

Regulatory Analysis Form

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IRRC
REVIEW COMMISSION

(1) Agency

Department of Environmental Protection

(2) I.D. Number (Governor's Office Use)

#7-382

IRRC Number: 2330

(3) Short Title

Filter Backwash Recycling Rule (FBRR)

(4) PA Code Cite

25 PA Code Chapter 109

(5) Agency Contacts & Telephone Numbers

Primary Contact: Sharon Trostle, 783-1303

Secondary Contact: Michele Tate, 783-1303

(6) Type of Rulemaking (Check One)

- Proposed Rulemaking
 Final Order Adopting Regulation
 Final Order, Proposed Rulemaking Omitted

(7) Is a 120-Day Emergency Certification Attached?

- No
 Yes: By the Attorney General
 Yes: By the Governor

(8) Briefly explain the regulation in clear and non-technical language.

The federal FBRR was promulgated on June 8, 2001. This rule is intended to further protect public health by requiring public water systems (PWSs), where needed, to institute changes to the return of recycle flows to a plant's treatment process that may otherwise compromise microbial control. The FBRR applies to all public water systems that use surface water or ground water under the direct influence of surface water (GUDI) sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes.

The FBRR requires that recycled filter backwash water, sludge thickener supernatant, and liquids from dewatering processes must be returned to a location such that all processes of a system's conventional or direct filtration including coagulation, flocculation, sedimentation (conventional filtration only) and filtration, are employed. Systems may apply to the State for approval to recycle at an alternate location.

(9) State the statutory authority for the regulation and any relevant state or federal court decisions.

The Pennsylvania Safe Drinking Water Act, (35 P.S. § 721.4(a)) and Sections 1917-A and 1920-A of the Administrative Code of 1929, 71 P.S. § 510-7 and 510-20(b)

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(10) Is the regulation mandated by any federal or state law or court order, or federal regulation? If yes, cite the specific law, case or regulation, and any deadlines for action.

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

EPA promulgated the *Federal Filter Backwash Recycling Rule (FBRR)* on June 8, 2001. Therefore, Pennsylvania must adopt regulations implementing the federal rules by June 8, 2003. Failure to do so, and without an EPA-granted extension, may result in Pennsylvania losing primacy. The Department has requested an extension until June 8, 2004 because the state is adopting two or more EPA regulations at the same time (one of the criteria for EPA to grant an extension).

(11) Explain the compelling public interest that justifies the regulation. What is the problem it addresses?

The purpose of the FBRR is to require public water systems to review their recycle practices and, where appropriate, work with the Department to make necessary changes to recycle practices that may compromise microbial control. The presence of microbiological contaminants is a health concern. If finished water supplies contain microbiological contaminants, illnesses and disease outbreaks may result. Of the 12 waterborne cryptosporidiosis outbreaks that have occurred nationwide at drinking water systems since 1984, three were linked to contaminated drinking water utilities where recycle practices were identified as a possible cause.

The Surface Water Treatment Rule (SWTR) and the Interim Enhanced Surface Water Treatment Rule (IESWTR) set enforceable drinking water treatment technique requirements to reduce the risk of waterborne microbiological disease including *Cryptosporidium* from surface water. The proposed FBRR will provide further necessary protection of *Cryptosporidium* for systems that practice recycling.

(12) State the public health, safety, environmental or general welfare risks associated with non-regulation.

The amendments will greatly reduce the chances of cryptosporidiosis outbreaks in Pennsylvania such as the single cryptosporidiosis outbreak that occurred in Milwaukee in 1994 infecting over 400,000 individuals and causing about 50 fatalities.

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(13) Describe who will benefit from the regulation. (Quantify the benefits as completely as possible and approximate the number of people who will benefit.)

The amendments will benefit customers of public water systems, which practice recycling and which use surface water or GUDI sources. Currently, there are about 120 systems in Pennsylvania serving water to about 5,178,300 people that meet these criteria.

The economic benefits of the FBRR derive from the increased level of protection to public health. The primary benefits of the proposed rule come from reductions in the risk of illness from microbial pathogens in drinking water. In particular, FBRR focuses on reducing the risk associated with disinfection resistant pathogens, such as *Cryptosporidium*.

Available literature research demonstrates that increased hydraulic loading or disruptive hydraulic currents such as may be experienced when plants exceed operating capacity or when recycle is returned directly into the sedimentation basin can disrupt filter and sedimentation performance. The primary goal of the amendments is to improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens (i.e. *Giardia* or other waterborne bacterial or viral pathogens) in drinking water supplies through improvements in recycling process at water systems. Implementation of these provisions is expected to reduce the potential for *oocysts* getting into the finished water and causing cases of cryptosporidiosis. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In addition to preventing illnesses, the proposed rule is expected to have other non-health related benefits. These benefits results from avoiding non-health related costs associated with waterborne disease outbreaks. During an outbreak, local governments and water systems must issue warnings and alerts and may need to provide an alternative source of water. Systems also face negative publicity and possible legal costs. The monetary costs associated with an outbreak can be difficult to quantify and will vary with a host of criteria. However, one study of a *Giardia* outbreak in Luzerne County estimated these non-health related costs to be quite significant. This study estimated losses to individuals due to actions taken to avoid the contaminated water at between \$19 million and \$49 million, in 1984 dollars (\$31M-\$81M in 2000\$). Losses due to averting actions for restaurants and bars totaled \$1 million and \$0.6 million for schools and other businesses, in 1984 dollars. The burden for government agencies was \$230,000 and the outbreak cost the water utility an estimated \$1.8 million, again in 1984 dollars

(14) Describe who will be adversely affected by the regulation. (Quantify the adverse effects as completely as possible and approximate the number of people who will be adversely affected.)

