12/16 Revised

Regulatory Analysis Form

(Completed by Promulgating Agency)

(All Comments submitted on this regulation will appear on IRRC's website)

INDEPENDENT REGULATORY REVIEW COMMISSION

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(1) Agency
Environmental Protection

(2) Agency Number:
Identification Number: 7-534

IRRC Number: 3182

(3) PA Code Cite: 25 Pa. Code, Chapter 93

(4) Short Title:
Water Quality Standards – Triennial Review

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

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

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

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

Section 303(c)(1) of The Clean Water Act requires that states periodically, but at least once every 3 years, review and revise as necessary, their water quality standards. Further, states are required to protect existing uses of their waters. This regulation is undertaken as part of the Department's ongoing review of Pennsylvania's water quality standards.

The proposed regulation will update and revise Table 3, at Section 93.7 by updating the aquatic life criterion for ammonia, and the Bacteria criteria for changes to the recreational use (Bac_1) criterion and moving the Bac_2 criterion to Drainage List X; deleting reference to Appendix A, Table 1A in Section 93.8a(b) since Table 1A is being deleted in Chapter 16; removing reference to the Federal regulation in 40 CFR 131.32(a) in Section 93.8a(j)(3) since this federal promulgation had been withdrawn by U.S. EPA; Sections 93.8c(a) and 93.8c(b), are updated to clarify that the criteria in Table 5 may apply to the Great Lakes System for those substances not listed in Table 6; toxic substances at Section 93.8c, Table 5, are being updated using the latest scientific information and policies developed by EPA under the Clean Water Act, section 304(a); clarifying the use of the Biotic Ligand Model (BLM) for the development of new or updated site-specific criteria for copper in freshwater systems in Section 93.8d(c); and creating a new on-line resource at Section 93.8d(f)(2), to maintain a publicly available list of site-specific criteria that have been developed, and are being used by the Department in permitting and other pollution control measures.

There are also corrections to the water quality standards chapters for typographical and translation errors, and missed references associated with prior rulemaking and/or publication activities. This includes corrections to use designations and stream entries found in Drainage Lists at Sections 93.9a-93.9z, for revisions which are not

being addressed by separate stream redesignation rulemakings. These changes to the drainage lists are proposed to clarify stream names, segment boundaries, reformat the drainage lists, and to correct typographical and other errors.

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

The Pennsylvania Clean Streams Law, Act of June 22, 1937 (P.L. 1987, No. 394) as amended, 35 P.S. §§ 691.5 (b)(1) and 691.402.

Section 1920-A of The Administrative Code of 1929, as amended, 71 P.S. § 510-20.

Section 303(c) of the Federal Clean Water Act, 33 U.S.C.A. § 1313(c).

(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 303(c) of the federal Clean Water Act and 40 CFR Part 131 require states to develop water quality standards that consist of designated uses, water quality criteria and antidegradation requirements. Such standards must "protect the public health or welfare and enhance the quality of water." In addition, such standards must take into consideration water uses including public water supplies, propagation of fish and wildlife, recreational purposes, agricultural purposes and industrial purposes.

The U.S. EPA urged the Department in a letter dated January 21, 2013 to include the federally recommended ammonia and recreational water quality criteria (RWQC) into the Commonwealth's water quality standards. Also, the U.S. EPA specifically mentioned in their May 22, 2014 approval letter in reference to the 2013 Pennsylvania Triennial Review of WQS "that PADEP will address the issues of total dissolved solids, most notably chlorides, ammonia, and recreational criteria", in their next triennial review.

In addition, it is the duty of the Department, pursuant to section 5 of the state Clean Streams Law, to consider water quality management, pollution control in the watershed as a whole, and the present and possible future uses of waters in adopting regulations.

(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.

Section 303(c)(1) of the federal Clean Water Act and 40 CFR 131.20 require that states review their water quality standards and modify them, as appropriate, at least once every three years. The proposed regulation fulfills this requirement for Pennsylvania's triennial review of water quality standards. This requirement is based upon recognition that the science of water quality is constantly advancing. Its purpose is to ensure that standards are based on current science, methodologies, and U.S. EPA mandates, recommendations and guidance. The federal mandate for states to develop water quality criteria is found at section 303(c)(2)(A) of the Clean Water Act (CWA).

The purpose of developing the water quality standards is to protect Pennsylvania's surface waters. Pennsylvania's surface waters, through the water quality standards program, are protected for a variety of uses including: drinking water supplies for humans, livestock and wildlife; fish consumption; irrigation for crops;

aquatic life uses; recreation; and industrial water supplies. All the citizens of this Commonwealth will benefit from the regulation because it provides the appropriate level of water quality protection for all water uses.

By protecting the water uses, and the quality of the water necessary to maintain the uses, benefits may be gained in a variety of ways by all citizens of the Commonwealth. For example, clean water used for drinking water supplies benefits the consumers by lowering drinking water treatment costs and reducing medical costs associated with drinking water illnesses. Additionally, by maintaining water quality standards, clean surface water is available for irrigation of crops and livestock and for use in industrial processes. Clean surface waters also benefit the Commonwealth by providing for increased tourism and recreational use of the waters. Clean water provides for increased wildlife habitat and more productive fisheries.

(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.

No. The proposed regulations are not more stringent than federal standards.

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

Other states are also required to maintain water quality standards, based on the federal mandate at section 303(c) of the federal Clean Water Act and 40 CFR Part 131. If other states or tribes have not yet adopted similar CWA Section 304(a) criteria, they will be required to consider these criteria during their next triennial review. The proposed amendments will not put Pennsylvania at a competitive disadvantage to other states.

See attached summary Table – Summary: Ammonia, and Human Health Criteria for U.S. EPA Region 3 and Neighboring States.

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

No other state regulations are affected by this proposal.

State agencies that may cause pollution in surface waters could possibly be affected by this regulation. For example, if an agency's activity involves the discharge of pollutants into surface waters, the discharge must meet the water quality standards identified by this regulation.

(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 Water Resources Advisory Committee (WRAC) was briefed on the scope of the regulation at the February 18, 2015, meeting, and provided on-going updates on the review and regulatory development at the August 12th and November 18, 2015, meetings. WRAC was also provided a draft of the proposed regulatory amendments in January 2016, so they could consider the amendments and make recommendations at the March 24, 2016 meeting, when WRAC voted to concur with the Department's recommendation to move the rulemaking forward for EQB consideration. In addition, the Department provided to the Agricultural Advisory Board

(AAB) on February 25, 2016, a regulatory update that included the triennial review of water quality standards. Also, DEP provided to the Citizens Advisory Council (CAC) on June 21, 2016, an overview of the triennial review. Later in 2016, the draft proposed regulatory language was amended to remove the chloride criterion. The status of the draft regulatory language was discussed again with WRAC at its March 29, 2017 meeting, informing WRAC members that the proposal would be moving forward to the EQB, as modified without containing a chloride criterion recommendation.

The public will be afforded the opportunity to comment on this proposed regulation during a 60-day public comment period, in addition to public hearings.

(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?

Persons with existing or proposing new or expanded activities or projects which result in discharges to waters of the Commonwealth will be required to implement treatment of effluent or best management practices (BMPs) and the appropriate protections to meet the water quality standards established by this regulation. Such treatment and practices may result in higher design, engineering, construction, and treatment costs. However, it is not possible to identify the total number of persons, businesses and organizations that will be affected by the regulation, or the potential associated costs. It is not possible to predict the future business decisions of existing or potentially new entities that choose to conduct associated activities that will be affected by these regulations. Therefore, it is not possible or practicable to quantify their technology needs and BMP costs that may be associated with these future activities. The proposed regulations do, however, establish a clear and appropriate set of goals, objectives and targets to which these persons, businesses, and organizations can plan and design towards.

Ammonia is present in raw sewage and is currently treated and removed by many wastewater treatment plants. Ammonia is also used in agriculture in connection with fertilizers. It is also found as part of metal finishing, pharmaceuticals production, processing of crude oil and corrosion protection. No impact or minimal impact is expected for the great majority of point source discharges in Pennsylvania. In those cases, where additional treatment for ammonia may be needed, minimal cost impact is expected because ammonia is highly treatable. Treatment usually involves only time allowed for biological degradation and exposure to atmospheric oxygen.

Bacteria are common one-celled organisms and are a natural component of surface waters. While most are not harmful to humans, some can cause illness and disease. Fecal coliforms, including *E. coli*, are commonly found in the gastrointestinal tract and feces of warm-blooded animals, and are therefore indicators of fecal contamination from human and animal wastes. Water-borne pathogenic diseases that may coincide with fecal contamination include ear infections, dysentery, typhoid fever, viral and bacterial gastroenteritis, and Hepatitis A. All point source discharges in Pennsylvania containing treated sewage already are required to disinfect their wastewater prior to discharge. Disinfection practices such as chlorination, ozonation, or ultra-violet (UV) light are used to kill or deactivate microorganisms. There will be little cost associated with the new criteria since disinfection is already a required part of treatment at these facilities.

See also human health criteria rationale and technical documents referenced in #28 explaining the types of industries that may be affected by changes to the toxics criteria.

The proposed regulation will be implemented through the Department's permit and approval actions.

(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.

All persons, groups or entities with proposed or existing point source discharges containing the pollutants that are included in this proposed rulemaking into surface waters of the Commonwealth must comply with the regulation.

Also, see response to #15.

(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.

All citizens of the Commonwealth, both present and future, will benefit from having clean water that is protected and maintained. Any reduction in the total toxic load in Pennsylvania waterbodies is likely to have a positive effect on the human health of Pennsylvanians. This will translate into an as yet unknown economic benefit through avoided cleanup or remediation costs later in time, as well as avoided costs for the treatment and caring for persons with diseases and disabilities that can be reasonably attributed to environmental contaminants in surface water.

Reduced toxics in Pennsylvania's waterways will likely increase recreational fishing and tourism to swimming and fishing locations throughout the state. Additionally, cleaner rivers and fish may lead to increased birding and wildlife viewing opportunities, as the benefits of cleaner water and fish work themselves up the food chain, resulting in substantial economic benefits. Persons who recreate on the waters and who fish, both for sport and consumption, will benefit from better water quality protection.

A reduction in toxics found in Pennsylvania's waterways may lead to increased property values for properties located near rivers or lakes. The study, *The Effect of Water Quality on Rural Nonfarm Residential Property Values*, (Epp and Al-Ani, American Journal of Agricultural Economics, Vol 61, No. 3 (Aug. 1979)), used real estate prices to determine value of improvements in water quality in small rivers and streams in Pennsylvania. Water quality, whether measured in pH or by the owner's perception, has a significant effect on the price of adjacent property. Their analysis showed a positive correlation between water quality and housing values. They concluded that buyers are aware of the environmental setting of a home and that differences in the quality of nearby waters affects the price paid for a residential property.

A 2006 study from the Great Lakes region estimated that property values were significantly depressed in two regions associated with toxic contaminants (PAHs, PCBs, and heavy metals). The study showed that a portion of the Buffalo River region (approx. 6 miles long) had depressed property values of between $83 million and $118 million for single-family homes, and between $57 million and $80 million for multi-family homes as a result of toxic sediments. The same study estimated that a portion of the Sheboygan River (approx. 14 miles long) had depressed property values of between $80 million and $120 million as the result of toxics. "*Economic Benefits of Sediment Remediation,*" http://www.nemw.org/Econ . While this study related to the economic effect of contaminated sediment in other waters in the Great Lakes region, the idea that toxic pollution depresses property values is easily transferable to Pennsylvania. A reduction in toxic pollution in Pennsylvania's waters has a substantial economic benefit to property values in close proximity to waterways.

There are economic benefits to be gained by maintaining clean water for potable and other water supply uses. Water suppliers, and their customers, may benefit from lower pretreatment costs if water is withdrawn that meets the surface water quality standards. Assuring the availability of clean water will cut down on the costs to consumers for purchasing household pretreatment/water filtration systems and bottled water. *See* "*The Real Cost of Bottled Water*," San Francisco Chronicle, Feb. 18th, 2007, http://www.sfgate.com/green/article/The-

real-cost-of-bottled-water-2647986.php which estimates the cost of bottled water to be anywhere between 240 and 10,000 times more expensive than tap water. An additional benefit to greater reliance on tap water is the reduction of containers that need to be recycled or disposed of in landfills. Persons may incur a cost benefit by reducing their dependence on bottled waters and household water filtration systems based on their confidence in source water quality.

By controlling toxics at the point of discharge, users downstream will not have to bear the costs associated with cleaning up someone else's discharge before the water can be used. For example, fewer toxics in surface waters may reduce costs incurred by downstream surface water users who have to pre-treat water for industrial or commercial use (i.e. food processors). Also, reductions at the point of discharge reduce the costs for water suppliers who will have to treat water that is high in toxics at their intakes to meet drinking water standards. Passing on the treatment to water suppliers will increase costs to drinking water customers. Any intervening water uses such as irrigation and fish consumption, between the point of discharge and the point of use, will be protected by limiting the amount of toxics that may be discharged. Under these scenarios, multiple surface water users will benefit—industrial, agricultural, commercial, and potable water users.

There are also economic benefits to be gained by having clearly defined remediation standards for surface waters. Under Pennsylvania's Land Recycling and Environmental Remediation Standards Act, liability relief is available, by operation of law, if a person demonstrates compliance with the environmental remediation standards established by the law. Surface water quality criteria are used to develop remediation standards under the law. Persons performing remediation depend upon these criteria to obtain a liability relief benefit under the law. An article in the Duquesne University Law Review discusses the importance of liability limitation as "vital to the participation in the remediation process." The article recognizes that "liability protection provides the missing ingredient—financial incentive—for undertaking the cleanup of an industrial site." *See "COMMENT: Pennsylvania's Land Recycling Program: Solving the Brownfields Problem with Remediation Standards and Limited Liability,"* Creenan, James W. and Lewis, John Q., Duquesne University Law Review, 34 *Duq. L. Rev.* 661 (Spring 1996). Industrial land redevelopers will benefit from these regulations by having financial certainty when choosing a surface water cleanup standard and by being eligible for liability relief under state law.

Also, see response to #15.

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

Health and welfare benefits to all citizens of the Commonwealth accrue from protecting the surface waters of the Commonwealth at the appropriate level. The benefits from substantial revenue and jobs associated with popular fisheries, and other industries that rely on clean water, outweigh the cost and adverse effects associated with selective effluent treatment technology and best management practices for those who cause pollution of the waters.

Section 4 of the Pennsylvania Clean Streams Law (Declaration of Policy) clearly indicates the benefits of, and how it is essential to maintain clean, unpolluted waters, if Pennsylvania is to attract new manufacturing industries and to develop Pennsylvania's full share of the tourist industry; to have adequate out of door recreational facilities in the decades ahead; and that it is the objective of the Clean Streams Law not only to prevent further pollution of the waters of the Commonwealth, but also to reclaim and restore to a clean, unpolluted condition every stream in Pennsylvania that is presently polluted. The prevention and elimination of water pollution is recognized as being directly related to the economic future of the Commonwealth. Section 4 of the Clean Streams Law was amended July 31, 1970 (P.L.653, No. 222).

Also, see responses to #15 and #17.

(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.

