

<h2 style="margin: 0;">Regulatory Analysis Form</h2> <p style="margin: 0;">(Completed by Promulgating Agency)</p> <p style="margin: 0;">(All Comments submitted on this regulation will appear on IRRC's website)</p>	<p><i>INDEPENDENT REGULATORY REVIEW COMMISSION</i></p>
<p>(1) Agency Department of Environmental Protection</p>	<p>IRRC Number:</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: 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 checked="" type="checkbox"/> Proposed Regulation</p> <p><input 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 proposed 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 auxiliary power. 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, 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, 35 P.S. § 721.4(a) and (c), and section 1920-A of the Administrative Code of 1929, 71 P.S. § 510-20(b).</p>	

(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, in order for the state to retain primary enforcement authority (primacy), the state must adopt drinking water regulations that are “no less stringent than” the national primary drinking water regulations. 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 (Primary Enforcement Responsibility) set forth the program requirements that states must meet to retain primary enforcement responsibility. Furthermore, Section 5(a) of the Pennsylvania Safe Drinking Water Act, 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). The Department’s response was sent on February 24, 2017. See attached letter. Failure to meet minimum program elements may jeopardize primacy.

In order 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 which need revisions 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 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 Texas A&M study (1997) 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. The study also showed that for every four percent increase in source water turbidity (an indicator of water quality degradation from sediment, algae and microbial pathogens), treatment costs increase by one percent (Trust for Public Land, 2002). A study by the Pennsylvania Legislative Budget and Finance Committee (2013) stated, “(r)educing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards. Similarly, 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 need to understand and update potential threats to public drinking water sources, as well as ways to minimize those threats, was underscored by the January 2014 chemical spill in West Virginia that impacted the drinking water for 300,000 people. Currently, of the 10.6 million people served by CWSs in Pennsylvania, 7.7 million people are covered by substantially implemented local source water protection programs. Substantial implementation is a term referenced in EPA work plans that indicates a measure of progress relative to source water protection efforts. These proposed amendments will help ensure that the remaining nearly three million people also benefit from local source water protection efforts.

The proposed changes relating to new sources of supply in Section 109.503 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 permitting mistakes.

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

The proposed amendments to surface water treatment requirements will benefit more than eight million Pennsylvanians who are supplied water by PWSs utilizing filtration technologies. The filtration amendments are designed to identify and correct problems at the plant before a turbidity exceedance occurs or escalates. The U.S. Environmental Protection Agency (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 that consistently produce water that meets turbidity standards are able to deliver safe and potable water to all users.

The proposed amendments are intended to reduce the public health risks related to waterborne pathogens and waterborne disease outbreaks. Costs related to waterborne disease outbreaks are extremely high. For example, 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. *Emerg Infect Dis* [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(i) 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 proposed 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 proposed 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 utilized. This explains the need for expansion of 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.

The proposed amendments lower IFE trigger levels to be consistent with CFE turbidity requirements. Exceeding an IFE trigger is not a violation; instead, it prompts the water supplier to investigate the cause of the problem and correct any deficiencies. If water suppliers are diligent, no violations should occur.

An additional revision will require 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 Pennsylvania 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 proposed 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 proposed 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 proposed 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.

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 proposed amendments will 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 proposed amendments will

not require water suppliers without filter-to-waste capabilities or with undersized filter-to-waste capabilities to make a capital improvement.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The proposed revisions 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.

Pennsylvania'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 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 Pennsylvania waterways during these major weather events. PWSs that use these waterways as a source of supply 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 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 proposed amendments 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 (i.e. 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.

Part II: Amended Permit Fees and New Annual Fees

Part II of the proposed amendments includes new annual fees and amended permit fees to supplement state costs and help to fill the funding gap (it is proposed to bring in \$7.5 million which is half of the Commonwealth's share of Safe Drinking Water Program implementation costs).