Under the proposed amendments, customers of public water systems that use surface water or GUDI sources utilize direct or conventional filtration and recycle their waste streams may face increase in cost related to their water bills. The FBRR will result in increased costs to public water systems for reporting recycle practices to the Department. The Department will also face implementation costs associated with evaluating system's recycling reports and recycle practices. The actual increase in water use rates will depend on a number of factors, including population served and the filtration technology utilized. According to EPA studies conducted nationally, the mean annual cost per household is \$0.19 and the total annual cost per household is less than \$1.70 for 99 percent of the 31.4 million households potentially affected by the FBRR. The remaining one percent of households will experience a range of costs between \$1.70 and approximately \$100 per year. Only 321 of the 31.4 million households nationwide potentially affected by the FBRR (0.00001 percent) are expected to incur costs of approximately \$100 per year.

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

About 120 public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes are required to comply with the amendments. Approximately 5,178,300 Pennsylvanians obtaining their drinking water from these systems will be affected by the regulation.

(16) Describe the communications with and input from the public in the development and drafting of the regulation. List the persons and/or groups who were involved, if applicable.

The FBRR was developed through the regulatory negotiation process with many participants. These participants included public water systems, environmental groups, and public health groups. The Technical Assistance Center for Small Water Systems Advisory Board (TAC) reviewed the draft final regulation at their meeting on August 14, 2003. The Board endorsed the changes to Chapter 109 of the Department Regulations. The Water Resources Advisory Committee (WRAC) reviewed the draft final regulation at their meeting on September 10, 2003. The committee endorsed the changes to Chapter 109 of the Department regulation with a recommendation that the Department review the definition of "Capital Improvement" to be sure there are no legal implications.

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

The regulated community is considered to mean the public water suppliers who would be impacted by the proposed amendments. The consumers of water supplied by the public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes will experience higher water use rates associated with costs for reading and understanding the rule, reporting recycling practices to the state, and capital improvements to recycle return locations.

The EPA has estimated annual costs of the FBRR to be \$5.84 million or \$7.2 million (annualized using a three percent or seven percent discount rate respectively). Total capital and associated O&M costs associated with modifications to recycle locations at an estimated 371 systems nationwide are \$45.2 million, and represent \$5.5 million or \$6.8 million annually (annualized over 20 years using a three percent or seven percent discount rate, respectively). The benefits for Pennsylvania resulting from this amendments range from \$0.02 billion to \$0.1 billion per year using a valuation of \$2000 in health damages avoided per cryptosporidiosis illness prevented.

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

The FBRR will affect all public water systems that use surface water or GUDI sources; utilize direct or conventional filtration processes; and recycle spent filter backwash water, sludge thickener supernatant, or liquids from dewatering processes. Currently, there are almost 120 systems in Pennsylvania that meet these criteria of which about 15 are owned by the local governments. The local governments that own these utilities will have to incur additional annual utility costs.

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

The Commonwealth will incur additional costs to implement the amendments. Costs will also be borne by DEP for training, permitting, surveillance and compliance assistance. The Department will also face implementation costs associated with evaluating system's recycle report and recycle practices.

Primary activities in the first 3 years after adoption of the amendments will include engineering review of permit amendments applications and enforcement related activities. After the initial 3 years following adoption, program activities will shift to include field surveillance and compliance follow-up activities.

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

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
SAVINGS:	\$	\$	\$	\$	\$	\$
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 Savings	0	0	0	0	0	0
COSTS:						
Regulated Community	\$464,000	\$464,000	\$464,000	\$464,000	\$464,000	\$464,000
Local Government	0	0	0	0	0	0
State Government	\$5600	\$5600	\$5600	\$5600	\$5600	\$5600
Total Costs	\$469,600	\$469,600	\$469,600	\$469,600	\$469,600	\$469,600
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

(20a) Explain how the cost estimates listed above were derived.

The cost estimate was derived using EPA's national estimates as published in the Preamble of the FBRR (Federal Register, Vol. 66, No. 111). The EPA based their estimate on about 371 systems nationwide, which will require capital improvements to recycle return location. The recycle return provision of FBRR accounts for 95% of total annualized costs. Public Water System expenditures nationwide for all provisions are greater than 99% (\$5.8 million at three percent discount rate or \$6.7 million using a seven percent discount rate) of total annualized costs. Pennsylvania has about 120 systems likely to be affected by the proposed rule of which 30 systems may require capital improvements to recycle return location. State expenditures make up less than 1 percent (\$0.07 million at three percent discount rate or \$0.098 million at a seven percent discount rate).