Specific estimates of costs and savings cannot be determined because each activity that will result in pollution to waters in this Commonwealth must be reviewed based on site-specific considerations. These site-specific considerations include, but are not limited to the size, flow volume, and the chemical, biological and physical properties of both the receiving water and the effluent discharge. These unique parameters result in site-specific requirements. National Pollutant Discharge Elimination System (NPDES) permits and other approvals will be required for discharges to waters of this Commonwealth using the water quality uses and criteria identified in the proposed regulations.

(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.

No costs will be imposed directly upon local governments by this proposed regulation. This proposal is based on and will be implemented through existing Department programs, procedures and policies. However, certain municipalities or municipally-owned entities that discharge pollutants to surface waters may be affected by this proposed regulation as described in #15. The costs associated with permits and performance or design requirements will be site-specific and will be based on effluent limitations or best management practices and the appropriate protections for a particular waterbody.

A municipality may derive additional revenue and employment from the tourism industries that are attracted to recreation associated with protected and improved surface waters, such as anglers, boaters, swimmers and others interested in outdoor recreation.

(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.

No costs will be imposed directly upon state governments by this proposed regulation. This proposal is based on and will be implemented through existing Department programs, procedures and policies. However, certain state agencies or state-owned entities that discharge pollutants to surface waters may be affected by this proposed regulation as described in #15. The costs associated with permits and performance or design requirements will be site-specific and will be based on effluent limitations or best management practices and the appropriate protections for the particular waterbody.

The state may derive additional revenue and employment from the tourism industries that are attracted to recreation associated with the surface waters, such as anglers, boaters, swimmers, and others interested in outdoor recreation.

Also, see response to #17.

(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.

Each activity that will result in pollution to waters of this Commonwealth requires a review that is based on site-specific considerations, including the specific pollutant(s) expected or known to be in the discharge to waters of this Commonwealth. Existing Department procedures will be used to implement this proposed regulation. Persons with existing or proposing new or expanded activities or projects which result in discharges to waters of the Commonwealth will be required to implement treatment of effluent or best management practices and the appropriate protections to meet the water quality standards established by this regulation.

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

No additional forms are required, as a result of this regulation.

(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.**

N/A

(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 Year 16/17	FY+1 Year 17/18	FY+2 Year 18/19	FY+3 Year 19/20	FY+4 Year 20/21	FY+5 Year 21/22
SAVINGS:	$	$	$	$	$	$
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	"	"	"	"	"	"
State Government	"	"	"	"	"	"
Total Savings	"	"	"	"	"	"
COSTS:						
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	"	"	"	"	"	"
State Government	"	"	"	"	"	"
Total Costs	"	"	"	"	"	"

REVENUE LOSSES:						
Regulated Community	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable	Not Measurable
Local Government	"	"	"	"	"	"
State Government	"	"	"	"	"	"
Total Revenue Losses	"	"	"	"	"	"

(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)
160-10381 Enviro Protection Operations	$75,184,000	$84,438,000	$87,172,000	$89,066,000
161-10382 Enviro Program Management	$25,733,000	$28,517,000	$28,277,000	$30,025,000

(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.

Persons with proposed or existing discharges into surface waters of the Commonwealth must comply with the regulation. Also, see response #15.

(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.

Each activity that will result in pollution to waters of this Commonwealth requires a review that is based on site-specific considerations. National Pollutant Discharge Elimination System (NPDES) permits and other approvals will be required for discharges to waters, using the water quality criteria and standards identified in the proposed regulations. Existing Department procedures will be used to implement this proposed regulation.

(c) A statement of probable effect on impacted small businesses.

Each activity that will result in pollution to waters of this Commonwealth requires a review that is based on site-specific considerations. National Pollutant Discharge Elimination System (NPDES) permits and other approvals will be required for discharges to waters, using the water quality criteria and standards identified in the proposed regulations. Existing Department procedures will be used to implement this proposed regulation.

(d) A description of any less intrusive or less costly alternative methods of achieving the purpose of the proposed regulation.

There were no non-regulatory alternatives or less intrusive methods available to consider to achieve the purpose of this proposed regulation.

In addition to the flexibility afforded by the regulatory mechanisms in the NPDES permitting program, the water quality regulations include a provision that allows for the development of site-specific water quality criteria, in lieu of the statewide criteria, under certain circumstances. In particular, in accordance with §93.8d(a), if site-specific biological or chemical conditions of the receiving waters differ from the conditions upon which the statewide criteria are based, or there exists a need for a site-specific criterion for a substance not listed in §93.8c, Table 5, the Department will consider a request for site-specific criteria. A discharger has the opportunity to weigh the costs of developing a site-specific standard against the usage of an existing statewide standard.

(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.

There are no such provisions in this proposed regulation.

(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.

There were no non-regulatory alternatives available to consider in this case.

There were no alternative regulatory schemes to consider in achieving the correct level of protection for the waters of the Commonwealth. The proposed regulations reflect the results of a periodic and on-going scientific evaluation of regulatory criteria, as required by all states under the federal Clean Water Act.

The U.S. EPA urged the Department in a letter dated January 21, 2013 to include the federally recommended ammonia and recreational water quality criteria (RWQC) into the Commonwealth's water quality standards. Also, the U.S. EPA specifically mentioned in their May 22, 2014 approval letter in reference to the 2013 Pennsylvania Triennial Review of WQS "that PADEP will address the issues of total dissolved solids, most notably chlorides, ammonia, and recreational criteria", in their next triennial review.

(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.

This proposed regulation does not establish or revise compliance or reporting requirements for small businesses. There were no less stringent compliance or reporting requirements to consider in this case. Any WQ criteria that are less stringent than those proposed were not protective enough for the waters of the Commonwealth and would negate the benefits listed in Question #17.

There were no alternative regulatory schemes to consider in achieving the correct level of protection for the waters of the Commonwealth. The proposed regulations reflect the results of a scientific evaluation of regulatory criteria.

(b) The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses.

There were no non-regulatory alternatives available to consider.

Schedules of compliance and reporting requirements to meet the proposed standards may be considered when permit or approval actions are taken, in accordance with 25 Pa Code Chapter 92a. They are not considered as part of this scientific evaluation of the correct water quality criteria needed to protect surface waters.

(c) The consolidation or simplification of compliance or reporting requirements for small businesses.

Schedules of compliance and reporting requirements to meet the proposed standards may be considered when permit or approval actions are taken. They are not part of this scientific evaluation and establishment of the correct water quality criteria needed to protect surface waters.

(d) The establishment of performing standards for small businesses to replace design or operational standards required in the regulation.

The proposed regulations represent performance standards. They identify the instream goals for water quality protection and do not identify the design or operational standards that must be used to meet the goals.

(e) The exemption of small businesses from all or any part of the requirements contained in the regulation.

There were no such exemptions of small businesses to consider in this case.

(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.

Please see the attached rationale documents for criteria development and specific literature reviews and citations.

In addition to attached rationale documentation, more reference material can be accessed as described below:

DEP assessed the peer reviewed technical documentation for the recommended ammonia criteria and found it was scientifically sound. The document can be accessed at *https://www.epa.gov/wqc/aquatic-life-criteria-ammonia*

DEP assessed the peer reviewed technical documentation for the recommended recreational criteria for bacteria and found it was scientifically sound. The document can be accessed at *https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf*

DEP assessed the peer reviewed technical documentation for the recommended human health criteria and found it was scientifically sound. The document can be accessed at *https://www.epa.gov/sites/production/files/2015-10/documents/human-health-2015-update-factsheet.pdf*

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

A. The length of the public comment period: 60-days

B. The date or dates on which any public meetings or hearings will be held: Hearings TBD; during 60-day comment period

C. The expected date of delivery of the final-form regulation: Quarter 2, 2018

D. The expected effective date of the final-form regulation: Quarter 2, 2018

E. The expected date by which compliance with the final-form regulation will be required: Quarter 2, 2018

F. The expected date by which required permits, licenses or other approvals must be obtained: When permits or approvals are issued or renewed

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

This regulation will be reviewed on a triennial basis, as required at least once every three years, in accordance with the federal Clean Water Act. As newer science is developed, the standards will be updated.

TABLE – TR17 RAF # 12
Summary: Criteria Update for U.S. EPA Region 3 and Neighboring States

	AMMONIA	U.S. EPA's 2015 Human Health Criteria Updates
Pennsylvania		
Human Health		Proposing EPA's 2015 HH Criteria Updates for 94 pollutants; adding new risk input factors into codified methods for criteria development; and recalculated several state-derived criteria using new risk input factors during current TR
*Freshwater Aquatic Life - **Current Criteria***	Current criteria based on EPA 1983 draft report	
*Freshwater Aquatic Life – **Proposed Criteria***	Proposing EPA 2013 (mussels & trout present statewide) during current TR	
Delaware		
Freshwater Aquatic Life	No immediate plans to adopt EPA 2013; but will consider during next TR	
Freshwater Human Health		No immediate plans to adopt EPA 2015; will evaluate approach & risk factors during next TR
Maryland		
Freshwater Aquatic Life	Will consider EPA 2013 in next TR or in the interim	
Human Health		Not planning to adopt at this time. May adopt in a subsequent rulemaking.
New Jersey		
Freshwater Aquatic Life	plans to adopt EPA 2013 during next TR	
Freshwater Human Health		No current plans to adopt EPA 2015; currently performing preliminary review of HH updates
New York		
Human Health		Currently reviewing EPA's 2015 Updates; comparing NY's procedural approach to EPA's updates (risk factors and methods)

Freshwater Aquatic Life	Considering adoption as part of next TR	
	AMMONIA	**U.S. EPA's 2015 Human Health Criteria Updates**
Ohio		
Human Health		Proposing to include EPA's 2015 HH Criteria Updates for 94 pollutants along with this next triennial.
Aquatic Life - Current	Currently equation-based NH_3 criteria; Ohio-specific & tiered, varies by designated aquatic life / beneficial uses & *OMZA*[1] *http://www.epa.ohio.gov/portals/35/rules/01-07.pdf*	
Aquatic Life - Proposed	Plan to propose EPA 2013 for Warm water = mussels present & salmonids absent. Cold water = either retain current criteria or propose EPA 2013 mussels present & salmonids present.	
Virginia		
Freshwater Aquatic Life	Currently holding stakeholder advisory meetings. Expect to ask Water Control Board for permission to publish proposal public notice late 2016 or spring 2017. **VA's concern:** Implementation has yet to be definitively addressed. One option discussed is through schedules of permit compliance.	
Human Health		Yes. VA plans to adopt. Part of the same rulemaking for ammonia criteria update.
West Virginia		
Freshwater Aquatic Life	No immediate plans to adopt EPA 2013, need to know if it is fully protective of mussels before change is sought	
Human Health		Not expecting to adopt this Triennial year—seeking further information from EPA on how HH Criteria Updates were developed

Washington, D.C.		
Freshwater Aquatic Life	District is proposing EPA 2013 ammonia criteria during 2016 triennial review	
Human Health		District is proposing EPA 2015 HH criteria update during 2016 triennial review
	AMMONIA	**U.S. EPA's 2015 Human Health Criteria Updates**
DRBC		
Freshwater Aquatic Life	No immediate plans to adopt EPA 2013; but will coordinate with member states according to progress of their TR's	
Human Health		No immediate plans to adopt EPA 2015; but currently evaluating and will coordinate with member states according to their TR's; using DRBC Toxics Advisory Committee
ORSANCO		
Human Health	1 mg/L (applied only at water intake)	Will consider EPA 2015 HH criteria for next triennial.
Aquatic Life	Adopted EPA 2013[2].	

[1](OMZA) = outside mixing zone average

[2]Regarding Ammonia EPA 2013: Trout absent. Mussels present is default. Mussels absent table included in standards.

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

TRIENNIAL REVIEW OF WATER QUALITY STANDARDS

RATIONALE FOR THE DEVELOPMENT OF AMBIENT WATER QUALITY CRITERIA FOR

AMMONIA

PROTECTION OF AQUATIC LIFE USE

Introduction

The United States Environmental Protection Agency (US EPA) has released its 2013 water quality criteria recommendations for protecting aquatic life from ammonia. These recommendations are intended as guidance to states, territories, and authorized tribes in developing water quality standards to protect aquatic life from exposure to ammonia. State-wide application of these nationally recommended water quality criteria would provide an appropriate level of protection for aquatic life from the effects of ammonia.

Sources of Ammonia in Freshwaters

Ammonia is used in agriculture both directly and as a precursor for other nitrogen-based fertilizers. Ammonia is also used in numerous industrial applications including metal finishing, pharmaceuticals, processing of crude oil, and corrosion protection. Ammonia can enter the aquatic environment via anthropogenic sources or discharges (e.g., municipal effluent, agricultural runoff), and via natural sources such as decomposition of organic waste matter, the discharge of ammonia by biota, and nitrogen fixation processes. Ammonia is converted relatively quickly to other forms of nitrogen in oxygenated waters. (USEPA, 2013)

Toxicity of Ammonia

When ammonia is present in water at high enough levels, it is difficult for aquatic organisms to sufficiently excrete the toxicant, leading to toxic buildup in internal tissues and blood, and potentially death. Environmental factors, such as pH and temperature, can affect ammonia toxicity to aquatic animals. (USEPA, 2013a)

Ammonia exists in aqueous solution as either the ammonium ion (NH_4^+) or un-ionized ammonia (NH_3). The ammonium ion is the more abundant form. The sum of these two forms of ammonia is called total ammonia nitrogen (or TAN). They exist in water according to the following equilibrium reaction:

$$NH_4^+ + OH^- \leftrightarrow NH_3 + H_2O$$

As the pH increases, the ratio of un-ionized ammonia to ammonium ions increases. The increase in hydroxyl ions (OH^-) shifts the equilibrium and the result is a greater concentration of unionized ammonia. The unionized ammonia is more toxic than the ammonium ion. Therefore, higher pH levels are associated with greater toxicity of ammonia. This is true for both fish and invertebrates. Similarly, a rise in temperature increases the toxicity of ammonia for invertebrates, but vertebrate sensitivity to ammonia is independent of temperature. (USEPA, 2013)

PA's Early Ammonia Criteria

Pennsylvania's Water Quality Standards has incorporated water quality criteria for ammonia since the early 1970's. The criteria that was adopted in the early 1970's was bifurcated with the first level designed to be protective of cold water fishes (CWF) and was equal to 0.5 mg total ammonia nitrogen per liter. In the early 1970's the Pennsylvania Fish Commission recommended that any concentration greater than 0.5 mg/L adversely affects trout. This limit was based on that recommendation. The second level of the ammonia criteria was designed to be protective of trout stocking (TSF) and warm water fishes (WWF) and was set to 1.5 mg total ammonia nitrogen per liter. The 1.5 mg/L limit was based on work by M.M. Ellis (1937) which indicated that this concentration was not harmful to most varieties of fish. These criteria only applied to about one half of the streams in the state. (PADER, 1984)

PA's Current Criteria is based on EPA 1983

In 1984, Pennsylvania was beginning a new triennial review of its water quality standards. EPA had just released a draft report in 1983 called *Ambient Water Quality Criteria for Ammonia – 1983* (USEPA, 1983 draft). EPA implored Pennsylvania to consider promulgating ammonia criteria based on the findings presented in this report as part of its triennial review. Pennsylvania did adopt ammonia criteria as described in the draft report because of the following reasons. (1.) Data preceding publication of EPA's 1976 Water Quality Criteria (Red Book) supported criteria based on toxic levels of un-ionized ammonia. The 1984 dataset expanded on this basis, taking into account the effects of pH and temperature variation on the toxicity of ammonia. (2.) The federal draft recommendations (USEPA, 1983 draft) were based on EPA's ammonia toxicity models, which expressed allowable ammonia concentrations (total ammonia nitrogen concentrations) for specific pH and temperature conditions. (3.) Studies at the time indicated that un-ionized ammonia was the primary concern in aquatic toxicity, but total ammonia was also toxic to some degree and can impact on biochemical oxygen demand or BOD. Dissociation of ammonia in water is highly dependent on pH and temperature. The 1983 EPA model for allowable ammonia concentration included all of these considerations (PADER, 1984). Pennsylvania adopted ammonia criteria based on EPA's 1983 draft report, however, the recommendations in EPA's final document called *Ambient Water Quality Criteria for Ammonia – 1984* (USEPA, 1985) differed from their draft report, so Pennsylvania's current criteria differ from US EPA's final recommendation in the mid-1980's.