Pennsylvania is ranked third in the nation in terms of the number of PWSs, with 8,521 PWSs across the Commonwealth. The Department is responsible for regulating all PWSs and ensuring that safe and potable drinking water is continuously supplied to the 10.7 million customers they serve. In order to carry out these responsibilities, the Department must ensure adequate funding for the Safe Drinking Water Program.

The Board has the authority to establish fees for permit applications, laboratory certification and other services. Section 4(c) of the SDWA requires that "such fees shall bear a reasonable relationship to the actual cost of providing a service" (35 P.S. § 721.4(c)). The Department considers the following minimum program elements to be components of a service provided by the Drinking Water Program:

- 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 all state and federal recordkeeping and reporting requirements.
- Conducting training.
- Providing technical assistance.
- Responding to water supply emergencies.

The proposed rulemaking is necessary to generate adequate funding for the Department to carry out these minimum program elements. Failure to meet minimum program elements may result in an increased risk to public health as well as the loss of the Department's ability to serve as the primary enforcement agency under Federal law. This proposed rulemaking is expected to generate sufficient funds to cover half of the Commonwealth's share of the costs to implement the Safe Drinking Water Program. The remainder will continue to come from the Commonwealth's general fund

Program Staffing and Performance

Program staffing and performance has steadily declined since 2009.

The number of sanitary surveys (full inspections) has steadily declined since 2009. The Federally mandated inspection frequency is every 3 years for CWSs and every 5 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 in the last 6 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)

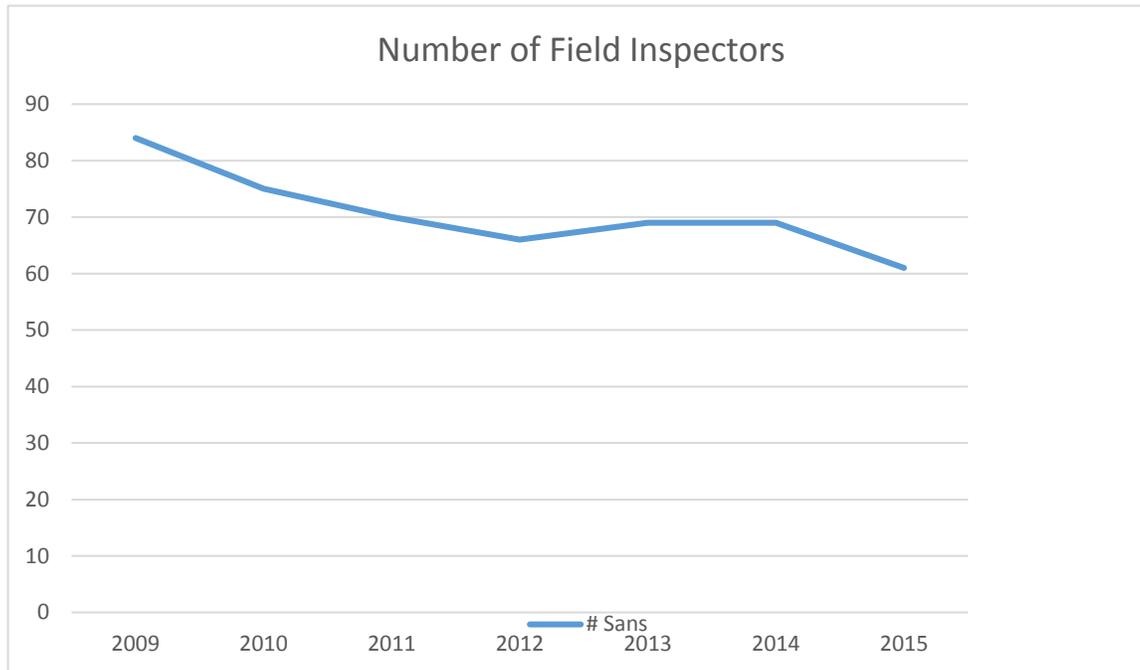
As per the Department’s Annual Compliance Report for 2015, PWSs continue to exceed health-based maximum contaminant levels (MCL), maximum residual disinfectant levels (MRDL), and treatment technique (TT) requirements for arsenic, radionuclides, volatile organic chemicals, disinfection byproducts, nitrate/nitrite and pathogens; and for failure 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/sanitarian 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, 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/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 State Drinking Water Administrators (ASDWA) survey, the national range and average of PWSs/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	134	153
							Avg.	Avg.	Avg.