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(20a) Continued.

The ratio of PA to nationwide is $30/371 = 0.08$

The federal estimate is multiplied by the ratio to get the Pennsylvania estimate, e.g.:

Estimated nationwide regulated community cost to implement = \$5.8 million

Estimated annual utility costs to Pennsylvania systems = \$5.8 million x 0.08 = \$464,000

EPA estimated annual State costs to implement FBRR = \$0.07 million

Estimated DEP annual costs to implement the amendments = \$0.07 million x 0.08 = \$5600

Although we are projecting these estimates from nationwide estimates, the costs of implementing the proposed amendments may be much lower because most Pennsylvania systems are already recycling their waste stream to the head of the plant.

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

Program	FY-3 (00-01)	FY-2 (01-02)	FY-1 (02-03)	Current FY (03-04)
Env. Prot. Operations (160)	\$76,018,000	\$75,074,000	\$75,560,000	\$76,393,000
Env. Program Mgmt. (161)	41,471,000	43,354,000	43,782,000	43,679,000

The safe drinking water program expenditures from the above appropriations are as follows:

<i>Env. Protection Operations (160)</i>	<i>491,116</i>	<i>792,445</i>	<i>853,816</i>	<i>950,000</i>
<i>Env. Program Management (161)</i>	<i>2,210,002</i>	<i>3,566,000</i>	<i>3,842,170</i>	<i>5,420,000</i>

21) Using the cost-benefit information provided above, explain how the benefits of the regulation outweigh the adverse effects and costs.

The FBRR is not expected to provide any adverse health effects. The economic benefits of the proposed amendments derive from the increased level of protection to public health. The amendment is expected to reduce the level of *Cryptosporidium* and other pathogen contamination in finished drinking water supplies through improvements in recycling processes. In this case, benefits will accrue due to the decreased likelihood of endemic incidences of cryptosporidiosis, giardiasis and other waterborne diseases. In addition, to reducing the endemic disease, the provisions are expected to reduce the likelihood of the occurrence of *Cryptosporidium* outbreaks and their associated economic costs.

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(22) Describe the non-regulatory alternatives considered and the costs associated with those alternatives. Provide the reasons for their dismissal.

No non-regulatory alternatives were considered. This is a federal rule that must be either complied with, or adopted, by the individual states.

(23) Describe alternative regulatory schemes considered and the costs associated with those schemes. Provide the reasons for their dismissal.

No alternative regulatory schemes were considered. This is a federal rule that must be either complied with, or adopted, by the individual states.

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

To the best of our knowledge, the amendments will not affect existing or proposed regulations of DEP. The amendments will be incorporated into the existing language of Title 25, PA code Chapter 109 and will enhance the existing Filtration Rule and IESWTR by reducing the risk of exposure to waterborne pathogens including *Cryptosporidium*.

(27) Will any public hearings or informational meetings be scheduled? Please provide the dates, times, and locations, if available.

The proposed regulation was published in the Pennsylvania Bulletin for public comment. IRRC was the only commentator to the proposed regulation. These comments have been addressed in the final regulation, but required no substantial changes to the regulation. No public hearings or information meetings were conducted.

(28) Will the regulation change existing reporting, record keeping, or other paperwork requirements? Describe the changes and attach copies of forms or reports, which will be required as a result of implementation, if available.

The amendments will not create any major change in the reporting, record keeping and paperwork requirements. It is anticipated that our current data reporting forms will easily facilitate any additional monitoring and reporting and that no additional data or paperwork will be necessary.

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

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

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(30) What is the anticipated effective date of the regulation; the date by which compliance with the regulation will be required; and the date by which any required permits, licenses or other approvals must be obtained?

The final Federal IESWTR was published in the Federal Register on June 8, 2001 (63 FR 31086). Unless granted an extension, Pennsylvania will have to adopt and implement the requirements of this regulation by June 8, 2003. PWSs must submit recycle notification to the Department by December 8, 2003. PWSs must return recycle flows through the processes of a system's existing conventional or direct filtration system or an alternate recycle location approved by the Department (a 2-year extension is available for systems making capital improvements to modify recycle location). Also, by June 8, 2004, PWSs must collect recycle flow information and retain on file. By June 8, 2006, PWSs must complete all capital improvements associated with relocating recycle return location (if necessary). The Department applied to EPA for a Primacy extension until June 8, 2004 to allow more time for Pennsylvania to incorporate the FBRR in our regulations. This action does not affect the effective dates of the FBRR. Until EPA grants Primacy, the Department is coordinating implementation of the FBRR with EPA.

31) Provide the schedule for continual review of the regulation.