1999 Federal Revision

The federal recommendation was updated in 1999 to reflect the most recent available science. The 1999 recommended aquatic life criteria for ammonia were based on the most sensitive endpoints known at the time: the acute criterion was based on salmonid fish toxicity information, and the chronic criterion was based primarily on reproductive effects on the benthic invertebrate *Hyalella* or on survival and growth of bluegill sunfish early life stages (when present), depending on temperature and season (USEPA 2013). Pennsylvania did not adopt the 1999 recommendation because its criteria adopted in 1985 were considered to provide adequate protection for aquatic life from the effects of ammonia. Pennsylvania's current aquatic life criteria are still based on the USEPA 1983 draft report.

Pennsylvania's Current Ammonia Criteria: Aquatic Life Protection

Pennsylvania's current water quality criterion for protection of aquatic life from ammonia is found at Table 3 in Title 25 of the Pennsylvania Code; §93.7(a):

TABLE 3

Parameter	*Symbol*	*Criteria*	*Critical Use**
		* * * * * *	
Ammonia Nitrogen	Am	The maximum total ammonia nitrogen concentration (in mg/L) at all times shall be the numerical value given by: un-ionized ammonia nitrogen (NH_3-N) x ($\log^{-1}[pK_T\text{-}pH] + 1$), where: un-ionized ammonia nitrogen = $0.12\ x\ f(T)/f(pH)$ $f(pH) = 1 + 10^{1.03(7.32-pH)}$ $f(T) = 1, T \geq 10°C$ $f(T) = \frac{1 + 10^{(9.73-pH)}}{1 + 10^{(pK_T-pH)}}, T < 10°C$ and $pK_T = 0.090 + \left[\frac{2730}{(T+273.2)}\right]$, the dissociation constant for ammonia in water. The average total ammonia nitrogen concentration over any 30 consecutive days shall be less than or equal to the numerical value given by: un-ionized ammonia nitrogen (NH_3-N) X ($\log^{-1}[pK_T\text{-}pH] + 1$), where: un-ionized ammonia nitrogen = $0.025\ x\ f(T)/f(pH)$ $f(pH) = 1, pH \geq 7.7$ $f(pH) = 10^{0.74(7.7-pH)}, pH < 7.7$ $f(T) = 1, \geq 10°C$ $f(T) = \frac{1 + 10^{(9.73-pH)}}{1 + 10^{(pK_T-pH)}}, T < 10°C$ The pH and temperature used to derive the appropriate ammonia criteria shall be determined by one of the following methods:	CWF, WWF, TSF, MF

		1) Instream measurements, representative of median pH and temperature – July through September. 2) Estimates of median pH and temperature – July through September – based upon available data or values determined by the Department. For purposes of calculating effluent limitations based on this value the accepted design stream flow shall be the actual or estimated lowest 30-consecutive-day average flow that occurs once in 10 years.	
* * * * * *			

USEPA's latest recommendation (USEPA 2013)

In 2003, EPA became aware of new toxicity studies indicating the relative sensitivity of freshwater mussels to ammonia and began to update the 1999 criteria to reflect this new information. In 2009, following external peer review, EPA published draft recommended ammonia criteria, for waters with and without mussels. Since the publication of the draft 2009 ammonia criteria, additional toxicity testing has validated information on the effects of ammonia on sensitive freshwater gill-breathing (non-pulmonate) snail species. The 2013 criteria incorporate scientific views received on the draft (2009) ammonia criteria and supersede EPA's previously recommended 1999 criteria. In April 2013, EPA finalized the updated ammonia criteria that are applicable nationally, taking into account the latest toxicity information for freshwater species, including unionid mussels and gill-breathing (non-pulmonate) snails. EPA is now imploring the PA DEP to consider adoption of the most recent federal recommendation for aquatic life protection from ammonia.

EPA analyzed the new data and determined that the pH and temperature relationships in the 1999 criteria are still supported by the most current research. In the development of the 2013 criteria equations, it was noted that temperature has little effect on the toxicity of total ammonia nitrogen to fish, therefore the effect concentrations for fish are only normalized for pH. For invertebrates, temperature and pH both affect the toxicity of TAN, so the TAN effect concentrations are normalized for both pH and temperature. The acute criterion magnitude is driven by freshwater unionid mussels at water temperatures greater than 15.7°C at pH = 7. The TAN effects concentrations of salmonids and other fish drive the acute criterion magnitude at lower temperatures. The 2013 chronic criterion magnitude is determined primarily by the sensitivity of freshwater mollusks, particularly unionid mussels. (USEPA, 2013).

Freshwater unionid mussels are found in many states of the continental United States and many of these mussels are Federally-listed as endangered or threatened species. Non-pulmonate snails also have a very broad distribution across the United States. There are approximately 65 species of unionid mussels in Pennsylvania, including many that are rare or endangered. The seven most sensitive genera in the acute dataset are all in the family Unionidae and all of these genera except for *Venustaconcha* are found in Pennsylvania. The two most sensitive genera in the chronic dataset are also unionid mussels that are both found in Pennsylvania. The genus *Fluminicola* is ranked number 5 in chronic sensitivity. *Fluminicola* is a group of freshwater non-pulmonate (or prosobranch) snails in the family Hydrobiidae, and its members are commonly known as the pebblesnails. There are 6 families (including Hydrobiidae) and at least 16 genera of non-pulmonate snails in Pennsylvania (Evans, 2004).

EPA is recommending a single national acute criterion and a single national chronic criterion that will be protective of sensitive mollusks. EPA makes this recommendation because every state has at least one freshwater unionid mussel or bivalve mollusk, or non-pulmonate snail species, native or present in at least some of their waters. (USEPA 2013) It is appropriate for Pennsylvania to adopt these national criteria that were developed to be protective when sensitive mollusks are present because freshwater mussels are among the most sensitive genera in the dataset and many of these sensitive mussels reside in Pennsylvania. Additionally, Pennsylvania is host to at least 18 species of non-pulmonate (or prosobranch) snails.

EPA developed three equations to be used when mussels are present. The first equation is used to determine the acute criterion when mussels are present and salmonids are present. (USEPA 2013)

$$CMC = MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\left(0.7249\times\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)\times\left(23.12\times10^{0.036\times(20-T)}\right)\right)\right)$$

The second acute equation is used when mussels are present and salmonids are absent (USEPA 2013).

$$CMC = 0.7249\times\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\times MIN\left(51.93, 23.12\times10^{0.036\times(20-T)}\right)$$

The third equation is used to derive the chronic criterion when mussels are present. When mussels are present, the 2013 CCC magnitude is protective of fish early life stages regardless of temperature (USEPA 2013).

$$CCC = 0.8876\times\left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right)\times\left(2.126\times10^{0.028\times(20-MAX(T,7))}\right)$$

The duration of the acute criterion is one hour. The duration of the chronic criterion is a 30-day rolling average with the additional restriction that the highest 4-day average within the 30 days be no greater than 2.5 times the chronic criterion magnitude. These values are not to exceed a frequency of more than once in 3 years on average. (USEPA 2013)

RECOMMENDATION

The Department recommends that the ammonia criteria should be updated to be reflective of the latest recommendation from the US EPA. The proposed criteria for the Commonwealth of Pennsylvania are borrowed directly from the 2013 federal recommendation, Aquatic life ambient water quality criteria for ammonia – freshwater 2013 (USEPA 2013). The Department has reviewed the current national aquatic life criteria for ammonia.

This latest recommendation from the US EPA considers the most recent scientific research regarding the effects of ammonia on aquatic life. The Department should replace its current water quality criteria for ammonia nitrogen (Am), having a critical Use of CWF, WWF, TSF, MF found in Table 3 at §93.7(a) with the following:

TABLE 3

Parameter	Symbol	Criteria	Critical Use*
* * * * * *			
Ammonia Nitrogen	Am	In freshwater, the concentration of total ammonia nitrogen (TAN) shall not exceed (more than once in three years on average), the concentration calculated (in milligrams of TAN per liter) by the following: 1-hour average Criteria Maximum Concentration (CMC) acute criterion equation: $CMC = MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\left(0.7249\times\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)\times\left(23.12\times10^{0.036\times(20-T)}\right)\right)\right)$ 30-day average Criteria Continuous Concentration (CCC) chronic criterion equation: $CCC = 0.8876\times\left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right)\times\left(2.126\times10^{0.028\times(20-MAX(T,7))}\right)$ In addition, chronic concentration is not to exceed 2.5 times the CCC as a 4-day average within 30 days (e.g. 2.5 × 1.9 mg TAN/L at pH 7 and 20°C or 4.8 mg TAN/L) more than once in 3 years on average. The pH and temperature used to derive the appropriate ammonia criteria shall be determined by instream measurements or best estimates, representative of the median pH and temperature of the receiving stream for the applicable time period and design conditions.	CWF, WWF, TSF, MF
* * * * * *			

The nationally recommended criteria were developed to be protective of sensitive mollusks. The first equation above that is included with the proposed criteria will be the equation for the Criteria Maximum Concentration. EPA recommends using this equation to calculate the CMC when mussels are present and salmonids are present. The values generated for the acute criteria using this equation are more stringent below 17°C than are the values generated using the CMC equation that EPA generated for situations where mussels are present and salmonids are absent. The Department proposes to use the more restrictive equation to determine the statewide CMC

for total ammonia nitrogen for several reasons. (1.) Sensitive salmonid fishes are common throughout Pennsylvania. (2.) This equation uses the set of conditions that generates the most stringent criteria, so our proposed CMC will most certainly be sufficiently protective. (3.) All of the proposed acute criteria values generated by the proposed equation (regardless of the ambient pH and temperature conditions) are less restrictive than the values for our current acute criteria calculated using the same pH and temperature, as depicted in Table One. Adopting this approach will not be detrimental to anyone who is currently a discharger because the acute standards will be less restrictive under all temperature and pH conditions. (4.) It is less complex (*and therefore simpler to understand and easier to implement with fewer errors*) to adopt a single statewide equation for the acute criteria (i.e. the more restrictive CMC equation for salmonids present and mussels present), rather than to adopt two separate equations which would otherwise be used in different situations to derive the CMC values.

COMPARISON OF PA'S CURRENT AND PROPOSED CRITERIA

Table One and Table Two are provided to illustrate the differences between Pennsylvania's current and proposed aquatic life criteria for ammonia. Table One compares the acute criteria and Table Two compares the chronic criteria. The varying hues of red and blue on both tables indicate the difference between the proposed criteria and Pennsylvania's current criteria. The darker or more intense shades of red and blue indicate where the proposed criteria are increasingly more or less restrictive than the current criteria, respectively.

All of the values for the proposed acute criteria will be less restrictive for all temperature and pH conditions, with the greatest departure from the current criteria at the lower pH values. The current chronic criteria is sometimes less restrictive than the proposed criteria and it will sometimes be more restrictive, depending on the temperature and pH conditions. There is a tendency for the proposed chronic criteria to be more restrictive than the current criteria at lower pH values.

TABLE ONE: ACUTE CRITERIA COMPARISON TABLES

Values on tables given in milligrams of Total Ammonia Nitrogen per liter (MG TAN / L)

Color Code = The difference between the federally recommended acute aquatic life criteria (EPA2013) and Pennsylvania's current acute aquatic life criteria (PA Current) is given in milligrams of total ammonia nitrogen per liter. (EPA2013 minus PA Current)

0 to 3 | 3 to 6 | 6 to 9 | 9 to 12 | >12

PA Current vs EPA2013 with *Oncorhyncus mykiss* present

		Temperature															
	°C	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
pH	°F	32	35.6	39.2	43	46.4	50	53.6	57.2	60.8	64.4	68	71.6	75.2	78.8	82.4	86
6	PA Current	26.98	26.98	26.98	26.98	26.98	26.97	23.09	19.80	17.02	14.66	12.65	10.94	9.48	8.23	7.16	6.24
	EPA2013	36.72	36.72	36.72	36.72	36.72	36.72	36.72	36.72	35.57	30.14	25.53	21.63	18.33	15.53	13.16	11.15
6.5	PA Current	25.51	25.51	25.51	25.51	25.51	25.50	21.83	18.73	16.10	13.87	11.97	10.35	8.97	7.79	6.78	5.91
	EPA2013	32.61	32.61	32.61	32.61	32.61	32.61	32.61	32.61	31.59	26.76	22.67	19.21	16.28	13.79	11.68	9.90
7	PA Current	20.59	20.59	20.59	20.59	20.99	20.58	17.62	15.12	13.00	11.20	9.67	8.37	7.26	6.31	5.49	4.79
	EPA2013	24.10	24.10	24.10	24.10	24.10	24.10	24.10	24.10	23.35	19.78	16.76	14.20	12.03	10.19	8.64	7.32
7.5	PA Current	12.40	12.40	12.40	12.40	12.40	12.40	10.62	9.12	7.85	6.77	5.85	5.07	4.41	3.83	3.34	2.92
	EPA2013	13.28	13.28	13.28	13.28	13.28	13.28	13.28	13.28	12.87	10.90	9.24	7.83	6.63	5.62	4.76	4.03
8	PA Current	5.47	5.47	5.47	5.47	5.47	5.47	4.70	4.04	3.49	3.02	2.62	2.28	1.99	1.74	1.53	1.34
	EPA2013	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.44	4.61	3.90	3.31	2.80	2.37	2.01	1.70
8.5	PA Current	2.03	2.03	2.03	2.03	2.03	2.03	1.76	1.52	1.32	1.16	1.01	0.89	0.79	0.70	0.62	0.56
	EPA2013	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.07	1.76	1.49	1.26	1.07	0.90	0.77	0.65
9	PA Current	0.75	0.75	0.75	0.75	0.75	0.75	0.66	0.58	0.52	0.46	0.41	0.37	0.34	0.31	0.29	0.26
	EPA2013	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.73	0.62	0.52	0.44	0.37	0.32	0.27

TABLE TWO: CHRONIC CRITERIA COMPARISON TABLE

Values on table given in milligrams of Total Ammonia Nitrogen per liter (MG TAN / L)

Color Code = The difference between the federally recommended chronic aquatic life criteria (EPA2013) and Pennsylvania's current chronic aquatic life criteria (PA Current) was calculated in milligrams of total ammonia nitrogen per liter. (EPA2013 minus PA Current) The value for the difference was assigned to a particular range and color coded as follows:

< -2.5	-1.25 to -2.5	-0.5 to -1.25	0 to -0.5
0 to 0.133	0.133 to 0.267	0.267 to 0.4	>0.4

		Temperature															
	°C	0	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
pH	°F	32	35.6	39.2	43	46.4	50	53.6	57.2	60.8	64.4	68	71.6	75.2	78.8	82.4	86
6	PA Current	7.41	7.41	7.41	7.41	7.41	7.41	6.34	5.44	4.68	4.03	3.48	3.01	2.61	2.26	1.97	1.71
	EPA2013	5.13	5.13	5.13	5.13	4.81	4.23	3.72	3.27	2.87	2.52	2.22	1.95	1.71	1.51	1.32	1.16
6.5	PA Current	5.50	5.50	5.50	5.50	5.50	5.50	4.70	4.04	3.47	2.99	2.58	2.23	1.93	1.68	1.46	1.27
	EPA2013	4.92	4.92	4.92	4.92	4.61	4.06	3.57	3.13	2.75	2.42	2.13	1.87	1.64	1.45	1.27	1.12
7	PA Current	4.08	4.08	4.08	4.08	4.08	4.08	3.49	3.00	2.58	2.22	1.92	1.66	1.44	1.25	1.09	0.95
	EPA2013	4.36	4.36	4.36	4.36	4.09	3.60	3.16	2.78	2.44	2.15	1.89	1.66	1.46	1.28	1.13	0.99
7.5	PA Current	3.04	3.04	3.04	3.04	3.04	3.04	2.60	2.23	1.92	1.66	1.43	1.24	1.08	0.94	0.82	0.72
	EPA2013	3.22	3.22	3.22	3.22	3.02	2.66	2.33	2.05	1.80	1.59	1.39	1.22	1.08	0.95	0.83	0.73
8	PA Current	1.37	1.37	1.37	1.37	1.37	1.37	1.17	1.01	0.87	0.75	0.65	0.57	0.50	0.43	0.38	0.34
	EPA2013	1.80	1.80	1.80	1.80	1.68	1.48	1.30	1.14	1.01	0.88	0.78	0.68	0.60	0.53	0.46	0.41
8.5	PA Current	0.45	0.45	0.45	0.45	0.45	0.45	0.39	0.34	0.29	0.26	0.22	0.20	0.17	0.15	0.14	0.12
	EPA2013	0.80	0.80	0.80	0.80	0.75	0.66	0.58	0.51	0.45	0.40	0.35	0.31	0.27	0.24	0.21	0.18
9	PA Current	0.16	0.16	0.16	0.16	0.16	0.16	0.14	0.12	0.11	0.10	0.09	0.08	0.07	0.07	0.06	0.06
	EPA2013	0.36	0.36	0.36	0.36	0.34	0.30	0.26	0.23	0.20	0.18	0.16	0.14	0.12	0.11	0.09	0.08

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TRIENNIAL REVIEW OF WATER QUALITY STANDARDS

RATIONALE FOR THE DEVELOPMENT OF AMBIENT WATER QUALITY CRITERIA FOR

BACTERIA

PROTECTION OF RECREATIONAL USE

Introduction

The United States Environmental Protection Agency (US EPA) has released its 2012 recreational water quality criteria (RWQC) recommendations for protecting human health in all coastal and non-coastal waters designated for primary contact recreation use. These recommendations are intended as guidance to states, territories and authorized tribes in developing water quality standards to protect swimmers from exposure to water that contains organisms that indicate the presence of fecal contamination (US EPA, 2012b). State-wide application of these nationally recommended recreational use bacteria criteria would provide an appropriate level of protection for those recreating in Pennsylvania's surface waters.

Pennsylvania's Current Recreational Use Bacteria Criteria

PA DEP (25 Pa Code; Chapter 93): Pennsylvania's recreational use bacteria criteria during the swimming season have been based upon a maximum fecal coliform level of 200 colony forming units per 100 mL (cfu/100 mL) since the early 1970's. The 2000 Water Quality Regulatory Basics Initiative Triennial Review (PA DEP, 2000) gives Pennsylvania its current bacteria criteria as indicated below. The bacteria water quality criteria currently found in §93.7 (Table 3) of Pennsylvania's water quality standards (25 Pa Code; Chapter 93) are still based on fecal and/or total coliform indicator organisms, and are as follows:

> **§ 93.7. Specific water quality criteria.**
> (a) Table 3 displays specific water quality criteria and associated critical uses. The criteria associated with the Statewide water uses listed in § 93.4, Table 2 apply to all surface waters, unless a specific exception is indicated in §§ 93.9a—93.9z. Other specific water quality criteria apply to surface waters as specified in §§ 93.9a—93.9z. All applicable criteria shall be applied in accordance with this chapter, Chapter 96 (relating to water quality standards implementation) and other applicable State and Federal laws and regulations.

TABLE 3

Parameter	*Symbol*	*Criteria*	*Critical Use**
		********	
Bacteria	Bac_1	(Fecal coliforms/ 100 ml)—During the swimming season (May 1 through September 30), the maximum fecal coliform level shall be a geometric mean of 200 per 100 milliliters (ml) based on a minimum of five consecutive samples each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed 400 per 100 ml. For the remainder of the year, the maximum fecal coliform level shall be a geometric mean of 2,000 per 100 milliliters (ml) based on a minimum of five consecutive samples collected on different days during a 30-day period.	WC
	Bac_2	(Coliforms/100 ml)—Maximum of 5,000/100 ml as a monthly average value, no more than this number in more than 20% of the samples collected during a month, nor more than 20,000/100 ml in more than 5% of the samples.	PWS

Bac_1 is designed to be protective of activities involving water contact sports (WC). The Bac_1 criterion is systematically applied to all surface waters in the Commonwealth unless otherwise specified in other portions of Pennsylvania's water quality standards.

Historically, the Bac_2 criterion was originally implemented as a site-specific criterion to protect the potable water supply (PWS), where the WC use was removed. Bac_2 has always only been implemented in select waters where the WC use was removed. As such, Bac_2 is currently only applicable in the outer Erie Harbor and Presque Isle Bay; specifically, in the harbor area and central channel dredged and maintained by the United States Army Corps of Engineers.

Bac_1 affords a better level of use protection to drinking water (PWS) than would be offered by Bac_2 since Bac_1 is based on much lower concentrations of indicator organisms and Bac_1 is applicable to all waters statewide, where WC has not been removed.

Reference to 2004 Bacteria Rule in Drainage List X: The Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 (US EPA, 2000) required each state and territory with coastal recreation waters to adopt into their water quality standards by April 10, 2004, bacteria criteria that were "as protective of human health as" the nationally recommended 1986 bacteria criteria (US EPA, 1986). The BEACH Act defined coastal recreation waters as the Great Lakes and coastal waters (including coastal estuaries) that states, territories, and authorized tribes officially recognize (or "designate") for swimming, bathing, surfing, or similar activities in the water. The 2004 Bacteria Rule for Coastal and Great Lakes Recreation Waters (2004 Bacteria Rule)(US EPA, 2004) established federal standards for those states and territories with coastal recreation waters that had not yet adopted bacteria criteria as protective of health as the 1986 criteria into their water quality standards. This federal promulgation included swimming

beaches in Lake Erie and Presque Isle in Pennsylvania and therefore 40 CFR 131.41 is referenced in Drainage List X (25 Pa Code §93.9x), where applicable. This reference was added to Drainage List X during Pennsylvania's 2009 Triennial Review of Water Quality Standards (TR-2009) which became effective upon publication of the final rulemaking on May 16, 2009 (39 Pa.B. 2523).

PDOH (28 Pa Code; Chapter 18): The Pennsylvania Department of Health (PDOH) maintains regulations at Title 28; §18.28. These PDOH regulations have primary jurisdiction at all those places in Pennsylvania designated as bathing beaches to protect swimmers from contamination. The current PDOH regulations apply statewide, not just to the Lake Erie coastal recreation waters. These PDOH regulations are based on the previous nationally recommended 1986 bacteria criteria (US EPA, 1986) and are given below.

§ 18.28. Bathing beach contamination.

(a) Use of a bathing beach found to be contaminated shall be discontinued until written approval to reopen the bathing beach for swimming or bathing is obtained from the Department. The permittee shall prominently post legible signs measuring at least 8" by 11" at all entrances to the bathing beach area informing the public that the bathing beach is closed and that swimming or bathing is prohibited. The approval will be given by the Department when the Department finds that the waters of the bathing beach are no longer contaminated.

(b) The water in bathing beaches will be considered contaminated for bathing purposes when one of the following conditions exists:

(1) The Department determines that a substance is being discharged or may be discharged into the water and is or may be hazardous to the health of persons using the bathing beach.

(2) The E. coli density of a water sample taken from the bathing beach exceeds 235 per 100 milliliters.

(3) The E. coli density in all water samples taken from the bathing beach, in any 30-day period during the bathing beach's operating season, exceeds a geometric mean of 126 per 100 milliliters.

Reference to PA DOH Regulations in Drainage List X: Specific reference to PDOH regulations at Title 28; §18.28 for Lake Erie and Presque Isle in Drainage List X as an exception to specific criteria, was added during TR-2009. This reference to the PDOH regulations was added as a result of the 2004 Bacteria Rule which promulgated bacteria criteria for these waters. Although these PDOH regulations are only currently referenced in the Department's Water Quality Standards (25 Pa Code §93) as Exceptions to Specific Criteria in List X, they do apply to all designated bathing beaches everywhere in Pennsylvania.

Current National Recommendation: 2012 RWQC

EPA last issued ambient water quality criteria recommendations for recreational waters in 1986. EPA issues such recommendations under the authority of the Clean Water Act (CWA). Amendments to the CWA by the BEACH Act of 2000 direct EPA to conduct studies associated with pathogens and human health, and to publish new or revised criteria recommendations for pathogens and pathogen indicators based on those studies. The 2012 RWQC recommendations meet those requirements set forth by the BEACH Act of 2000 (US EPA, 2012b).

The 2012 RWQC rely on the latest research and science, including studies that show a link between illness and fecal contamination in recreational waters. They are based on the use of two bacterial indicators of fecal contamination, *Escherichia coli* (*E. coli*) and enterococci (USEPA, 2012b). Culturable *E. coli* and enterococci are now known to be better indicators of fecal contamination than the previously used general indicators, total coliforms and fecal coliforms (USEPA, 2012a). The new criteria are designed to protect primary contact recreation, including swimming, bathing, surfing, water skiing, tubing, water play by children, and similar water contact activities where a high degree of bodily contact with the water, immersion, and ingestion are likely (US EPA, 2012a).

Most water quality criteria, including the 2012 RWQC, have three components which are magnitude, duration, and frequency. The magnitude of the 2012 RWQC is given as two sets of recommendations. The recommendations differ because they are calculated based on different illness rates. States and tribes may select either one of the two recommended sets of numeric concentration thresholds which comprise the magnitude. US EPA maintains that either of these magnitude recommendations would protect the public from exposure to harmful levels of pathogens (US EPA, 2012a). States and tribes have the flexibility to choose whichever of the two risk paradigms is most appropriate for them. The magnitude of both of the two different recommendations of the 2012 RWQC is summarized in the table below and each recommendation includes both a geometric mean (GM) and a statistical threshold value (STV). The STV approximates the 90th percentile of the water quality distribution. The STV is intended to be implemented so that it should not be exceeded in more than ten percent of the samples taken (US EPA, 2012a). The duration given for the final criteria is 30 days. The GM of the samples should not exceed the selected GM magnitude in any 30-day period. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 30-day interval (US EPA, 2012a & US EPA, 2012b).

Criteria Elements	**Recommendation 1** Estimated illness rate = 36/1,000		**Recommendation 2** Estimated illness rate = 32/1,000	
Indicator	GM (cfu/100 ml)	STV (cfu/100 ml)	GM (cfu/100 ml)	STV (cfu/100 ml)
Enterococci (marine & fresh)	35	130	30	110
E. coli (fresh)	126	410	100	320

Pennsylvania's Recommended Criteria

The Department is recommending changes to its bacteria criteria which will include replacing the current fecal coliform – based criteria for water contact sports (WC), during the swimming season (May 1 to September 30) with US EPA's 2012 RWQC in Pennsylvania's surface waters. This change is designed to protect those engaging in water contact sports (defined as the use of the water for swimming and related activities) from fecal contamination. There are two sets of recommendations based on two different risk paradigms (32 illnesses per 1000 swimmers and 36 illnesses per 1000 swimmers). EPA maintains that both risk paradigms are adequately protective (US EPA 2012a). The Department recommends adopting the *Escherichia coli* freshwater levels associated with the 36 per 1,000 illness rate (Recommendation 1). The *E. coli* levels associated with this risk paradigm (GM = 126 cfu/100 ml & STV = 410 cfu/100ml) are most closely akin to the current PDOH standards at Title 28; §18.28 (which apply to bathing beaches). The criteria values for the current DOH standards and the criteria values that were promulgated under the BEACH Act for Lake Erie beaches including Presque Isle Bay are a geometric mean value of 126 cfu/100 ml and a single sample maximum value of 235 cfu/100 ml. In order to achieve the most consistent approach and because EPA considers both risk paradigms to be equally protective, the Department favors the criteria based on Recommendation 1. The Department believes that will result in a more seamless transition.

The Department recommends that the current non-swimming season (when only secondary contact recreation occurs) fecal coliform-based numerical criterion, which is a geometric mean maximum value of 2,000 cfu/100 ml (found at 25 Pa Code; §93.3; Table 3) shall be retained and should continue to be applied statewide in all surface waters from October 1 to April 30. The US EPA is currently conducting research to help in designing criteria that will be protective of secondary contact recreation. When the US EPA finalizes and recommends these new Federal secondary contact recreational criteria, the Department will evaluate these recommendations and propose to adopt them if they are appropriate for Pennsylvania.

The current Bac_2 total coliform-based criterion with a critical use of PWS (also found at 25 Pa Code; §93.3; Table 3) has always been implemented as a site-specific criterion rather than a statewide criterion. This current total coliform-based criterion applies to specific waters, where the water contact sports (WC) use has been removed, and currently only to portions of Lake Erie (§93.9x; Drainage List X) in the outer Erie Harbor and Presque Isle Bay. The Bac_1 criterion is a more restrictive standard than Bac_2 with respect to the number of indicator organisms per unit volume, and it will continue to provide statewide protection for both WC and PWS. This site-specific Bac_2 criterion should, therefore, be deleted from Table 3 and incorporated into Drainage List X as an Exception to Specific Criteria.

Since the PDOH bathing beach regulations at Title 28; §18.28 apply to all regulated beaches, statewide, the Department recommends deleting references to the PDOH regulations found in 25 Pa Code §93.9x since they are not limited to Lake Erie. The Department also recommends deleting the language currently found at 25 Pa Code §93.9x, which refers to the promulgated Federal regulations (USEPA 2004 Bacteria Rule, 40 CFR 131.41) pertaining to Lake Erie and Presque Isle beaches. These references to 40 CFR 131.41 and Title 28; §18.28 as *Exceptions to Specific Criteria* are no longer necessary since the proposed *E. coli* WC criteria in Bac_1 will be

applied statewide, and the PDOH regulations already apply statewide. Recommended amendments to Table 3 and §93.9x are shown below.