Final numbers for FY 2016/2017 will be finalized in June 2017. Currently, the number of sanitarians is 61. This workforce includes 43 sanitarians, 11 trainees and seven vacancies. Due to the ever-increasing complexity of the drinking water program, trainees are not considered adequately trained until they have at least two years of experience. In addition, due to a Department-wide complement reduction, it is unclear if or when the program will receive approval to fill the seven vacancies. As such, the actual available workforce is 54 sanitarians with a workload of 158 PWSs/sanitarian. Of those 54 sanitarians, 26 have four years or less of experience.

Performance issues and concerns have been well documented by EPA since 2009:

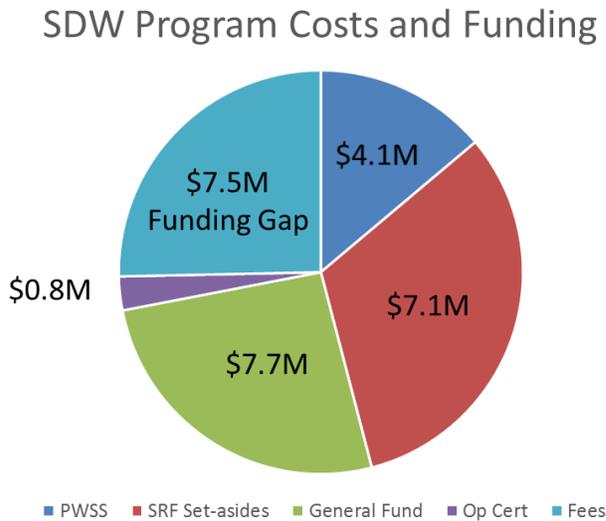
- EPA Region III PWSS Program Review for DEP Bureau of Water Standards and Facility Regulation (July 2009): identified the impacts of a 2008 hiring freeze that prevented the filling of vacancies to reach the full additional complement, and led to inadequate training of field staff. These problems continue today.
- EPA Region III Review of the Bureau of Safe Drinking Water (December 2012): identified that the Department was unsuccessful at retaining all allocated drinking water FTEs as of June 2009 due to budget cuts and increasing costs. Further, the report documented that the number of field inspectors was down by 20% since June of 2009. The report also found that as a result of staffing cuts, there was a backlog of required sanitary surveys (full inspections), and a backlog of Pennsylvania Drinking Water Information System (PADWIS) programming modifications and reports.
- Program performance is currently under review by EPA Region III. An EPA letter dated December 30, 2016 further documents the Department's poor performance. As per the letter, EPA's concerns include the following:
 - Programmatic requirements are not being met in a complete and timely manner. Minimum program requirements must be met in order for states to maintain primacy for the Safe Drinking Water Program.
 - PA DEP's average of 149 PWSs/sanitarian is more than double the ASDWA national average. EPA cautions DEP that this kind of excessive workload is not sustainable and program performance will continue to suffer.
 - PA DEP failed to meet the federal requirement for sanitary surveys. 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 PA's 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 DEP'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). The Department sent a response to EPA on February 4, 2017. Failure to meet minimum program elements may jeopardize EPA's approval of the Department's authority to enforce the Federal law (primacy).

To improve program performance, the proposed rulemaking is intended to supplement state costs for administering the Safe Drinking Water Program by filling the funding gap. The proposed fees will total approximately \$7.5 million annually and will account for nearly 50% of the Program's state funding.

The fees will augment the Program funding currently coming from the General Fund (\$7.7 million). Note: If General Funds do not keep pace with state costs, the funding gap will continue to grow.

The below figure includes a breakdown of total Safe Drinking Water Program costs and funding sources.