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

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Attorney General

By: _____
(Deputy Attorney General)

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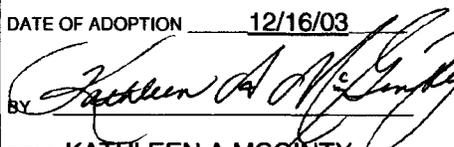
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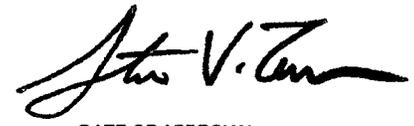
DOCUMENT/FISCAL NOTE NO. 7-382

DATE OF ADOPTION 12/16/03

BY 
TITLE KATHLEEN A MCGINTY
CHAIRPERSON

EXECUTIVE OFFICER CHAIRMAN OR SECRETARY

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Executive or Independent Agencies

BY 

DATE OF APPROVAL

(Deputy General Counsel)
(Chief Counsel - Independent Agency)
(Strike inapplicable title)

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

ORDER ADOPTING REGULATIONS

**DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD**

Filter Backwash Recycling Rule (FBRR)

25 Pa. Code, Chapter 109

Notice of Final Rulemaking
Department of Environmental Protection
Environmental Quality Board
(25 Pa. Code, Chapter 109)
(Safe Drinking Water)
(Filter Backwash Recycling Rule (FBRR))

Preamble

The Environmental Quality Board (Board) by this order amends 25 Pa Code, Chapter 109 (relating to Safe Drinking Water). The amendments in general pertain to public water systems using surface water or ground water under direct influence of surface water (GUDI); utilize direct or conventional filtration processes; and recycle backwash water, sludge thickener supernatant, or liquid from dewatering processes.

This rule is intended to further protect public health by requiring public water systems (PWSs), where needed, to institute changes to the return of recycle flows to a plant's treatment process that may otherwise compromise microbial control. The FBRR requires that recycled filter backwash water, sludge thickener supernatant, and liquids from dewatering processes must be returned to a location such that all processes of a system's conventional or direct filtration including coagulation, flocculation, sedimentation (conventional filtration only) and filtration, are employed. Systems may apply to the Department of Environmental Protection (Department) for approval to recycle at an alternate location.

This order was adopted by the Board at its meeting of December 16, 2003.

A. Effective Date

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

B. Contact Persons

For further information contact Jeffrey A. Gordon, Chief, Division of Drinking Water Management, P. O. Box 8467, Rachel Carson State Office Building, Harrisburg, PA 17105-8467, (717) 772-4018 or Marylou Barton, Assistant Council, Bureau of Regulatory Council, P. O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Information regarding submitting comments on this proposal appears in Section I of this preamble. Persons with a disability may use AT&T Relay Service by calling 1-800-654-5984 (TDD users) or 1-800-654-5988 (voice users). This proposal is available electronically through the DEP Web site (<http://www.dep.state.pa.us>)

C. Statutory Authority

The final rulemaking is being made under the authority of section 4 of the Pennsylvania Safe Drinking Water Act (act) (35 P.S. § 721.4), which grants the Board the authority to adopt rules and regulations governing the provision of drinking water to the public, and sections 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §510-7 and §510-20).

D. Background of the Amendments

The EQB promulgated the Filtration Rule in March of 1989 to address the rising number of waterborne disease outbreaks in Pennsylvania. The rule required public water systems with surface water sources to filter and disinfect the water before use by the public, cover finished water reservoirs, perform treatment performance and water quality compliance monitoring, and provide public notification of violations. The rule also established design and performance standards for the filtration and disinfection treatment techniques intended to protect against the adverse health effects of exposure to *Giardia lamblia*, viruses, and legionella, as well as many other pathogenic organisms.

The EQB also promulgated the Interim Enhanced Surface Water Treatment Rule (IESWTR) on July 21, 2001. This rule is intended to improve the control of microbial pathogens, specifically including the protozoan *Cryptosporidium parvum*, in drinking water. The IESWTR applies to Public Water Systems serving 10,000 or more people and which use surface water or ground water under the direct influence of surface water (GUDI). GUDI is any water beneath the surface of the ground with the presence of insects or other microorganisms, algae, organic debris or large diameter pathogens such as *Giardia lamblia* and *Cryptosporidium*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity or pH which closely correlate to climatological or surface water conditions. Key provisions of the IESWTR include 99% *Cryptosporidium* removal requirements for systems that filter; strengthened combined, and individual, filter effluent turbidity performance standards; disinfection benchmark provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with new disinfection byproduct standards; inclusion of *Cryptosporidium* in the definition of GUDI; and sanitary surveys for all surface water systems, regardless of size.

Water treatment plants generate various waste streams during the water production process as well as during subsequent waste handling procedures. Waste streams can be large in volume, such as spent filter backwash water, which can make up more than 3 percent of plant production, or very small in volume, like streams of filtrate from a filter press, which may represent less than 0.1 percent of plant production. The waste streams can be handled in a variety of ways. Some treatment plants recycle the wastewater to the beginning of the treatment cycle, where the water will be treated again. Other plants waste it by sending into the local wastewater treatment plant. Still other plants obtain a discharge permit and release the water to a river or stream after some additional treatment. Increasingly stringent discharge requirements, expensive chemicals, and conservation efforts have forced many plants to consider or implement recycling. Recycling of water treatment plant waste streams is an

acceptable practice of good water conservation management. This rule does not mandate recycling nor is it intended to discourage the recycling of waste streams.