TABLE 3

Parameter	*Symbol*	*Criteria*	*Critical Use**
		********	
Bacteria	Bac_1	**[(Fecal coliforms/ 100 ml)] (*Escherichia coli*/100 ml)** —During the swimming season (May 1 through September 30), the maximum **[fecal coliform] *E. coli*** level shall be a geometric mean of **[200] 126** per 100 milliliters (ml) based on **[a minimum of five]** consecutive samples, each sample collected on different days, during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed **[400] 410** per 100 ml. **(Fecal coliforms/ 100 ml)**—For the remainder of the year, the maximum fecal coliform level shall be a geometric mean of 2,000 per 100 milliliters (ml) based on a minimum of five consecutive samples collected on different days during a 30-day period.	WC
	[Bac_2	**(Coliforms/100 ml)—Maximum of 5,000/100 ml as a monthly average value, no more than this number in more than 20% of the samples collected during a month, nor more than 20,000/100 ml in more than 5% of the samples.**	**PWS]**
		********	

§ 93.9x. Drainage List X.

Lake Erie				
Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions to Specific Criteria**
1—Lake Erie	All sections of lake in PA except Outer Erie Harbor and Presque Isle Bay	Erie	CWF	***Delete*** Fe**[**,**]** **and** DO_1 **[and Bac1]** See GLWQA **[*Add* E. coli per 40 CFR 131.41 (Except (f)) and See 28 Pa. Code § 18.28(b)(2) and (3)]**

1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)		Portion of lake bordered by Presque Isle on west, longitude 80° 01' 50" on east, and latitude 42° 10' 18" on north, except harbor area and central channel dredged and maintained by United States Army Corps of Engineers		Erie	WWF		***Delete*** pH ***Add*** pH between 7 and 9 **[*Add* E. coli per 40 CFR 131.41 (Except (f)) and See 28 Pa. Code § 18.28(b)(2) and (3)]**

The following criterion is specific to Lake Erie (Outer Erie Harbor and Presque Isle Bay) waters in the Harbor area and central channel dredged and maintained by United States Army Corps of Engineers, based on special studies.

Parameter	***Symbol***	***Criteria***	***Critical Use***
Bacteria	**Bac_2**	**Total Coliforms/100 ml; Maximum of 5,000/100 ml as a monthly average value, no more than this number in more than 20% of the samples collected during a month, nor more than 20,000/100 ml in more than 5% of the samples.**	**PWS**

1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)		Harbor area and central channel dredged and maintained by United States Army Corps of Engineers		Erie	WWF, ***Delete*** WC		***Delete*** pH and Bac_1 ***Add*** pH between 7 and 9, Bac_2
* * * * * *							

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

TRIENNIAL REVIEW OF WATER QUALITY STANDARDS

RATIONALE FOR THE DEVELOPMENT OF AMBIENT WATER QUALITY CRITERIA

FOR HUMAN HEALTH PROTECTION

Introduction

Ambient water quality criteria are numeric values limiting the amount of chemicals present in our nation's waters. A water quality criterion is the concentration of a pollutant in water that is not expected to pose a significant risk to, or adversely impact, in this case, human health protection. Water quality criteria are based solely on the best available scientific data and scientific judgments on pollutant concentrations and environmental or human health effects. These water quality criteria are developed under Section 304(a) of the federal Clean Water Act of 1972. Section 304(a)(1) of the Clean Water Act requires that the Administrator, U.S. Environmental Protection Agency (EPA), develop criteria for water quality that accurately reflects the latest scientific knowledge.

On June 29, 2015, the Environmental Protection Agency (EPA) announced the final updates recommended for the ambient water quality criteria for the protection of human health. Ninety-four priority pollutants have been updated to reflect the latest scientific information and implementation of existing EPA policies found in the *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*. The EPA issued the draft updated human health criteria on May 13, 2014, and accepted written views from the public until August 13, 2014. These updated recommendations reflect the latest scientific information and EPA policies, including updated body weight, drinking water consumption rate, fish consumption rate, bioaccumulation factors, health toxicity values, and relative source contributions. The final 2015 update supersedes EPA's previous recommendations to the section 304(a) human health criteria recommendations.

The EPA's recommended ambient water quality criteria for the protection of human health provide technical information for states to establish water quality standards (i.e., criteria) and to protect human health under the Clean Water Act (CWA). Under the CWA and its implementing regulations, states are required to adopt water quality criteria to protect designated uses (e.g., public water supply, aquatic life, recreational use, or industrial use) that are based on sound scientific rationale. Sections 5(b)(1) and 402 of The Clean Streams Law (35 P. S. § § 691.5(b)(1) and 691.402) authorizes the Environmental Quality Board (Board) to develop and adopt rules and regulations to implement The Clean Streams Law, and section 1920-A of The Administrative Code of 1929 (71 P.S. § 510-20), which grants the Board the power and duty to formulate, adopt and promulgate rules and regulations for the proper performance of the work

of the Department. Economic effects, achievability, and feasibility are not to be incorporated into the development of the aquatic life or human health criteria but can be considered in the criteria implementation process when setting effluent limitations, compliance schedules, and issuing other approvals and orders based on these criteria.

The Department's staff use the ambient water quality criteria found in 25 Pa Code Chapter 93, Tables 3, 5, or 6 (relating to specific water quality criteria; ... to water quality criteria for toxic substances; or ... to Great Lakes aquatic life and human health criteria, respectively) as a tool in determining the appropriate effluent limitations and loading requirements designed to protect water quality and uses. These criteria are implemented, in part, through Pennsylvania's regulations supporting the National Pollution Discharge Elimination System (NPDES), and through other approvals issued by the Department. The NPDES regulations are found in Chapter 95 (relating to wastewater treatment requirements) and in other implementation provisions found in Chapter 96 (relating to water quality standards implementation).

Updated Exposure Inputs

The 2015 human health criteria updates incorporate the latest exposure factors for body weight, drinking water intake, and fish consumption. There is also an update to the methodology used to determine the bioaccumulation in fish, in addition to other toxicity factors (reference dose and cancer slope factors). Below are the updated inputs used to calculate the human health ambient water quality criteria. (*EPA Human Health Ambient Water Quality Criteria: 2015 Update*)

Body Weight – the default body weight has been increased to **80 kilograms** (176 lbs.). This is the mean body weight for adults ages 21 and older. The new weight is based on data from the National Health and Nutrition Examination Survey (NHANES), from 1999 – 2006. The previous default body weight was 70 kilograms (154 lbs.) and was based on the NHANES data from 1988-1994.

Drinking Water – the default drinking water intake assumption is increased to **2.4 liters per day**. This is based on NHANES data collected from 2003 to 2006 for the 90th percentile of water consumption in adults ages 21 and older. The water intake rate is based on consumer-only estimates of direct and indirect water ingestion. The previously recommended default drinking water intake rate was 2 liters per day. The data used was from adults surveyed in the US Department of Agriculture, 1994-1996 Continuing Survey of Food Intake by Individuals (CSFII) and the National Cancer Institute study of the 1977 and 1978 Nationwide Food Consumption Survey.

Fish Consumption – the recommended default fish consumption rate has been increased to **22 grams per day**. This rate represents the consumption of freshwater and shellfish from inland and near shore waters for adults 21 years of age and older, based on NHANES data from 2003 to 2010. The previous fish consumption rate was 17.5 grams per day based on the consumption rate of freshwater and estuarine fish for the adult population from 1994-1996 CSFII data.

Bioaccumulation Factors – the criteria have been updated using bioaccumulation factors as recommended in the EPA human health criteria methodology (USEPA 2000). Bioaccumulation factors will account for the uptake and retention of a chemical by an aquatic organism from all surrounding media. (e.g. water, food, sediment) Criteria were previously calculated with bioconcentration factors that only accounted for direct water contact. In order to account for the variation in bioaccumulation due to the aquatic tropic position of an organism, EPA is recommending that the bioaccumulation factors be determined and applied to three tropic levels of fish. EPA used field measured BAF's and laboratory measured bioconcentration factors, along with octanol-water partition coefficients available from peer-reviewed databases to develop the national BAFs. EPA verified the calculated BAFs using a peer-reviewed model called Estimation Program Interface Suite (EPI Suite).

Health Risk Factors – EPA has updated the health risk factors using the most current toxicity information. The toxicity values for both noncarcinogenic and carcinogenic effects were used. EPA's Integrated Risk Information System (IRIS) is the primary source for reference dose and cancer slope values. For some pollutants EPA has used other sources provided by EPA's Office of Water, Office of Pesticide Programs and international and state agencies.

Relative Source Contribution – EPA has updated the Relative Source Contribution (RSC) to reflect chemical-specific exposure. The RSC will range from 20 -80 percent as recommended in EPA's human health methodology (USEPA 2000). This value is only applied to threshold non-carcinogens. The RSC protects against particular pollutant exposures from other foods, marine fish consumption, dermal exposure and respiratory exposures. The use of the RSC is to ensure that an individual's total exposure from all sources of a pollutant does not exceed the criteria.

Criteria Development

Human health AWQC for toxic pollutants are necessary to protect any designated uses related to ingestion of water and ingestion of aquatic organisms. These uses can include, but are not limited to, recreation in and on the water, consumption of fish or shellfish (including consumption associated with fishing or shellfish harvesting), and protection of drinking water supplies. The derivation of human health AWQC requires information about both the toxicological endpoints of concern for water pollutants and the pathways of human exposure to those pollutants. EPA considers the following two primary pathways of human exposure to pollutants present in a particular water body when deriving human health 304(a) AWQC: (1) direct ingestion of drinking water obtained from the water body and (2) consumption of fish or shellfish obtained from the water body. (EPA Human Health Criteria Update, June 2015)

Below is the equation used for deriving human health AWQC for non-carcinogenic and carcinogenic effects, based on the consumption of both water and aquatic organism. EPA recommends including the drinking water exposure pathway for ambient surface waters where drinking water is a designated use for the following reasons: (1) drinking water is a designated use for surface waters under the CWA, and therefore criteria are needed to ensure that this designated use can be protected and maintained; (2) although they are rare, some public water

supplies provide drinking water from surface water sources without treatment; (3) even among the majority of water supplies that do treat surface waters, existing treatments might not be effective for reducing levels of particular contaminants; and (4) in consideration of the Agency's goals of pollution prevention, ambient waters should not be contaminated to a level where the burden of achieving health objectives is shifted away from those responsible for pollutant discharges and placed on downstream users that must bear the costs of upgraded or supplemental water treatment (USEPA 2000a). (EPA Human Health Criteria Update, June 2015)

The equations for deriving the criteria values are as follows (USEPA 2000a):
For consumption of water and organisms:

AWQC (μg/L) =
Toxicity value (mg/kg-d) × BW (kg) × 1,000 (μg/mg) / DI (L/d) + Σ(FCRi) 4 i=2 (kg/d) × BAFi (L/kg)

Where:

AWQC = ambient water quality criteria
Toxicity value =RfD x RSC (mg/kg-d) for non-carcinogenic effects or 10-6/CSF (kg-d/mg) for carcinogenic effects
RSC = relative source contribution (applicable to only non-carcinogenic and nonlinear low-dose extrapolation for carcinogenic effects)
BW = body weight, default (80 Kg)
DI = drinking water intake, default (2.4 L/day)
Σ4 i=2 = summation of values for aquatic trophic levels (TLs), where the letter *i* stands for the TLs to be considered, starting with TL2 and proceeding to TL4
FCRi = fish consumption rate for aquatic TLs 2, 3, and 4 – default (22.0 g/day)
BAFi = bioaccumulation factor for aquatic TLs 2, 3, and 4

(EPA rounds AWQC to the number of significant figures in the least precise parameter as described in the 2000 Methodology (USEPA 2000a, section 2.7.3.) The Department has rounded the AWQC in Table 5 to 2 significant figures.)

Comparison Tables

EPA 2015 Final Recommended Criteria and DEP Current Criteria –

Of the 94 pollutants recalculated by EPA, 55 will have a **more stringent** criterion than previously listed in Chapter 93, Table 5. These criteria have been recalculated to include chemical-specific bioaccumulation factors, which account for how long the pollutant will be available in the environment and in increased average body weight and fish consumption amount. These pollutant-specific inputs may be the driving factors for the change in the newly developed criteria. These AWQC are intended to be protective of the general adult population from non-carcinogenic or carcinogenic effects due to chronic (up to a lifetime) exposure.

Table 1 – More Stringent Criteria

	Pollutant	CAS No.	DEP Current Water + Organism (µg/L)	DEP Proposed Water + Organism (µg /L)	EPA 2015 Water + Organism (µg/L)
1	1,2,4-Trichlorobenzene	120-82-1	35	.07	0.071
2	1,3-Dichlorobenzene	541-73-1	420	7.0	7
3	1,3-Dichloropropene	542-75-6	0.34	0.27	0.27
4	1,4-Dichlorobenzene	106-46-7	420	300	300
5	2,4-Dichlorophenol	120-83-2	77	10	10
6	2,4-Dimethylphenol	105-67-9	380	100	100
7	2,4-Dinitrophenol	51-28-5	69	10	10
8	2-Chloronaphthalene	91-58-7	1,000	800	800
9	2-Chlorophenol	95-57-8	81	30	30
10	2-Methyl-4,6-Dinitrophenol	534-52-1	13	2.0	2
11	Acenaphthene	83-32-9	670	70	70
12	Acrolein	107-02-8	6	3.0	3
13	Aldrin	309-00-2	0.000049	0.0000008	0.00000077
14	alpha-Hexachlorocyclohexane (HCH)	319-84-6	0.0026	0.0004	0.00036
15	alpha-Endosulfan	959-98-8	62	20	20
16	Anthracene	120-12-7	8,300	300	300
17	Benzene	71-43-2	1.2	0.58	0.58
18	Benzo(a)anthracene	56-55-3	0.0038	0.001	0.0012
19	Benzo(a)pyrene	50-32-8	0.0038	0.0001	0.00012
20	Benzo(b)fluoranthene	205-99-2	0.0038	0.001	0.0012
21	beta-Hexachlorocyclohexane (HCH)	319-85-7	0.0091	0.008	0.0080
22	beta-Endosulfan	33213-65-9	62	20	20
23	Bis(2-Chloro-1-Methylethyl) Ether	108-60-1	1,400	200	200
24	Bis(2-Ethylhexyl) Phthalate	117-81-7	1.2	0.32	0.32
25	Butylbenzyl Phthalate	85-68-7	1,500	0.1	0.10
26	Chlordane	57-74-9	0.0008	0.0003	0.00031
27	Chlorobenzene	108-90-7	130	100	100
28	Cyanide	57-12-5	140	4.0	4
29	Dibenzo(a,h)anthracene	53-70-3	0.0038	0.0001	0.00012
30	Dieldrin	60-57-1	0.000052	0.000001	0.0000012
31	Diethyl Phthalate	84-66-2	17,000	600	600
32	Dimethyl Phthalate	131-11-3	270,000	2000	2,000
33	Di-n-Butyl Phthalate	84-74-2	2,000	20	20
34	Endosulfan Sulfate	1031-07-8	62	20	20
35	Endrin	72-20-8	0.059	0.03	0.03
36	Ethylbenzene	100-41-4	530	68	68
37	Fluoranthene	206-44-0	130	20	20
38	Fluorene	86-73-7	1,100	50	50
39	Heptachlor	76-44-8	0.000079	0.000006	0.0000059

40	Hexachlorobenzene	118-74-1	0.00028	0.00008	0.000079
41	Hexachlorobutadiene	87-68-3	0.44	0.01	0.01
42	Hexachlorocyclopentadiene	77-47-4	40	4.0	4
43	Hexachloroethane	67-72-1	1.4	0.1	0.1
44	Indeno(1,2,3-cd)pyrene	193-39-5	0.0038	0.001	0.0012
45	Isophorone	78-59-1	35	34	34
46	Nitrobenzene	98-95-3	17	10	10
47	Pentachlorophenol	87-86-5	0.27	0.03	0.03
48	Phenol	108-95-2	10,000	4000	4,000
49	p,p'-Dichlorodiphenyldichloroethane (DDD)	72-54-8	0.00031	0.0001	0.00012
50	p,p'-Dichlorodiphenyldichloroethylene (DDE)	72-55-9	0.00022	0.00002	0.000018
51	p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	0.00022	0.00003	0.000030
52	Pyrene	129-00-0	830	20	20
53	Toluene	108-88-3	1,300	57	57
54	trans-1,2-Dichloroethylene (DCE)	156-60-5	140	100	100
55	Trichloroethylene (TCE)	79-01-6	2.5	0.6	0.6

Per EPA **recommendation**, the following toxic pollutants **will be added** to the water quality criteria for toxic substances in Chapter 93, Table 5.