TOTAL SAFE DRINKING WATER PROGRAM COSTS AND FUNDING



Total Safe Drinking Water Program costs and funding:

Federal funds (~\$11.2 million):

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

State funds (~\$16 million):

- General Fund (~\$7.7 million) – used for personnel costs
- Operator Certification Sub-fund (\$0.8 million) – used for Operator Certification Program costs
- Funding Gap (\$7.5 million)

Total Costs = Federal (\$11.2 million) + State (\$16 million) = \$27.2 million

The proposed annual fees and increased permit fees apply to all 8,521 PWSs, including:

- CWSs = 1,952
- Nontransient noncommunity water systems (NTNCWS) = 1,088
- Transient noncommunity water systems (TNCWS) = 5,309
- Bottled, vended, retail and bulk water hauling systems (BVRB) = 172

The annual fees range from \$250 - \$40,000 for CWSs, \$50 - \$1,000 for NCWSs, and \$1,000 - \$2,500 for BVRBs. The fees will most likely be passed on to the 10.7 million customers of these PWSs as a user fee. Per person costs are expected to range from \$0.35 to \$10 per year, depending on the water system size.

This proposed 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 Safe Drinking Water Act (35 P.S. § 721.14), all fees will 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 Act.

Part III: New General Updates

General Permits

These proposed amendments will 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 proposed amendments will 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 proposed amendments will address concerns related to gaps in the monitoring, reporting and tracking of back-up water sources and entry points. As per Commonwealth and Federal regulations, 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 5 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. 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 Pennsylvania, 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 Pennsylvania, 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 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 conducting 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 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.

(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 proposal 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.

Turbidity and Filtration Requirements

- Sections 109.202(c)(1)(i)(A)(V), 109.202(c)(1)(i)(C), 109.301(1)(i) and (iii), 109.301(2)(i), 109.602(f) through 109.602 (i), 109.701(a)(2), 109.701(e)(2)(v) through 109.701(e)(2)(viii), 109.703(b)(1), and 109.703(b)(5), are provisions which 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.
- Sections 109.301(1)(iv), 109.301(2)(i) (D) and 109.1305(a)(1)(iii) 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 5 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 sections 109.303(i) and 109.717 are more stringent. 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

Proposed §§ 109.708(a) through (c) concerning auxiliary power is a more stringent provision that improves system resiliency and strengthens 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 proposed 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 proposed amendments will provide consistency in both the drinking water and wastewater industry.

Requirements for Responding to Significant Deficiencies

Section 109.716 includes proposed requirements for significant deficiencies. This section is more stringent 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.

(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. 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.

Regarding the development of local source water protection programs, Delaware and more recently, West Virginia, have requirements for source water protection by statute. Under these proposed amendments, the development of a local source water protection program will remain voluntary in Pennsylvania.

The source water aspects of the proposed regulation should not affect Pennsylvania's ability to compete with other states.

Pennsylvania has had a permitting program in place for many years and the permitting aspects of the proposed regulation should not affect Pennsylvania'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 Pennsylvania. 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. Pennsylvania's proposed

amendments are less stringent than twelve other states since attended operation is not being required. In addition, the proposed 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 proposed regulation is not expected to negatively affect Pennsylvania’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.

Filter-To-Waste

All thirty states responding to the ASDWA survey require some of their filter plants to filter-to-waste. This proposed regulation is not expected to negatively affect Pennsylvania 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 these states when developing proposed regulatory language. These proposed amendments are not expected to negatively affect Pennsylvania’s ability to compete with other states because it will help ensure adequate quantity and quality is consistently provided to Pennsylvania homeowners and businesses 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 Program, 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. Pennsylvania’s fees range from \$50 to \$40,000.