When a facility recycles filter backwash water, it reintroduces contaminants back into treatment processes. Poor recycle practices can degrade influent water quality and impair treatment process performance. The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) required the Environmental Protection Agency (EPA) to promulgate a regulation governing the recycling of filter backwash water. EPA promulgated the federal FBRR on June 8, 2001. The federal FBRR addresses filter backwash water and two additional recycle streams of concern, sludge thickener supernatant and liquids from dewatering processes. EPA believes that establishing such a regulation will improve performance at filtration plants by reducing the opportunity for recycle practices to adversely affect plant performance in a way that would allow microbes such as *Cryptosporidium* to pass through into finished water. While the Pennsylvania Filtration Rule and the IESWTR contained treatment technique requirements designed to address microbial pathogens such as *Giardia* and *Cryptosporidium*, neither the Pennsylvania Filtration Rule nor the IESWTR addressed filter backwash recycling practices. About 120 surface water treatment plants using conventional or direct filtration practice some form of waste stream recycling in Pennsylvania.

The Department is incorporating the provisions of the federal FBRR into the Pennsylvania Safe Drinking Water Regulations to retain primacy for enforcement responsibility of safe drinking water. The amendment will provide additional protection against disease-causing organisms (pathogens) in drinking water. This action would address risks associated with certain recycle practices in the least burdensome, most effective and simplest means possible. The amendment will allow recycle practices to be conducted in a manner that does not upset the chemical treatment and coagulation process vital to the performance and contaminant removal capability of a filtration plant. The amendment will also assure that *Cryptosporidium oocysts* in recycled water, as well as source water, receive the full benefit of well-operated treatment processes to achieve at least 99% *Cryptosporidium* removal.

The rule will improve public health by increasing the level of protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through improvements in recycling processes at water treatment plants. This will decrease the likelihood of endemic illness from *Cryptosporidium* by several thousand cases annually in the U.S., thus reducing health care costs. Implementation of these provisions is expected to reduce the potential for oocysts getting into the finished water and causing cases of cryptosporidiosis. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In terms of occurrence, *Cryptosporidium* is common in the environment. Most surface water sources contain or are vulnerable to *Cryptosporidium oocyst* contamination at one time or another. Since some people are carriers, oocysts may enter the water through treated and untreated sewage outfall. Other sources of *Cryptosporidium* contamination are those animals that live in or near the water who are likely to deposit oocysts directly into the drinking water supplies. Livestock are notorious carriers of *Cryptosporidium*. Runoff from watersheds allows

transport of this pathogen into water bodies used as sources for drinking water treatment plants. Complicating this matter is *Cryptosporidium's* resistance to standard disinfection practices.

In humans, *Cryptosporidium* may cause a severe infection that can last several weeks. It may cause the death of individuals who have a weaker immune system due to age, cancer treatment, AIDS and anti-rejection organ replacement drugs. In 1993, *Cryptosporidium* caused over 400,000 people in Milwaukee to experience serious intestinal illness. More than 4,000 were hospitalized and at least 50 deaths were attributed to the *Cryptosporidium* outbreak. There have also been cryptosporidiosis outbreaks in Nevada, Oregon and Georgia over the past several years.

The Technical Assistance Center for Small Water Systems Advisory Board (TAC) reviewed the draft final regulation at its meeting on August 14, 2003. The Board endorsed the changes to Chapter 109 of the Department's regulations.

The Water Resources Advisory Committee (WRAC) reviewed the draft final regulation at its meeting on September 10, 2003. The Committee endorsed the changes to Chapter 109 with a recommendation that the Department review the definition of "Capital Improvement" to be sure there are no legal implications.

E. Summary of Changes to the Proposed Rulemaking

§ 109.1

Subparagraph (ii) in the definition of "recycle flows" was deleted since the term "recycle streams" is synonymous with recycle flows.

§ 109.202 (h)(1) and (2)

Paragraph (1) was reworded to clarify the exception in paragraph (2) and the term "recycled" was added to indicate the flows that should be returned through the system's existing filtration processes. Paragraph (2) requires PWSs requiring capital improvements to modify the recycle location to complete all capital improvements by June 8, 2006. A typographical error was simply corrected.

§ 109.202 (h)(3)

This paragraph was modified to remove "or expenditure" from the definition of "capital improvements."

F. Summary of Comments and Responses on the Proposed Rulemaking

The Department received comments only from the Independent Regulatory Review Commission (IRRC).

Section 109.1. Definitions.

IRRC suggested that subparagraph (ii) of the recycle flows definition be deleted to avoid confusion. The change was made as suggested since “recycle flows” is the term generally used in the amendments.

Section 109.202. State MCLs, MRDLs and Treatment Technique Requirements

IRRC commented on a typographical error in paragraph (h)(2), as printed in the *Pennsylvania Bulletin*. Paragraph (h)(2) has been revised to reference paragraph (h)(1), which was inadvertently omitted.