1,1,1-Trichloroethane (TCE) – The Department currently has acute (3000 ug/L) and chronic (800 ug/L) aquatic life criteria for 1,1,1-TCE. Chapter 93, Table 5 does not have a human health criterion for TCE. The EPA recommended human health criterion is 10000 ug/L. Ingestion of drinking water is a potentially significant source of exposure to 1,1,1-trichloroethane. Inputs used to derive the 2015 updated human health AWQC are protective of exposure to 1,1,1-trichloroethane from consuming drinking water and eating fish and shellfish (organisms) from inland and near shore waters.

1,2-Dichloropropane– Under the 1986 EPA *Guidelines for Carcinogen Risk Assessment* (USEPA 1986), 1,2-dichloropropane is classified as Group B2, "probable human carcinogen" (USEPA 1987). The major source of 1,2-dichloropropane in drinking water is discharge from industrial chemical factories. It may be released into the atmosphere or in wastewater during its production or use as an intermediate in chemical manufacture. There were also significant releases during its former use as a soil fumigant. It may also leach from municipal landfills. There are currently acute (11000 ug/L) and chronic (2200 ug/L) aquatic life criteria in Chapter 93, Table 5. The EPA recommended cancer risk level (CRL) is 0.9 ug/L.

1,2,4,5-Tetrachlorobenzene - was historically used as an insecticide, an intermediate in the production of herbicides and defoliants, and a component of dielectric fluids (USDHHS 2003). Currently, 1,2,4,5-tetrachlorobenzene is not registered for use as a pesticide (USEPA 2015c). The general population could be exposed to 1,2,4,5-tetrachlorobenzene via inhalation of ambient

air and drinking water (USDHHS 2003). EPA is recommending a human health criterion of 0.03 ug/L.

2,4,5-Trichlorophenol - was once registered as an antimicrobial by EPA, but is not currently a registered pesticide (USEPA 2015c). Chlorophenols can be formed when water containing humic substances is treated with chlorine and has a pH ranging from 7 to 8 (Krijgsheld and van der Gen 1986). The general population could be exposed to chlorophenols through ingestion of water and food contaminated with the compounds as well as inhalation of contaminated air (ATSDR 1999). 2,4,5-Trichlorophenol has been detected in ocean fish (ATSDR 1999). The EPA recommended human health criterion is 300 ug/L.

3-Methyl-4-chlorophenol - is used as a disinfectant and a preservative in the United States (USDHHS 2012). It also is registered in the United States as an antimicrobial pesticide and is currently in the reregistration process by EPA (USEPA 2015c). Exposure of the general U.S. population to the chemical might occur through inhalation and dermal contact (USDHHS 2012). EPA is recommending as human health criterion of 500 ug/L.

Bis(chloromethyl)ether – EPA has revised the human health criteria for bis(chloromethyl) ether to reflect the latest scientific information. Under the 1986 EPA *Guidelines for Carcinogen Risk Assessment* (USEPA 1986), bis(chloromethyl) ether is classified as Group A, "human carcinogen" (USEPA 1988). The EPA recommended cancer risk level (CRL) is 0.00015 ug/L.

Chlorophenoxy Herbicide (2,4-D) is a herbicide used to control broad-leaved weeds in cereals, grain crops, roadsides, and farm buildings (USDHHS 2012). 2,4-D is currently registered as a pesticide by EPA (USEPA 2015c). Human exposure to 2,4-D might occur through inhalation and ingestion of food and water (USDHHS 2012). The primary exposure routes for the general public are through food residues and water ingestion (USDHHS 2012).
Thus, based on its low potential for bioaccumulation, exposure to this chemical from ingestion of fish and shellfish is not considered likely. Because of the lack of data in fish and shell fish, EPA has not established BAF's according to trophic levels. 2,4-D is calculated with a total BAF of 13 L/kg. EPA's recommended criterion is rounded from 1371 ug/L to 1300 ug/L. The Department disagrees with this rounding and the criterion will be rounded up to 1400 ug/L.

Chlorophenoxy Herbicide (2,4,5-TP) is a herbicide that is no longer used in the United States. This herbicide was formerly used to control woody plants, broadleaf herbaceous weeds, and aquatic weeds (USDHHS 2010). Cancellation of all registered uses in the United States was put into effect on January 2, 1985 (USEPA 1998; USDHHS 2010). Prior to the cancellation of 2,4,5-TP, research surveys detected the chemical in large fruit samples and dairy products (USDHHS 2010). Recent monitoring information on 2,4,5-TP in imported foods could not be identified. Based on the available exposure information for 2,4,5-TP, and given that the chemical is no longer produced or used in the United States, EPA does not anticipate that there will be significant sources and routes of exposure of 2,4,5-TP other than fish and shellfish from inland and nearshore waters and water ingestion. EPA is recommending a human health criterion of 100 ug/L.

Dinitrophenols –DNPs can be found today in contaminated air, as well as in waste water originating from some manufacturing sites. After reviewing data presented in EPA's ambient water quality criteria updates, the Dinitrophenols criterion will be adopted by PA DEP. The inputs used to calculate the criterion for dinitrophenols are identical to the inputs used to calculate 2,4-Dinitrophenol. Dinitrophenols will protect against other forms of dinitrophenols (2,5-dinitrophenol and 2,6-dinitrophenol). The EPA recommended criterion for dinitrophenols is 10 ug/L.

Hexachlorocyclohexane (HCH)-technical - has several isomers, one of which goes by the common name "lindane". Lindane is found in prescription topical treatments and has been used as an insecticide on fruit, vegetables and forest crops. Technical grade HCH is classified as Group B2, "probable human carcinogen" (USEPA 1986b). EPA is recommending a CRL of 0.007 ug/L.

Methoxychlor - Methoxychlor is an insecticide that is no longer produced or used in the United States. Prior to its cancellation as an approved pesticide, the chemical was detected in fish from the Great Lakes at levels ranging from 10 to 120 µg/kg wet weight (ATSDR 2002). It also was detected in several species of migratory fish in Great Lakes tributaries at concentrations up to 1.4 µg/kg (ATSDR 2002). In EPA's National Lake Fish Tissue Study (USEPA 2009c), the chemical was detected in 1–5 percent (i.e., 9 of 468) of the predator fillets (at a maximum concentration of 370 ppb) and 5.8 percent (i.e., 23 of 395) of the bottom dweller whole body fish samples (at a maximum concentration of 107 ppb) (USEPA 2009c). Thus, based on available exposure information and its high potential to bioaccumulate, ingestion of fish and shellfish is a potentially significant source of exposure to methoxychlor. The EPA recommended human health criterion is 0.02 ug/L.

Pentachlorobenzene is generated as a by-product in a variety of industrial processes, such as solid waste incineration and combustion of coal (USDHHS 2013). Air is likely the primary source by which the general population is exposed to pentachlorobenzene; however, water and food ingestion might also be significant (USDHHS 2013). Based on the physical properties and available exposure information for pentachlorobenzene, air, fish, and shellfish are potentially significant sources. EPA is recommending a human health criterion of 0.1 ug/L.

Table 2 – New Pollutants to be added to Chapter 93, Table 5

	Pollutant	CAS No.	DEP Current Water + Organism (µg/L)	DEP Proposed Water + Organism (µg /L)	EPA 2015 Water + Organism (µg/L)
1	1,1,1-Trichloroethane	71-55-6	None	10000	10,000
2	1,2-Dichloropropane	78-87-5	None	0.9	0.90
3	1,2,4,5-Tetrachlorobenzene	95-94-3	None	0.03	0.03
4	2,4,5-Trichlorophenol	95-95-4	None	300	300
5	3-Methyl-4-Chlorophenol	59-50-7	None	500	500
6	Bis(Chloromethyl)Ether	542-88-1	None	0.0002	0.00015
7	Chlorophenoxy Herbicide (2,4-D)	94-75-7	None	1400	1300

8	Chlorophenoxy Herbicide (2,4,5-TP) [Silvex]	93-72-1	None	100	100
9	Dinitrophenols	25550-58-7	None	10	10
10	Hexachlorocyclohexane (HCH)-Technical	608-73-1	None	0.007	0.0066
11	Methoxychlor	72-43-5	None	0.02	0.02
12	Pentachlorobenzene	608-93-5	None	0.1	0.1

EPA has recalculated the toxicity of the following 18 pollutants which will result in a reduced criterion. These criteria have been recalculated to include chemical-specific bioaccumulation factors, which accounts for how long the pollutant will be available in the environment and in increased average body weight and fish consumption amount. These pollutant-specific inputs may be the driving factors for the change in the newly developed criteria.

Table 3 – Recalculated less stringent criteria

	Pollutant	CAS No.	DEP Current Water + Organism (µg/L)	DEP Proposed Water + Organism (µg /L)	EPA 2015 Water + Organism (µg/L)
1	1,2-Dichlorobenzene	95-50-1	420	1000	1,000
2	1,2-Dichloroethane	107-06-2	0.38	9.9	9.9
3	3,3'-Dichlorobenzidine	91-94-1	0.021	.05	0.049
4	Acrylonitrile	107-13-1	0.051	0.06	0.061
5	Benzidine	92-87-5	0.000086	0.0001	0.00014
6	Benzo(k)fluoranthene	207-08-9	0.0038	0.01	0.012
7	Bromoform	75-25-2	4.3	7.0	7.0
8	Carbon Tetrachloride	56-23-5	0.223	0.4	0.4
9	Chlorodibromomethane	124-48-1	0.4	0.8	0.80
10	Chloroform	67-66-3	5.7	60	60
11	Chrysene	218-01-9	0.0038	0.12	0.12
12	Dichlorobromomethane	75-27-4	0.55	0.95	0.95
13	Endrin Aldehyde	7421-93-4	0.29	1.0	1
14	gamma-Hexachlorocyclohexane (HCH)	58-89-9	0.98	4.2	4.2
15	Methyl Bromide	74-83-9	47	100	100
16	Methylene Chloride	75-09-2	4.6	20	20
17	Tetrachloroethylene (Perchloroethylene)	127-18-4	0.69	10	10
18	Toxaphene	8001-35-2	0.00028	0.0007	0.00070

There are 10 pollutants that have an **insignificant** change in the toxicity and will not require any change to the current criteria.

1,1-Dichloroethylene – Under the 1986 EPA *Guidelines for Carcinogen Risk Assessment* (USEPA 1986), 1,1-dichloroethylene is classified as Group C, "possible human carcinogen" (USEPA 2002d). EPA has not identified a cancer slope factor for this compound. Therefore, a

factor of 10 has been applied to the current human health criterion (1,1-DCE) for the protection of carcinogenic effects. Our current criterion is 33 ug/L. The recalculated criterion is 30 ug/L. This is an insignificant change, and therefore the human health criterion of 33 ug/L will remain in Chapter 93, Table 5.

Table 4 – Criteria with no significant change

	Pollutant	CAS No.	DEP Current Water + Organism (µg/L	DEP Proposed Water + Organism (µg /L)	EPA 2015 Water + Organism (µg/L)
1	1,1-Dichloroethylene	75-35-4	33	30	300
2	1,1,2,2-Tetrachloroethane	79-34-5	0.17	0.2	0.2
3	1,1,2-Trichloroethane	79-00-5	0.59	0.55	0.55
4	1,2-Diphenylhydrazine	122-66-7	0.036	0.03	0.03
5	2,4,6-Trichlorophenol	88-06-2	1.4	1.5	1.5
6	2,4-Dinitrotoluene	121-14-2	0.05	0.05	0.05
7	Bis(2-Chloroethyl) Ether	111-44-4	0.03	0.03	0.03
8	Heptachlor Epoxide	1024-57-3	0.000039	0.0004	0.00003
9	Vinyl Chloride	75-01-4	0.025	0.02	0.02

Recommendation

The EPA's recommended ambient water quality criteria for the protection of human health provide technical information for states to establish water quality standards (i.e., criteria) and to protect human health under the Clean Water Act (CWA). Under the CWA and its implementing regulations, states are required to adopt water quality criteria to protect designated uses (e.g., public water supply, aquatic life, recreational use, or industrial use) that are based on sound scientific rationale.

After a thorough review of the 94 individual recommended criteria updates, the Department recommends adopting updated criteria for 73 compounds and adding 12 new human health compounds to Chapter 93, Table 5. There are 9 EPA recommended criteria that will remain the same as currently in the Chapter 93, Table 5 regulation.

In addition, DEP recommends updating the applicable criteria in Table 5 with EPA's latest exposure factors for body weight, drinking water intake, and fish consumption; also using the methodology used to determine the bioaccumulation in fish, and other toxicity factors (reference dose and cancer slope factors).

Literature Cited

US EPA, *Final Updated Ambient Water Quality Criteria for the Protection of Human Health, EPA-HQ-OW-2014-0135; FRL-9929-85-OW,* (June 29, 2015)
http://water.epa.gov/scitech/swguidance/standards/criteria/current/hhfinal.cfm

US EPA, EPA *Guidelines for Carcinogen Risk Assessment* (USEPA 1986)

US EPA, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (2000).

Centers for Disease Control and Prevention (CDC), *National Health and Nutrition Examination Survey (NHANES), 1999 – 2006; 2003 to 2010.*

PA Code, Title 25, Chapter 93, *Water Quality Standards*, Table 5, *Water Quality Criteria for Toxic Substances.*

U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, Toxic Substances Portal
https://www.atsdr.cdc.gov/substances/index.asp

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD
(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-534

DATE OF ADOPTION APRIL 18, 2017

BY Patrick McDonnell

TITLE PATRICK MCDONNELL
ACTING CHAIRMAN

EXECUTIVE OFFICER CHAIRMAN OR SECRETARY

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BY Marisa D.Z. Lehr

MAY 05 2017
DATE OF APPROVAL

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

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NOTICE OF PROPOSED RULEMAKING

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

Triennial Review of Water Quality Standards

25 Pa. Code, Chapter 93

PROPOSED RULEMAKING
ENVIRONMENTAL QUALITY BOARD
25 Pa. Code, Chapter 93

Triennial Review of Water Quality Standards

PREAMBLE

The Environmental Quality Board (Board) proposes to amend Chapter 93 (relating to water quality standards) to read as set forth in Annex A.