Summary of Public Water System 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 NTNCWSs: Based on # connections \$0.30/connection/month, minimum fee = \$250 TNCWSs: \$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 NTNCWSs: ranges from \$75 - \$4,450 TNCWSs: 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 NTNCWSs: \$50 TNCWSs: \$25
Florida	FAC § 62-4.053 Type: Annual Fee CWSs: Based on permitted design capacity Ranges from \$100 – \$6,000 NTNCWSs: \$100 TNCWSs: \$50
Idaho	IAC § 58.01.08-010 Type: Annual Fee CWSs and NTNCWSs: Based on # connections 1-20 \$100 21-184 \$5/connection, max. \$735 185-3,663 \$4/connection, max. \$10,988 >3,664 \$3/connection TNCWSs: \$25
Indiana	IC § 13-18-20.5-2 Type: Annual Fee CWSs: Based on # connections - < 400 connections \$350 ≥ 400 connections \$0.95/connection NTNCWSs: Based on population – ranges from \$150 - \$300 TNCWSs: 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	<p>§ 10-144, CMR Chapter 231, § 1-A Type: Annual Fee Base Fee (\$75) + (\$0.45 (per capita rate) x (pop)) Cap = \$30,000</p>															
Massachusetts	<p>MGL, Chapter 21A, Section 18A Type: Annual Fee PWSs: Metered – minimum \$20, \$8.50/million gallons used Unmetered – \$50 - \$250 based on population</p>															
Michigan	<p>MI SDWA, 1976, PA 399 Type: Annual Fee CWSs: Based on population, ranges from \$400 - \$134,000 NTNCWSs: \$575 TNCWSs: \$135</p>															
Minnesota *	<p>Minnesota Statutes 2009, § 144.3831 Type: Annual Fee CWSs: Based on # connections, \$6.36/connection</p>															
Mississippi *	<p>MS ST § 41-26-23 Type: Annual Fee CWSs: Based on # connections, \$3.00/connection, cap = \$40,000</p>															
Missouri *	<p>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</p>															
Montana	<p>ARM § 17.38.248 Type: Annual Fee CWSs: Based on # connections – \$2.00/connection, Minimum fee = \$100 NTNCWSs: \$100 TNCWSs: \$50</p>															
New Jersey	<p>NJAC § 7:10-15 Type: Annual Fee CWSs only: Based on population, and whether system has treatment.</p> <table border="0" style="margin-left: 40px;"> <thead> <tr> <th></th> <th>w/o treatment</th> <th>w/t</th> </tr> </thead> <tbody> <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> </tbody> </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
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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 NTNCWSs: \$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 border="0"> <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>NTNCWSs: ranges from \$112 - \$16,820 TNCWSs: 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 border="0"> <tr> <td colspan="5">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	+
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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 NTNCWSs: \$330 TNCWSs: \$200</p>															
South Carolina	<p>S.C. Code of Regulations R. 61-30.G(2) Type: Annual Fee CWSs and NTNCWSs: 3 Components: Administration + Distribution Monitoring + Source Monitoring Costs for Admin only:</p> <table border="0"> <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>TNCWSs: \$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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Texas	<p>30 TAC § 290.51 Type: Annual Fee CWSs and NTNCWSs: Based on # connections – <25 \$200 25-160 \$300 ≥161 \$4/connection TNCWSs: \$100</p>															

Virginia	<p>12VAC5-600-50 to 110 Type: Annual Fee CWSs: Based on # connections –\$3/connection, cap = \$160,000</p> <table border="0"> <tr> <td># Connections</td> <td></td> </tr> <tr> <td>278 (pop=750)</td> <td>\$834</td> </tr> <tr> <td>1,222 (pop=3,300)</td> <td>\$3,666</td> </tr> <tr> <td>18,518 (pop=50,000)</td> <td>\$55,554</td> </tr> <tr> <td>92,592 (pop=250,000)</td> <td>\$160,000</td> </tr> </table> <p>NTNCWSs: \$90</p>	# 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
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92,592 (pop=250,000)	\$160,000										
Washington	<p>WAC 246-290-070 Type: Annual Fee Based on # connections – cap = \$100,000 Base Fee + Per Connection Fee \$100 + \$1.05 to \$1.30</p>										

* 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 proposed regulation should not put Pennsylvania at a competitive disadvantage with any other state. Rather, the amendments should enhance Pennsylvania’s ability to compete with other states 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 25 Pa Code 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 submitted to the Small Water Systems Technical Assistance Center (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.