IRRC commented that the definition of “capital improvement” contains the vague phrases “nonrecurring, significant modification” and “nonroutine, long-term physical improvements.” These criteria do not clearly indicate which projects would qualify. The regulation should identify the specific criteria, such as a cost threshold or the time needed to complete the project, which would allow a public water system to use the later compliance date.

The Department believes that it is difficult to place a time limit or a cost on defining “capital improvement” as they can differ considerably among water systems, even for similar modifications. Costs and completion timeframes are generally unique to each water system. However, the definition of capital improvement in paragraph (h)(3) was revised to delete the phrase “or expenditure” to provide clarity.

G. Benefits, Costs and Compliance

Executive Order 1996-1 requires a cost/benefit analysis of the final regulation.

Benefits

The amendments will benefit customers of public water systems, which utilize direct or conventional filtration; use surface water or GUDI sources and practice recycling. Currently, there are about 120 systems in Pennsylvania serving water to about 5,178,300 people that meet these criteria.

The economic benefits of the FBRR derive from the increased level of protection to public health. The primary benefits of the proposed rule come from reductions in the risk of illness from microbial pathogens in drinking water. In particular, FBRR focuses on reducing the risk associated with disinfection resistant pathogens, such as *Cryptosporidium*.

Available literature research demonstrates that increased hydraulic loading or disruptive hydraulic currents, such as may be experienced when plants exceed operating capacity or when recycle is returned directly into the sedimentation basin, can disrupt filter and sedimentation performance. The goal of the amendments is to improve public health by increasing the level

of protection from exposure to *Cryptosporidium* and other pathogens (i.e. *Giardia* or other waterborne bacterial or viral pathogens) in drinking water supplies through improvements in the recycling process at water systems. Implementation of these provisions is expected to reduce the potential for oocysts getting into the finished water and causing cases of cryptosporidiosis. Exposure to other pathogenic protozoa, such as *Giardia*, or other emerging microbial pathogens is likely to be reduced by this rule as well.

In addition to preventing illnesses, the rule is expected to have other non-health related benefits. These benefits result from avoiding non-health related costs associated with waterborne disease outbreaks. During an outbreak, local governments and water systems must issue warnings and alerts and may need to provide an alternative source of water. Systems also face negative publicity and possible legal costs. The monetary costs associated with an outbreak can be difficult to quantify and will vary with a host of criteria. However, one study of a *Giardia* outbreak in Luzerne County estimated these non-health related costs to be quite significant. This study estimated losses to individuals due to actions taken to avoid the contaminated water at between \$19 million and \$49 million, in 1984 dollars (\$31M-\$81M in 2000\$). Losses due to averting actions for restaurants and bars totaled \$1 million and \$0.6 million for schools and other businesses, in 1984 dollars. The burden for government agencies was \$230,000 and the outbreak cost the water utility an estimated \$1.8 million, again in 1984 dollars.

Compliance Costs

Increased costs will be borne by the regulated community for systems making capital improvements to modify recycle location. Additional training, permitting, surveillance and compliance assistance costs will also be borne by DEP.

The consumers of water supplied by about 120 affected public water systems using surface water or GUDI; utilize direct or conventional filtration processes; and recycle backwash water, sludge thickener supernatant, or liquid from dewatering processes may experience higher water use rates associated with costs for capital improvements to modify recycle locations. The actual increase in water use rates will depend on a number of factors, including population served and type of improvements done.

Compliance Assistance Plan

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

Paperwork Requirements

The Department's current data forms will facilitate any additional monitoring and reporting or paperwork.

H. Sunset Review

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

I. Regulatory Review

Under Section 5(a) of the Regulatory Review Act (71 P.S. §745.5(a)), the Department submitted a copy of the proposed rulemaking, published at 33 Pa.B. 1234, March 8, 2003, to the IRRC and the Chairpersons of the Senate and House Environmental Resources and Energy Committees for comments.

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

Under Section 5.1(j.2) of the Regulatory Review Act (71 P.S. §745.5a(d)), on _____, these final-form regulations were deemed approved by the House and Senate Committees. Under Section 5.1(e) of the Regulatory Review Act, IRRC met on _____ and approved the final-form regulations.

J. Findings of the Board

The Board finds that:

- (1) Public notice of proposed rulemaking was given under sections 201 and 202 of the Act of July 31, 1968, P.L. 769, No. 240 (45 P.S. §§1201 and 1202) and regulations promulgated thereunder at 1 *Pennsylvania Code* §§7.1 and 7.2.
- (2) A public comment period was provided as required by law, and all comments were considered.
- (3) These regulations do not enlarge the purpose of the proposal published at 33 *Pennsylvania Bulletin* 1234, March 8, 2003.
- (4) These regulations are necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

K. Order of the Board

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

- a) The regulations of the Department of Environmental Protection, 25 *Pennsylvania Code*, Chapter 109, are amended by amending Chapter 109 to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.