This proposal was adopted by the Board at its meeting of April 18, 2017.

A. Effective Date

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final-form rulemaking, and subsequent approval by the U.S. Environmental Protection Agency (U.S. EPA) when water quality standards are used to implement the Federal Clean Water Act.

B. Contact Persons

For further information, contact Thomas Barron, Bureau of Clean Water (BCW), 11th Floor, Rachel Carson State Office Building, P.O. Box 8774, 400 Market Street, Harrisburg, PA 17105-8774, 717-787-9637 or Michelle Moses, Assistant Counsel, Bureau of Regulatory Counsel, 9th Floor, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, 717-787-7060. Persons with a disability may use the AT&T Relay Service by calling 1-800-654-5984 (TDD-users) or 1-800-654-5988 (voice users). This proposed rulemaking is available on the Department of Environmental Protection (Department or DEP) website at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board (EQB)").

C. Statutory and Regulatory Authority

This proposed rulemaking is being made under the authority of sections 5(b)(1) and 402 of The Clean Streams Law (35 P.S. §§ 691.5 (b)(1) and 691.402), which authorize the Board to develop and adopt rules and regulations to implement the provisions of The Clean Streams Law (35 P.S. §§ 691.1 – 691.1001), and section 1920-A of The Administrative Code of 1929 (71 P.S. § 510-20), which grants to the Board the power and duty to formulate, adopt, and promulgate rules and regulations for the proper performance of the work of DEP. In addition, section 303 of the Federal Clean Water Act (33 U.S.C.A. § 1313) sets forth requirements for water quality standards.

D. Background and Purpose

Water quality standards are in-stream water quality goals that are implemented by imposing specific regulatory requirements (such as treatment requirements, effluent limits, and best

management practices (BMPs)) on individual sources of pollution. Section 303(c)(1) of the Clean Water Act requires that states periodically, but at least once every three years, review and revise as necessary, their water quality standards. Water quality standards include designated uses, numeric and narrative criteria and antidegradation requirements for surface waters. The regulatory changes in this proposed rulemaking are the result of on-going reviews and evaluations of the water quality standards conducted by DEP. This proposed rulemaking fulfills the Federally-required triennial review of water quality standards as mandated by the Federal Clean Water Act.

Pennsylvania water quality standards, which are generally codified in Chapter 93, are designed to implement the requirements of Section 5 and 402 of The Clean Streams Law and Section 303 of the Federal Clean Water (33 U.S.C.A. § 1313). The water quality standards include the existing and designated uses of the surface waters of this Commonwealth, along with the specific numeric and narrative criteria necessary to achieve and maintain those uses, and an antidegradation policy, which prohibits degradation of waters. The water quality standards also include a policy for the special protection of the existing quality of certain waters found to be of high quality or exceptional value.

Water quality standards are an important element of the Commonwealth's water quality management program. Some type of water quality standard has been in use for over 75 years in this Commonwealth. One of the early actions after the Sanitary Water Board (SWB) was created in 1923 was to classify streams by priority for water quality management actions. In 1947, the SWB classified all streams in this Commonwealth by the degree of treatment that had to be provided before discharge could occur. Article 301 – Water Quality Control, which specifically contained water uses, general and specific water quality criteria, and designated water uses, was added to the SWB's Rules and Regulations on June 28, 1967. The SWB was then abolished on January 19, 1971 following the formation of the Pennsylvania Department of Environmental Resources (DER) in 1968. Responsibilities for developing and maintaining the water quality criteria and standards, and other related regulations were transferred to DER. New or revised specific water quality criteria and standards were developed by DER for all Pennsylvania surface waters, and formally adopted into 25 Pennsylvania Code, Chapter 93 – Water Quality Standards on September 10, 1971.

DER completed its first major review and complete overhaul of the water quality criteria and standards in 1979. After a series of public hearings and extensive public participation, revisions to the water quality criteria and uses were incorporated into Chapter 93. U.S. EPA Region III formally approved the revisions to Pennsylvania's water quality standards on January 26, 1981. Section 303(c)(1) of the Clean Water Act requires that states periodically, but at least once every three years, review and revise as necessary, their water quality standards. As such, additional reviews and revisions were made to Pennsylvania's water quality standards during 1985, 1989, and 1994. The then newly formed Department of Environmental Protection (DEP), which was created in June 1995, after splitting DER into two agencies by approval of the Conservation and Natural Resources Act (71 P.S. §§1340.101 – 1340.1103), began to conduct its first comprehensive review of water quality standards regulations, policies, and implementation procedures which became the basis for the next Triennial Review. Additional reviews and revisions were made to Pennsylvania's water quality standards during 1998, 1999, 2000, 2002,

2004, 2009 and 2013 to address amendments for the Great Lakes Initiative (GLI), Antidegradation policies, the Water Quality Standard (WQS) Regulatory Basics Initiative (RBI) Triennial, and several other corrective amendments.

The U.S. EPA urged the Department in a letter dated January 21, 2013, to include the Federally recommended ammonia and recreational water quality criteria (RWQC) into the Commonwealth's water quality standards. Also, the U.S. EPA specifically recommended in its May 22, 2014, approval letter in reference to the 2013 Pennsylvania Triennial Review of WQS "that PADEP will address the issues of total dissolved solids, most notably chlorides, ammonia, and recreational criteria", in its next triennial review.

On March 24, 2016, DEP's Water Resources Advisory Committee (WRAC) voted to concur with the Department's recommendation to move the rulemaking forward for EQB consideration. In addition, DEP provided to the Agricultural Advisory Board (AAB) on February 25, 2016, a regulatory review that included the triennial review of water quality standards. Also, DEP provided to the Citizens Advisory Council (CAC) on June 21, 2016, an overview of the triennial review.

E. Summary of Regulatory Requirements

The following is a detailed description of proposed revisions in Chapter 93, presented by Section:

Chapter 93. WATER QUALITY STANDARDS

§ 93.7 Specific water quality criteria. Table 3:

The Board is proposing the following changes to the Table 3 criteria:

Ammonia Criteria: The U.S. EPA released, in April 2013, final recommendations for Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater 2013 (EPA 822-R-13-001). These recommendations are intended as guidance to states, territories, and authorized tribes in developing water quality standards to protect aquatic life from exposure to ammonia. DEP assessed the peer-reviewed technical documentation for the recommended ammonia criteria and found it was scientifically sound and appropriate for the surface waters of Pennsylvania. The document can be accessed at https://www.epa.gov/wqc/aquatic-life-criteria-ammonia.

These recommendations consider the most recent scientific research regarding the effects of ammonia on aquatic life and incorporate the latest toxicity information for freshwater species, including unionid mussels and gill-breathing (non-pulmonate) snails.

Freshwater unionid mussels are found in many states of the continental United States and many of these mussels are Federally-listed as endangered or threatened species. Freshwater mussels are broadly distributed across the U.S., as are freshwater non-pulmonate snails, and both of these sensitive groups are now included in the ammonia criteria dataset. There are approximately 65 species of unionid mussels in Pennsylvania, including many that are rare or endangered. The

seven most sensitive genera in the acute dataset are all in the family Unionidae and all of these genera, except for *Venustaconcha*, are found in Pennsylvania. The two most sensitive genera in the chronic dataset are also unionid mussels, and are both found in Pennsylvania. These criteria are appropriate for Pennsylvania because they provide sufficient protection for Pennsylvania's most sensitive fauna.

The magnitude for both the acute (CMC) and chronic (CCC) criteria is determined by two separate equations and is given as a concentration in milligrams of total ammonia nitrogen per liter (mg TAN/L). Temperature and pH both influence the toxicity of ammonia. Temperature has little effect on the toxicity of total ammonia nitrogen (TAN) to fish, therefore the effect concentrations for fish are only normalized for pH. For invertebrates, temperature and pH both affect the toxicity of TAN, so the TAN effects concentrations are normalized for both pH and temperature. At pH = 7, the acute criterion magnitude is driven by freshwater unionid mussels at water temperatures greater than 15.7°C (60.27°F). The TAN effects concentrations of salmonids and other fish drive the acute criterion magnitude at lower temperatures. The 2013 chronic criterion magnitude is determined primarily by the sensitivity of freshwater mollusks, particularly unionid mussels.

Therefore, U.S. EPA developed the acute and chronic criteria equations with the underlying assumption that mussels are present, and this is appropriate for Pennsylvania, as sensitive mussels are ubiquitous throughout the Commonwealth. Additionally, U.S. EPA developed an acute criteria equation that is appropriate when salmonids are present (along with the aforementioned mussels also being present). It is appropriate to use the acute criteria equation that considers the sensitive salmonids. DEP recommended that the Board consider salmonids being present when determining the statewide CMC for total ammonia nitrogen for several reasons. (1.) Salmonid fishes are common throughout Pennsylvania. (2.) This equation uses the set of conditions that generates the most stringent criteria, so the proposed CMC will most certainly be sufficiently protective. (3.) All of the proposed acute criteria values generated by the proposed equation (regardless of the ambient pH and temperature conditions) are less restrictive than the values for the current acute criteria calculated using the same pH and temperature. Adopting this approach will not be detrimental to any current dischargers because the proposed acute standards will be less restrictive under all temperature and pH conditions. The 2013 chronic criterion magnitude is determined primarily by the sensitivity of freshwater mollusks, particularly unionid mussels, therefore the presence or absence of salmonids is inconsequential in the determination of the proposed chronic criteria.

As mentioned previously, adopting the acute criterion will not be detrimental to any current dischargers because the proposed acute standards will be less restrictive under all temperature and pH conditions. The chronic criterion becomes more stringent as pH and temperature increase just the same as the current chronic ammonia criterion does. Median summer temperature and pH were calculated using data from 235 fixed water quality sampling sites (WQN) collected between 2000 to 2015. The data is representative of all different types of streams found statewide. The new chronic criterion is typically more stringent than the existing criterion in streams with low pH and temperature. These are typically smaller headwater streams where it is less likely for a discharge to exist. At pH < 7, the new criterion is more stringent being anywhere from 0.1 to 1.5 mg/l lower. It is most stringent in cold streams with pH near 6.0.

At pH > 7.8 the proposed compared to the current criterion is less stringent by 0.2 mg/l or less. Between pH 7.5 and 7.8, the proposed criterion is typically more stringent but ninety-five percent of the time the difference is less than 0.17 mg/l and only 0.6 mg/l fifty percent of the time. Between pH of 7.0 to 7.5 mg/l half the time the proposed criterion is higher and half the time it is less stringent depending on the temperature. When the U.S. EPA-recommended criteria are more stringent, ninety-five percent of the time the difference is < 0.9 mg/l.

Overall, with respect to the proposed ammonia criteria, we expect either no impact or minimal impact on the great majority of point source discharges in Pennsylvania. In those cases, where additional treatment for ammonia may be needed, minimal cost impact is expected because ammonia is highly treatable. Treatment usually involves only time allowed for biological degradation and exposure to atmospheric oxygen.

The Board proposes to replace the current statewide aquatic life use criteria for ammonia with the new Federally recommended criteria for ammonia. Statewide application of these nationally recommended water quality criteria would provide an appropriate level of protection for aquatic life from the effects of ammonia.

Bacteria Criteria: The Board is proposing changes to the bacteria criteria that will include replacing the current fecal coliform-based criteria for water contact sports (WC) during the swimming season (May 1 to September 30), with U.S. EPA's recommended 2012 Recreational Water Quality Criteria (RWQC) in Pennsylvania's surface waters. DEP assessed the peer-reviewed technical documentation for U.S. EPA's recommended recreational criteria for bacteria and found it was scientifically sound and appropriate for the surface waters of Pennsylvania. The document can be accessed at https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf.

Pennsylvania's current recreational use bacteria criteria have been based upon a maximum fecal coliform level of 200 colony forming units per 100 mL (cfu/100 mL) since the early 1970's. It is now widely accepted that *Escherichia coli (E. coli)* levels are a better indicator of fecal contamination than fecal coliforms. This change is designed to protect those engaging in water contact sports (defined as the use of the water for swimming and related activities) from fecal contamination. There are two sets of recommendations based on two different risk paradigms (36 illnesses per 1,000 swimmers and 32 illnesses per 1,000 swimmers). U.S. EPA maintains, in the 2012 RWQC, that both risk paradigms are adequately protective. The Board proposes the adoption of the *E. coli* freshwater levels associated with Recommendation 1, the 36 per 1,000 illness rate. The *E. coli* levels associated with this risk paradigm (geometric mean (GM) = 126 cfu/100 ml & statistical threshold value (STV) = 410 cfu/100ml) are most closely akin to the current Pennsylvania Department of Health (PDOH) standards at 28 Pa. Code §18.28 (which concerns bathing beach contamination) and the criteria that were promulgated for Lake Erie and Presque Isle under the 2004 Bacteria Rule (40 CFR 131.41), as published in the Federal Register (69 FR 67218) on November 16, 2004. The criteria values for the current PDOH standards and the criteria values that were Federally promulgated for Lake Erie beaches, including Presque Isle are a geometric mean value of 126 and a single sample maximum value (SSM) of 235. This SSM feature is not part of the 2012 RWQC. The SSM has been replaced by the STV of 410, which is most similar to the SSM (409) for the 90th percentile from U.S. EPA's 1986

recommended bacteria criterion. In order to achieve the most consistent approach, the Board is favoring the criteria based on the similar geometric mean and single sample maximum values. DEP believes this will result in a more seamless transition.

DEP conducted field studies making side-by-side sample comparisons between the current Fecal Coliform and proposed *E. coli* criteria. One hundred and eighty-one sites in seven different watersheds were included in the study. Applying the proposed *E. coli* standard would impair 15% more sites for water contact recreation than the Fecal Coliform standard. This indicates the proposed standard provides a higher level of protection from waterborne diseases for the citizens of Pennsylvania.

Other changes will occur in Table 3 and Drainage List X (25 Pa. Code §93.9x), which provide further clarification. First, the Board would like to emphasize that the PDOH bathing beach contamination regulations, at 28 Pa. Code §18.28, apply to all regulated beaches, statewide. Therefore, the Board is proposing to delete references to the PDOH regulations found in Drainage List X since they are not limited to Lake Erie. The Board also proposes to delete the language currently found in Drainage List X, which refers to the promulgated Federal regulations (40 CFR 131.41) pertaining to Lake Erie and Presque Isle beaches. These references to 40 CFR 131.41 and 28 Pa. Code §18.28, as *Exceptions to Specific Criteria*, are no longer necessary since the new proposed *E. coli* WC criterion in Bac_1 will be applied statewide, and the PDOH regulations already apply statewide.

Bac_1 is designed to be protective of activities involving water contact sports (WC). The Bac_1 criterion is systematically applied to all surface waters in the Commonwealth unless otherwise specified in other portions of Pennsylvania's water quality standards.

Historically, the Bac_2 criterion was originally implemented as a site-specific criterion to protect the potable water supply (PWS), where the WC use was removed at Lake Erie and has always only been implemented in these select waters. As such, Bac_2 is currently only applicable in the outer Erie Harbor and Presque Isle Bay; specifically, in the harbor area and central channel dredged and maintained by the United States Army Corps of Engineers. Therefore, the Board proposes to remove the Bac_2 criterion from Table 3 and insert this criterion in a new table in Drainage List X, Section 93.9x, where it only applies to Lake Erie waters.