(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 revisions will affect all PWSs as well as the people to which they provide water. Currently, there are 8,521 PWS that serve a total population of over 12 million

Pennsylvanians. Of the 8,521 PWSs, approximately 2,641 are owned by a municipality, an authority, the Commonwealth of Pennsylvania, the federal government, or another not-for-profit entity. The other 5,880 PWSs are either privately or investor owned.

A review of the USA Small Business Size Regulations under 13 CFR Chapter 1, 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 \$7.0 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 Pennsylvania, 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 proposed 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 response 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 proposed changes 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 Pennsylvania 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 the 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.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The 1,952 CWSs in Pennsylvania 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 the 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 <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

New Annual Fees and Amended Permit Fees

All 8,521 PWSs will be required to comply with one or more of these proposed amendments. Of the 8,521 PWSs, approximately 5,780 may be considered to be small businesses. For the 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 proposed regulation are (1) the avoidance of a full range of health effects from the consumption of contaminated drinking water such as: acute and chronic illness, endemic and epidemic disease, waterborne disease outbreaks, and death; and (2) healthy and sustainable communities.

This regulation 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 is 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 Texas A&M study (1997) 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. The study also showed that for every four percent increase in source water turbidity (an indicator of water quality degradation from sediment, algae and microbial pathogens), treatment costs increase by one percent (Trust for Public Land, 2002). A study by the PA Legislative Budget and Finance Committee (2013) stated, “(r)educing pollution inputs from pipes and land-based sources can reduce locality costs to treat drinking water sources to safe standards”. Similarly, 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 proposed 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 proposed 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 adequate quantity and quality of water.

These proposed 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 proposed regulation, 1,618 serve less than 3,300 customers.

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 wasn't a disruption in water service is estimated to be \$2,891.00.
- 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 \$24,775.00.
- Total economic impact on the water utility due to the two-day outage (sum of the above losses) is estimated at \$27,666.00.
- 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 proposed 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 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 off-set 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 proposed 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 proposed filtration requirements are designed to identify and correct problems at the plant before a turbidity exceedance occurs or escalates. The proposed 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 proposed 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 proposed revisions 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.

Pennsylvania'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

Per DEP's records, approximately 30 new CWS sources are permitted each year. DEP estimates that an additional eight hours of work completed by a professional geologist will be needed to comply with the new source permitting amendments. This extra time will amount to approximately \$1,176 per source permitted, based on current hourly rates charged by consulting firms.

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 Pennsylvania. 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)	\$2,881.00		\$2,881.00
Calibration Cylinder	\$ 89.00		
20 NTU StablCal x (4) Calibrations		\$ 556.00	
Lamp Assembly Replacement		\$ 62.00	
Chart Recorder- Duel Pen	\$1,657.00		\$1,657.00
Chart Recorder Paper		\$ 60.00	
Chart Recorder Replacement Pens		\$ 79.00	
Installation	\$1,000.00		
Total (not including tax and shipping)	\$5,627.00	\$ 757.00	\$4,538.00

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)	\$6,142.00		\$6,142.00
HACH SC200 (includes flow sensor input, RFID, and Modbus))	\$2,596.00		\$2,596.00
Maintenance/Calibration Kit (includes primary standards)		\$1,100.00 (\$349 to replace the primary standards that are included in the kit)	
Replacement Desiccant Cartridge		\$ 17.00	
Chart Recorder- Duel Pen	\$1,657.00		\$1,657.00
Chart Recorder Paper		\$ 60.00	
Chart Recorder Replacement Pens		\$ 79.00	
Installation	\$1,000.00		
Total (not including tax and shipping)	\$11,395.00	\$ 1,256.00 (1st year) \$ 505.00 (subsequent year)	\$10,395.00

Individual Filter Effluent (IFE) Monitoring

There are 353 filter plants in Pennsylvania of which 263 are currently required to continuously monitor and record their IFE and already have instrumentation installed. The proposed amendments will 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. 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.