- b) **The Chairperson of the Board shall submit this order and Annex A to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.**
- c) **The Chairperson shall submit this order and Annex A to the Independent Regulatory Review commission and the Senate and House Environmental Resources and Energy Committees as required by the Regulatory Review Act.**
- d) **The Chairperson of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau, as required by law.**
- e) **This order shall take effect immediately.**

BY:

**KATHLEEN A. McGINTY
Chairperson
Environmental Quality Board**

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

CHAPTER 109. SAFE DRINKING WATER

Subchapter A. GENERAL PROVISIONS

§ 109.1. Definitions.

Liquid from dewatering processes – A stream containing liquids generated from a unit used to concentrate solids for disposal.

Recycle – The act of returning recycle streams to a conventional or direct filtration plant’s treatment process.

Recycle flows - ~~[(i)]~~ Any water, solid or semi solid generated by a conventional or direct filtration plant’s treatment process and residual treatment processes that is returned to the plant’s treatment process.

~~[(ii)] — The term is also referred to as recycle streams.~~

Spent filter backwash water – A stream containing particles dislodged from filter media when the filter is backwashed to clean the filter.

Thickener supernatant – A stream containing the decant from a clarifier, sedimentation basin, or other unit used to treat water, solids or semi-solids from the primary treatment process.

Subchapter B. MCLs, MRDLs OR TREATMENT TECHNIQUE REQUIREMENTS

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

(h) Recycling of waste stream.

(1) EXCEPT AS PROVIDED IN PARAGRAPH (2) [If no capital improvements are required], a public water system that uses a surface water source or GUDI and provides conventional filtration or direct filtration treatment and recycles spent filter backwash water, thickener supernatant, or liquids from dewatering processes shall return these RECYCLED flows through the processes of the system's existing conventional or direct filtration system as defined in § 109. 1 (relating to definitions) or at an alternate location approved by the Department by June 8, 2004.

(2) If capital improvements are required to modify the recycle location to meet the requirement [in] OF paragraph (1), the capital improvements shall be completed by June 8, 2006.

(3) Capital improvement means a nonrecurring, significant modification [or expenditure] for non-routine, long-term physical improvements to any part of a public water system, including, but not limited to, construction activities, renovation activities, demolition activities, source development, treatment process modifications, storage modifications, distribution system modifications, waste-processing modifications, and all associated design costs.

Subchapter G. SYSTEM MANAGEMENT RESPONSIBILITIES

§ 109.701. Reporting and record keeping.

(h) Reporting and record maintenance requirements for systems recycling their waste streams.

(1) Public water systems using surface water or GUDI sources and providing conventional filtration or direct filtration treatment and that recycle spent filter backwash water, thickener supernatant, or liquids from dewatering processes shall notify the Department in writing by

December 8, 2003. This notification shall include the following information:

- (i) A plant schematic showing the origin of all flows that are recycled (including, but not limited to, spent filter backwash water, thickener supernatant, and liquids from dewatering processes), the hydraulic conveyance used to transport them and the location where they are reintroduced back into the treatment plant.**
 - (ii) Typical recycle flow in gallons per minute (gpm), the highest observed plant flow experienced in the previous year (gpm), design flow for the treatment plant (gpm) and Department-approved operating capacity for the plant.**
- (2) Record maintenance. Beginning June 8, 2004, public water systems using [a] surface water or GUDI sources and providing conventional filtration or direct filtration and [recycle] RECYCLING spent filter backwash water, thickener supernatant, or liquids from dewatering processes shall collect and retain on file recycle flow information specified in this paragraph. This information is for the previous year of recycling and shall be available to the Department for review and evaluation at the Department's request:**

- (i) **A copy of the recycle notification and information submitted to the Department under subsection (h).**
- (ii) **A list of all recycle flows and the frequency with which they are returned.**
- (iii) **Average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.**
- (iv) **Typical filter run length and a written summary of how filter run length is determined.**
- (v) **The type of treatment provided for the recycle flow.**
- (vi) **Data on the physical dimensions of the equalization or treatment units, or both, typical and maximum hydraulic loading rates, type of treatment chemicals used and average dose and frequency of use, and frequency at which solids are removed, if applicable.**

SAFE DRINKING WATER ACT AMENDMENTS

25 PA CODE CHAPTER 109

FILTER BACKWASH RECYCLING RULE (FBRR)

COMMENT AND RESPONSE DOCUMENT

List of Commentators

1. Independent Regulatory Review Commission
Commonwealth of Pennsylvania
333 Market Street
14th Floor
Harrisburg, PA 17101

COMMENTS AND RESPONSES

Section 109.1. Definitions.

Comment # 1: The definition of “recycle flows” states, Subsection (ii), that “recycle streams” also has the same meaning. For clarity, subsection ii should be deleted and one term should be used consistently throughout the regulation. (1)

Response # 1: The term “recycle flow” is the same as “recycled stream” according to EPA guidelines. However, recycle flow is more generally used in the FBRR. Therefore, subsection (ii) has been deleted from the final regulation.

