Fee Per Connection	Annual Fee	Minimum Cost of Services	% of Cost of Minimum Services
25	9	Flat fee	\$250.00	\$2,180	11 %
125	46	Flat fee	\$250.00	\$2,180	11 %
750	278	\$3.20	\$889.60	\$2,465	36 %
3,300	1,222	\$3.20	\$3,910.40	\$2,465	150%
10,000	3,704	\$3.00	\$11,112.00	\$2,465	450 %
50,000	18,518	\$1.70	\$31,480.60	\$3,920	803%
100,000	37,037	\$1.50	\$55,555.50	\$4,778	1,163 %
120,000	45,052	\$1.50	\$67,578.00	\$4,778	1,414 %
160,000	59,259	\$1.50	\$88,888.50	\$4,778	1,860 %
250,000	92,592	\$1.50	\$138,888.00	\$4,778	2,907 %
660,000	244,444	\$1.00	\$244,444.00	\$4,778	5,116 %
820,000	303,704	\$1.00	\$303,704.00	\$4,778	6,356 %
1,600,000	592,593	\$1.00	\$592,593.00	\$4,778	12,402 %

Source Water Protection and New Source Permitting Requirements

No alternative regulatory schemes were considered because the amendments are being made to clarify existing requirements.

Surface Water and GUDI Filter Plants

Consideration was given to requiring plants to be manned during all hours of operation and to mandate shutdown capabilities for all filter plants. Based on feedback from TAC, plants are not being required to be manned at all times. And automatic alarms and shutdown capabilities are only being required for plants that are not attended 24/7.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The final-form rulemaking includes alternate provisions that resulted from TAC and other public comments. Please refer to Question 24 for more information.

(27) In conducting a regulatory flexibility analysis, explain whether regulatory methods were considered that will minimize any adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), including:

- a) The establishment of less stringent compliance or reporting requirements for small businesses;
- b) The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;
- c) The consolidation or simplification of compliance or reporting requirements for small businesses;
- d) The establishment of performance standards for small businesses to replace design or operational standards required in the regulation; and
- e) The exemption of small businesses from all or any part of the requirements contained in the regulation.

- a) Many small businesses will be able to meet the alternate power supply requirements through the use of rental generators.
- b) Several of the provisions in the final-form rulemaking have less stringent schedules or deadlines, giving them more time to comply; including the provisions to strengthen resiliency.
- c) Neither consolidation nor simplification of compliance or reporting requirements for small businesses was considered.
- d) No performance standards for small businesses to replace design or operational standards required in the regulation were considered.
- e) No exemptions for small businesses from all or any part of the requirements contained in the regulation were considered because the rules of this Commonwealth and the Federal rules do not allow exemptions simply based on system size. All consumers of PWSs deserve the same quality of drinking water, whether they get their water from a system that serves 25 people or a system that serves 1.6 million people.

Other regulatory methods, beyond those mentioned above, were not considered for this rulemaking as the amendments included in the final-form rulemaking will apply to most of this Commonwealth's population served by PWSs. Further, the impact of this rulemaking – the provision of safe drinking water to this Commonwealth's populace – is unrelated to whether the regulation is implemented by small or large businesses. Ultimately, regulatory compliance puts all of the regulated community in the best position to prove that water they provide is safe to drink, thereby providing necessary protection of public health.

(28) If data is the basis for this regulation, please provide a description of the data, explain in detail how the data was obtained, and how it meets the acceptability standard for empirical, replicable and testable data that is supported by documentation, statistics, reports, studies or research. Please submit data or supporting materials with the regulatory package. If the material exceeds 50 pages, please provide it in a searchable electronic format or provide a list of citations and internet links that, where possible, can be accessed in a searchable format in lieu of the actual material. If other data was considered but not used, please explain why that data was determined not to be acceptable.

Surface Water and GUDI Filter Plants

Historical Department inspection reports and FPPE evaluations of more than 1,250 filters.

The following items are included or attached:

References related to Turbidity Standards

- (1) Huck, P.M. et al, 2002. *Effects of Filter Optimization on Cryptosporidium Removal*. Jour. AWWA, 94:6:97.
- (2) Emelko, M.B. et al, 2003. *Cryptosporidium and Microsphere Removal During Late in Cycle Filtration*. Jour. AWWA, 95:5:173.

Documentation related to Continuous Turbidity Monitoring and Recording

- (3) The link to HACH's product website from which cost information was gathered:
<http://www.hach.com/1720e-turbidimeter-with-sc200-controller-2-channel/product?id=7640457955>
- (4) A PowerPoint slide showing a filter profile which demonstrates that turbidity particles and pathogenic cysts that are stored during a filter run can be discharged during a very short period of time as a result of a hydraulic surge. This slide demonstrates the need for continuous turbidity monitoring as this type of filter break through would normally not be identified during 4-hour grab sampling.

- (5) EPA Turbidity Provisions; Chapter 7 *Importance of Turbidity* cites and summarizes data, research, and case studies which demonstrate: outbreaks have occurred when turbidity values did not exceed 0.17 NTU or during short increases in turbidity; microbial organisms can be shielded from disinfection by larger organism or particles; and that most pathogens are removed when filter performance is less than 0.10 NTU.

Documentation related to Filter Plant Automation, Alarms and Shutdowns

- (6) The results from an ASDWA survey of other states related to turbidity monitoring and plant automation.
- (7) Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers *Policy Statement on Automated/Unattended Operation of Surface Water Treatment Plants*.
- (8) West Virginia Department of Health’s requirements on filter plant automation, alarms and shutdowns.
- (9) The link to Raco Verbatim’s product website from which cost information was gathered for alarms, phone dialers, and shutdown controllers: <http://www.racom.com/verbatim.html>
- (10) Cost proposal from Allied Control Services for equipment and installation cost for alarm and shutdown capabilities.
- (11) HACH turbidimeter and recorder cost list.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

Data regarding the number of CWSs without an up-to-date emergency response plan was obtained from PADWIS.

- (12) The Department reviewed the back-up power supply requirements for New York, Connecticut and New Jersey.

NSF Requirements

NSF International (2016), “Survey of ASDWA Members on the Use of NSF/ANSI Standards,” available at http://www.nsf.org/newsroom_pdf/water_asdwa_survey.pdf

New Annual Fees

Fees were reviewed for all 50 states. The summary of other states’ fees is incorporated into this regulatory analysis form in response to Question 12.

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

- A. The length of the public comment period: 30 days
- B. The date or dates on which any public meetings or hearings will be held: N/A
- C. The expected date of delivery of the final-form regulation: Quarter 2, 2018
- D. The expected effective date of the final-form regulation: Quarter 3, 2018
- E. The expected date by which compliance with the final-form regulation will be required: Some provisions are

effective upon publication of the final-form rulemaking, other provisions are deferred for up to 3 years.

F. The expected date by which required permits, licenses or other approvals must be obtained: From 1 to 3 years after the publication date of the final-form rulemaking, unless an alternate schedule is approved by the Department.

(30) Describe the plan developed for evaluating the continuing effectiveness of the regulations after its implementation.

Certain provisions in § 109.301(1) and (2) are proposed to sunset in one year. Otherwise, the Board is not establishing a sunset date for this regulation, since it is needed for the Department to carry out its statutory authority. The Department will continue to closely monitor this regulation for its effectiveness and recommend updates to the Board as necessary. Under the final rulemaking, the Department will evaluate the fees every three years and recommend regulatory changes to address any disparity between the program income generated by the fees and the Department's cost of administering the program.