Combined Filter Effluent (CFE) Monitoring

The majority of filter plants in Pennsylvania 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 the state. 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. 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.

Annual Filter Inspection Program

No significant 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 clear-well 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 not additional cost depending on the capability of existing filter plant SCADA equipment.

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:
 - CFE Chlorine Residual
 - CFE Turbidity
 - Clear Well Level

- 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: \$8,860.00

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000.00

Deduct for use of Owner Furnished Alarm Dialer: (\$1,400.00)

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

- 1) One alarm control device with analog inputs for the following:
 - CFE Chlorine Residual
 - CFE Turbidity
 - Clear Well Level

- 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: \$9,980.00

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000.00

Deduct for use of Owner Furnished Alarm Dialer: (\$2,500.00)

Option C – Monitor/Alarm System with Cellular Alarm Dialer

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

- CFE Chlorine Residual
- CFE Turbidity
- Clear Well Level

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: \$9,700.00

Delivery: 2-3 Weeks (standard delivery)

Estimated Installation Cost: \$2,000.00

The Department estimates that 10% of the 353 filter plants in Pennsylvania 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 a plan 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 (e.g. less expensive for small systems). It is difficult to predict system specific costs because of the various options to comply with the proposed revisions. Estimates for small systems are \$3,000 - \$4,000 for the installation of a transfer switch, generator and concrete pad. 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.

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

New Annual Fees and Increased Permit Fees

The proposed annual fees and increased permit fees apply to all PWSs, including:

- CWSs = 1,952
- NTNCWSs = 1,088
- TNCWSs = 5,309
- Bottled, vended, retail and bulk water hauling systems (BVRB) = 172

The annual fees range from \$250 - \$40,000 for CWSs, \$50 - \$1,000 for NCWSs, and \$1,000 - \$2,500 for BVRBs. The fees will most likely be passed on to the 10.7 million customers of these PWSs as a user fee. Per person costs are expected to range from \$0.35 to \$10 per year, depending on the water system size. The amended permit fees are indicated below.

Title	Current	Proposed
Annual Fees:		
Community Water Systems (CWS)	\$ 0	\$250 - \$40,000
Nontransient Noncommunity Water Systems (NTNC)	\$ 0	\$100 - \$ 1,000
Transient Noncommunity Water Systems (TNC)	\$ 0	\$ 50 - \$ 500
Bottled Water Systems	\$ 0	\$ 2,500
Vended, Retail & Bulk Water Haulers	\$ 0	\$ 1,000
Permitting Fees (CWSs and NCWSs):		
Permit/Major Amendment	\$ 750	\$300 - \$10,000
Minor Amendment	\$ 0	\$100 - \$ 5,000
Operations Permit	\$ 0	\$ 50
Emergency Permit	\$ 0	\$ 100
Change in Legal Status	\$ 0	\$ 100

Permitting Fees (BVRBs):		
Permit/Major Amendment	\$ 750	\$500 - \$10,000
Minor Amendment	\$ 0	\$100 - \$ 1,000
Operations Permit	\$ 0	\$ 50
Change in Legal Status	\$ 0	\$ 100
Out-of-State Bottled Water	\$ 100	\$ 1,000
Emergency Permit	\$ 0	\$ 100
Noncommunity Water System		
Application for Approval		\$ 50
4-log Permit		\$ 50
Feasibility Study Fees:		
Feasibility Study	\$ 0	\$300 - \$10,000
Monitoring Waiver Fees/Source:		
VOC Use	\$ 0	\$ 100
SOC Use	\$100 - \$2,000	\$ 100
SOC Susceptibility	\$100 - \$2,000	\$ 300
IOC	\$ 0	\$ 100

(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 to a professional geologist 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 permitting mistakes.

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 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 proposed 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 proposed 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 proposed amendments are expected to result in more efficient use of staff time.

15 filter plants are owned and/or operated by the Commonwealth of Pennsylvania. 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 3 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 2 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 proposed amendments are intended to strengthen the capability of a water supplier to consistently provide 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 proposed 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 proposed amendments should also decrease staff time responding to these type of events in the long run.