Section 109.202. State MCLs, MRDLs and Treatment Technique Requirements

Comment # 2: Paragraph (h)(2), as printed in the Pennsylvania Bulletin, is missing a reference after the word “paragraph.” The reference should be added to the final-form regulation. (1)

Response #2: This is a typographical error in printing. Paragraph (h)(2) has been revised as follows: “If capital improvements are required to modify the recycle location to meet the requirement of paragraph (h)(1), the capital improvement shall be completed by June 8, 2006.”

Comment # 3: Paragraph (h)(3) provides a description of circumstances, which would trigger the later compliance date of June 8, 2006. However, it contains the vague phrases “nonrecurring, significant modification” and “nonroutine, long-term physical improvements.” These criteria do not clearly indicate what projects would qualify. The regulation should identify the specific criteria, such as a cost threshold or the time needed to complete the project, which would allow a public water system to use the later compliance date. (1)

Response # 3: It is difficult to place a time limit or a cost on defining "capital improvement" as they can differ considerably among water systems, even for similar modifications. Costs and completion timeframes are generally unique to each water system. However, the definition of capital improvement in paragraph (h)(3) was revised to delete the phrase “or expenditure” to provide clarity. The regulations provide that if capital improvements are not necessary to enable the system to comply with the FBRR provision to recycle through all the treatment processes, then the compliance date is June 8, 2004. However, if any capital improvements are necessary to modify or relocate the recycle location, then the system has until June 8, 2006 to complete the modifications. Systems that require modifying or making changes to the recycle location require additional time for such things as planning, development and evaluation of alternative locations, selection of consultants or contractors, obtaining necessary permit amendments from the Department, securing financing for the improvements and finally installation of the new piping,

pumps, processes and instrumentation. Therefore, the Department believes there is no need to provide either a cost threshold or a time limit since the regulations are specific in that simply if capital improvements are needed to modify or relocate the recycle location, the system must complete the modifications by June 8, 2006.



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building

P.O. Box 2063

Harrisburg, PA 17105-2063

January 13, 2004

Policy Office

717-783-8727

Mr. Robert E. Nyce, Executive Director
Independent Regulatory Review Commission
14th Floor, Harristown #2
333 Market Street
Harrisburg, PA 17120

Dear Mr. Nyce:

RE: Final Rulemaking: Chapter 109, Filter Backwash Recycling Rule (#7-382)

Pursuant to Section 5.1(a) of the Regulatory Review Act, enclosed is a copy of a final-form regulation for review by the Commission. The Environmental Quality Board (EQB) approved this final-form rulemaking on December 16, 2003.

The Filter Backwash Recycling Rule (FBRR) amends Chapter 109 to incorporate requirements contained in the Federal FBRR, which was promulgated on June 8, 2001. The FBRR will improve public health by increasing protection from exposure to *Cryptosporidium* and other pathogens in drinking water supplies through improvements in recycling processes at water treatment plants. The FBRR addresses recycled filter backwash water, sludge thickener supernatant and liquids from dewatering processes. It requires public water systems (PWSs), where needed, to return these flows through the system's existing filtration processes, thereby improving plant performance by reducing the opportunity for microbes to pass through finished water.

The FBRR applies to about 120 PWSs serving approximately 6 million Pennsylvanians. Systems may apply to DEP for approval to recycle at one or more alternate locations. In addition, systems covered under the rule must provide written notification to DEP that they recycle, and they must include flow data and recycle location(s). They must also provide data to DEP on recycle frequency and treatment provided for the recycle flow. The deadline for adoption of this rulemaking is June 8, 2004.

The proposed rulemaking was adopted by the EQB on December 17, 2002, and published in the *Pennsylvania Bulletin* on March 8, 2003, with a 30-day public comment period. There were no public comments. The Commission's comments have been addressed in the final-form rulemaking. Both the Technical Assistance Center for Small Water Systems and the Water Resources Advisory Committee support the final rulemaking.



The Department will provide assistance as necessary to facilitate the Commission's review of this final-form regulation under Section 5.1(e) of the Regulatory Review Act. Please contact me if you would like additional information.

Sincerely,



Sharon F. Trostle
Regulatory Coordinator

Enclosure

**TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE
REGULATORY REVIEW ACT**

I.D. NUMBER: 7-382
 SUBJECT: Filter Backwash Recycling Rule
 AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

2330

TYPE OF REGULATION

- Proposed Regulation
- X Final Regulation
- Final Regulation with Notice of Proposed Rulemaking Omitted
- 120-day Emergency Certification of the Attorney General
- 120-day Emergency Certification of the Governor
- Delivery of Tolled Regulation
 - a. With Revisions
 - b. Without Revisions

RECEIVED
 2001 JAN 13 PM 3:07
 REVIEW COMMISSION

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
1/13	<i>Vicki Hoffman</i>	HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
1-13	<i>Dani Castelli</i>	SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
1/13	<i>Steph J. Hoffman</i>	INDEPENDENT REGULATORY REVIEW COMMISSION
		ATTORNEY GENERAL (for Final Omitted only)
		LEGISLATIVE REFERENCE BUREAU (for Proposed only)