Approximately 21 CWSs are owned and/or operated by the Commonwealth of Pennsylvania; 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 probable 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 will be required to report log inactivation values on a monthly basis 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 requirements of this section. 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 to water suppliers to help facilitate development of the plans.

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 ground-water sources. Reporting forms will not be required. Submittal of a pre-drilling plan is an existing requirement (per the PWS Design Manual, Part II) to obtain a permit. The proposed modification simply clarifies when this information will need to be reported.

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

§109.705(a)(1)(iii) – 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 it on-site for review during inspections.

§109.713(b) – 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 2016/17	FY +1 2017/18	FY +2 2018/19	FY +3 2019/20	FY +4 2020/21	FY +5 2021/22
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	\$1,302,262	\$2,044,863	\$4,167,363	\$4,167,363	\$104,863	\$104,863
Local Government	\$494,859	\$777,047	\$1,583,597	\$1,583,597	\$39,847	\$39,847

State Government	\$13,022	\$20,448	\$41,673	\$41,673	\$1,048	\$1,048
Total Costs	\$1,302,262	\$2,044,863	\$4,167,363	\$4,167,363	\$104,863	\$104,863
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 includes 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 public water systems that are owned/operated by local or state government.
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 +3. Current FY 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 includes 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 2013/14	FY -2 2014/15	FY -1 2015/16	Current FY 2016/17
Environmental Program Operations	\$7,357,000	\$6,972,000	\$6,803,000	\$4,777,000
Environmental Program Management	\$710,000	\$296,000	\$334,000	\$215,000
General Government Operations	\$385	\$0	\$0	\$0
Safe Drinking Water Act	\$15,000	\$51,000	\$62,000	\$32,000

(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.

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 Pennsylvania 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.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

- (a) Of the 1,952 CWSs within the State, 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 via the alternate provision options, will 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 (e.g. less expensive for small systems). It is difficult to predict system specific costs because of the various options to comply with the proposed revisions. Estimates for small systems are \$3,000 - \$4,000 for the installation of a transfer switch, generator and concrete pad. Not all systems will require

auxiliary power. Some systems may already meet reliability criteria through storage or interconnections.

- (d) The proposed regulation does include alternative regulatory schemes based on Advisory Committee input. Because various options and alternate provisions are included in these proposed amendments, it is difficult to predict cost estimates.

(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 Pennsylvania'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.

(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.

Source Water Protection and New Source Permitting Requirements

No alternative regulatory schemes were considered.

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 manned 24/7.

Strengthen Resiliency Through Auxiliary Power or Alternate Provisions

The proposed regulation includes alternative provisions which resulted from Advisory Committee input.

(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) For these provisions, no less stringent compliance or reporting requirements for small businesses were considered.
 - b) For these provisions, no less stringent schedules or deadlines for small businesses were considered.

- c) For these provisions, neither consolidation nor simplification of compliance or reporting requirements for small businesses was considered.
- d) For these provisions, no performing standards for small businesses to replace design or operational standards required in the regulation for small businesses were considered.
- e) For these provisions, no exemptions for small businesses from all or any part of the requirements contained in the regulation were considered.

Other regulatory methods were not considered for this proposed rulemaking as the amendments included therein will apply to most of Pennsylvania's population served by PWSs. Further, the impact of this rulemaking – the provision of safe drinking water to the Pennsylvania 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 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.racomn.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.

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

New Annual Fees

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

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

- | | |
|---|----------------------|
| A. The length of the public comment period: | <u>30 days</u> |
| B. The date or dates on which any public meetings or hearings will be held: | <u>N/A</u> |
| C. The expected date of delivery of the final-form regulation: | <u>December 2017</u> |
| D. The expected effective date of the final-form regulation: | <u>April 2018</u> |
| E. The expected date by which compliance with the final-form regulation will be required: | <u>April 2018</u> |
| F. The expected date by which required permits, licenses or other approvals must be obtained: | <u>April 2018</u> |

(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.