The Board proposes that the current non-swimming season fecal coliform-based numerical criterion in Bac_1, which is a geometric mean maximum value of 2,000 cfu/100 mL, be retained and should continue to be applied statewide in all surface waters from October 1 through April 30. The U.S. EPA is currently conducting research in an attempt to develop criteria that will be protective of secondary contact recreation. When the U.S. EPA finalizes and recommends these new Federal secondary contact recreational criteria, DEP will conduct a thorough review and evaluate whether the recommendations are appropriate for Pennsylvania.

Chloride Criteria: Chlorides occur naturally in streams and are ubiquitous. Elevated levels of chloride are toxic to aquatic life in freshwater environments. The existing chloride criterion was developed primarily for the protection of PWS and is only applied at the point of water supply intake, pursuant to 25 Pa. Code § 96.3(d) (relating to water quality protection requirements). The

Board had proposed updates to the chloride criteria in several earlier rulemakings, but withdrew those recommendations due to objections from commentators that suggested additional research was needed. The Board initiated a proposed rulemaking for the promulgation of the 1988 National aquatic life criteria for chloride at its March 16, 2010 meeting. The proposed aquatic life criteria (230 mg/l = chronic; 860 mg/l = acute) mirrored the National recommended aquatic life criteria that were published in February 1988 by the U.S. EPA in Ambient Water Quality Criteria for Chloride. That proposed rulemaking was published at 40 Pa.B. 2264 (May 1, 2010) with a comment period that closed on June 15, 2010. Based on comments received during the 2010 public comment period, DEP re-evaluated the science used in the determination of the chloride criterion successfully implemented by the Iowa Department of Natural Resources (IDNR), which was based on research conducted by U.S. EPA, along with the Great Lakes Environmental Center (GLEC) in Columbus, OH, and the Illinois Natural History Survey (INHS) in Champaign, IL. That research demonstrated a correlation between chloride toxicity and hardness, and, to a lesser degree, sulfates levels in water. The final results of this toxicity testing were published in the report "*Acute Toxicity of Chloride to Select Freshwater Invertebrates*," EPA, October 28, 2008. The Board then proposed a new equation-based criterion in 2012, which was published at 42 Pa.B. 4367 on July 7, 2012. This equation-based criterion was also later withdrawn because of requests for DEP to conduct further studies.

In response to these earlier rulemaking actions, DEP conducted additional studies to characterize the ionic composition of surface waters and contracted with the Stroud Water Research Center, in Avondale, Pennsylvania to perform chloride toxicity testing on mayflies. The studies were designed to provide the additional information needed to support the development of a chloride criterion that is protective across the range of aquatic habitats and species found in Pennsylvania waters. The mayfly studies demonstrated the toxicity of chlorides is hardness dependent but the responses differed from those modeled in the above-mentioned study that used cladocera (water fleas) as the test organisms. There was not a sufficient number of mayfly toxicity tests done at varying hardness levels to determine a good mathematical relationship between hardness and chloride toxicity. The chloride criteria require adjustment to differing hardness levels so as not to be over or under protective at different hardness values. That adjustment remains a question as the cladocera responded differently from the mayflies and there were not enough tests to adequately define the mayfly response.

More recently, U.S. EPA published for public comment on December 20, 2016, draft *Field-Based Methods for Developing Aquatic Life Criteria for Specific Conductivity*. DEP is currently reviewing this new field-based method to determine how it applies to Pennsylvania. The document provides a scientific method to assess ecological effects of ions based on specific conductance. Elevated ionic concentration measured as specific conductivity has been shown to negatively impact aquatic life in a range of freshwater resources. Since specific conductance is a composite measure of all ions present in the water, it is believed it accounts for the toxic or protective interactions of the ions on overall toxicity. This field-based method is a shift away from traditional laboratory toxicity testing to develop criteria for individual ions such as chloride. Criteria for individual ions developed using laboratory toxicity tests requires adjustment at least for hardness as toxicity is at least partly dependent on hardness levels. Since conductivity is a surrogate measure for all the ions present in the water, this U.S. EPA study determines that conductivity better accounts for interactions between all ions and toxicity than simply defining a

relationship between only hardness and toxicity. For the ions, it is also believed that organism community field-based responses are better integrators of toxic impacts than single species controlled laboratory tests.

This study was geared toward waters where sulfate was the dominant ion but the same field-based methods are suggested for other ions such as chloride. The U.S. EPA recommendation is that there are advantages to using this field-based conductivity method for ions because it better accounts for interactions between ions than does the hardness adjustment. As stated above, the hardness to toxicity relationship was not defined well enough in the laboratory cladocera and mayfly toxicity tests. Once finalized, states and authorized tribes may use the methods to develop field-based specific conductivity criteria for flowing waters. This document does not impose binding water quality criteria on any state. Following closure of this 60-day public comment period, U.S. EPA will consider the comments, revise the document, as appropriate, and then publish a final document.

Due to the complex nature of the chemical interactions that determine the toxicological responses of aquatic organisms to chloride, and the release for comment of the field-based specific conductivity draft that addresses these concerns through specific conductance rather than the individual ions, DEP is not recommending a specific chloride criterion with this proposed rulemaking. DEP continues to review all available science, including the Draft Field-Based Methods for Developing Aquatic Life Criteria for Specific Conductivity from U.S. EPA and any new data acquired through the additional studies in efforts to develop appropriate criteria intended to be applied in all freshwaters of the Commonwealth for the protection of aquatic life.

§ 93.8a. Toxic substances.

The Board proposes to delete reference to Appendix A, Table 1A in § 93.8a(b) since Table 1A is being deleted in 25 Pa. Code Chapter 16. DEP will now maintain a publicly available online table of site-specific human health and aquatic life criteria that have been recently developed or adopted by DEP based on approved methodologies and the best scientific information currently available. It should be noted that a similar update is being made in § 93.8c(a) (relating to human health and aquatic life criteria for toxic substances). Also, it will be noted in § 93.8a(b) that the approved analytical procedures and detection limits for these substances will be listed in Chapter 16, as appropriate. Tables can be access at http://www.dep.pa.gov/Business/Water/CleanWater/WaterQuality/Pages/Site-Specific-Water-Quality-Criteria-In-PA.aspx.

Additionally, the Board proposes to delete, in § 93.8a(j)(3) (relating to antidegradation requirements for the Great Lakes System), reference to the Federal regulation in 40 CFR 131.32(a) since this Federal promulgation had been withdrawn by U.S. EPA. (75 FR 29899) This reference is no longer needed, but its removal from this section was missed during the previous triennial review.

§ 93.8c. Human health and aquatic life criteria for toxic substances.

The Board proposes to clarify in § 93.8c(a) that, for those aquatic life criteria that are a function of local water quality conditions and are specified as a formula, such as several of the heavy metals, the hardness and pH values used to derive the appropriate water quality criteria shall be determined by instream measurements or best estimates, representative of the median concentrations or conditions of the receiving stream for the applicable time period and design conditions.

The Board proposes to delete the current prohibition in § 93.8c(b) and clarify that criteria in Table 5 may apply to the Great Lakes System for those substances not listed in Table 6.

The Board is proposing additions and revisions to the human health and aquatic life criteria contained in Table 5. Water quality criteria are to be based solely on the best available scientific data and scientific judgments on pollutant concentrations and their effects on human health or aquatic life. The criteria are tools used to calculate discharge limits in the NPDES program and to support other pollution control efforts. The criteria in Table 5 have been updated to reflect the latest scientific information and implementation of existing U.S. EPA policies found in the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health – (EPA-822-B-00-004, October 2000). These updates include new scientifically-based exposure factors for body weight (80 kg), drinking water consumption rate (2.4 liters per day) and fish consumption rate (22.0 g per day).

On June 29, 2015, U.S. EPA announced (80 FR 36986) the final updates recommended for ninety-four pollutants. In addition to the updated exposure factors, U.S. EPA has determined pollutant-specific bioaccumulation factors and has updated available toxicity values using the data from the U.S. EPA Integrated Risk Information System (IRIS) as the primary source. DEP has reviewed the national recommendations and has determined the criteria are scientifically sound and applicable for the protection of Pennsylvania waters. The document can be accessed at https://www.epa.gov/sites/production/files/2015-10/documents/human-health-2015-update-factsheet.pdf.

Below are compounds that have been recommended by U.S. EPA since the completion of Pennsylvania's previous triennial review, which was finalized in August 2013. This list contains new criteria to protect human health from toxic substances that currently are not in regulation in Table 5.

Summary of Table 5 Proposed Criteria

Nonylphenol – Chapter 93 currently includes criteria for nonylphenol, which are based on guidance provided by U.S. EPA. U.S. EPA took no action, to approve or disapprove this criterion as part of the previous triennial review. U.S. EPA prepared a biological evaluation relating to Federally-listed threatened and endangered species and their critical habitat. The United States Fish and Wildlife Service could not concur that nonylphenol would be protective of endangered mussels in Pennsylvania. Due to this disagreement, U.S. EPA did not approve Pennsylvania's final statewide criterion, which was based on U.S. EPA's own national recommendation. Without final approval, DEP may not use the Nonylphenol standard, as a statewide criterion, to implement the Federal Clean Water Act. This triennial review retains the

existing statewide water quality criterion for Nonylphenol and DEP will, again, submit the criterion to U.S. EPA for approval. Until such time as U.S. EPA approves the criterion, DEP will use site-specific water quality criteria as applicable.

After a thorough review of the 94 individual recommended criteria updates, the Board is proposing to adopt the updated criteria for 73 compounds and add 11 new human health compounds to Table 5. There are 10 U.S. EPA recommended criteria that are the same as the criteria currently in Table 5, and therefore no change is recommended for these criteria.

The Board proposes the following 11 new human health toxic pollutants be added to the water quality criteria for toxic substances in Table 5. The Board will also clarify which pollutants in Table 5 have human health criteria that are still based on the exposure inputs of two liters per day of drinking water and consumption of 22 grams of fish per day for the protection of a 70 Kg person, based on the unavailability of information needed to calculate criteria based on new exposure assumptions. The regulations will also indicate which of the criteria were developed by DEP (D) or by U.S. EPA (E), for those pollutants in Table 5 without a Priority Pollutant Number (PPO NO).

1,1,1-Trichloroethane (TCE) – Currently, there are acute (3,000 ug/L) and chronic (800 ug/L) aquatic life criteria for 1,1,1-TCE in Table 5, but no human health criterion for TCE. The U.S. EPA-recommended human health criterion is 10,000 ug/L. Ingestion of drinking water is a potentially significant source of exposure to 1,1,1-trichloroethane. Inputs used to derive the 2015 updated human health AWQC are protective of exposure to 1,1,1-trichloroethane from consuming drinking water and eating fish and shellfish (organisms) from inland and near shore waters.

1,2-Dichloropropane - is classified as Group B2, "probable human carcinogen," under the 1986 U.S. EPA *Guidelines for Carcinogen Risk Assessment.* The major source of 1,2-dichloropropane in drinking water is discharged from industrial chemical factories. It may be released into the atmosphere or in wastewater during its production or use as an intermediate in chemical manufacture. There were also significant releases during its former use as a soil fumigant, and it may leach from municipal landfills. There are currently acute (11,000 ug/L) and chronic (2,200 ug/L) aquatic life criteria in Table 5. The U.S. EPA recommended cancer risk level (CRL) is 0.9 ug/L.

1,2,4,5-Tetrachlorobenzene – was historically used as an insecticide, an intermediate in the production of herbicides and defoliants, and a component of dielectric fluids. Currently, 1,2,4,5-tetrachlorobenzene is not registered for use as a pesticide. The general population could be exposed to 1,2,4,5-tetrachlorobenzene via inhalation of ambient air and drinking water. U.S. EPA is recommending a human health criterion of 0.03 ug/L.

2,4,5-Trichlorophenol – was once registered as an antimicrobial by U.S. EPA, but is not currently a registered pesticide. Chlorophenols can be formed when water containing humic substances is treated with chlorine and has a pH ranging from 7 to 8. The general population could be exposed to chlorophenols through ingestion of water and food contaminated with the

compounds as well as inhalation of contaminated air. 2,4,5-Trichlorophenol has been detected in fish. The U.S. EPA recommended human health criterion is 300 ug/L.

3-Methyl-4-chlorophenol – is used as a disinfectant and a preservative in the United States. It also is registered in the United States as an antimicrobial pesticide and is currently in the re-registration process by U.S. EPA. Exposure of the general population to the chemical might occur through inhalation and dermal contact. The U.S. EPA is recommending a human health criterion of 500 ug/L.

Methoxychlor –is an insecticide that is no longer produced or used in the United States. Prior to its cancellation as an approved pesticide, the chemical was detected in fish from the Great Lakes at levels ranging from 10 to 120 ug/kg wet weight. It was also detected in several species of migratory fish in Great Lakes tributaries at concentrations up to 1.4 ug/kg. In U.S. EPA's National Lake Fish Tissue Study, the chemical was detected in 1–5 percent (i.e., 9 of 468) of the predator fillets (at a maximum concentration of 370 ppb) and 5.8 percent (i.e., 23 of 395) of the bottom-dweller whole body fish samples (at a maximum concentration of 107 ppb). Thus, based on available exposure information and its high potential to bioaccumulate, ingestion of fish and shellfish is a potentially significant source of exposure to methoxychlor. The U.S. EPA recommended human health criterion is 0.02 ug/L.

Chlorophenoxy Herbicide (2,4-D) – is an herbicide used to control broad-leaved weeds in cereals, grain crops, roadsides, and farm buildings. 2,4-D is currently registered as a pesticide by U.S. EPA. Human exposure to 2,4-D might occur through inhalation and ingestion of food and water. The primary exposure routes for the general public are through food residues and water ingestion. Based on its low potential for bioaccumulation, exposure to this chemical from ingestion of fish and shellfish is not considered likely. Because of the lack of data in fish and shellfish, U.S. EPA has not established bioaccumulation factors (BAFs) according to trophic levels. 2,4-D is calculated with a total BAF of 13 L/kg. U.S. EPA's recommended criterion is rounded from 1371 ug/L to 1300 ug/L. DEP disagrees with this rounding and the criterion will be rounded up to 1400 ug/L.

Chlorophenoxy Herbicide (2,4,5-TP) – is an herbicide that is no longer used in the United States. This herbicide was formerly used to control woody plants, broadleaf herbaceous weeds, and aquatic weeds. Cancellation of all registered uses in the United States was put into effect on January 2, 1985. Prior to the cancellation of 2,4,5-TP, research surveys detected the chemical in large fruit samples and dairy products. Recent monitoring information on 2,4,5-TP in imported foods could not be identified. Based on the available exposure information for 2,4,5-TP, and given that the chemical is no longer produced or used in the United States, U.S. EPA does not anticipate that there will be significant sources and routes of exposure of 2,4,5-TP other than fish and shellfish from inland and nearshore waters and water ingestion. U.S. EPA is recommending a human health criterion of 100 ug/L.

Dinitrophenols (DNP) –DNPs can be found today in contaminated air, as well as in waste water originating from some manufacturing sites. The inputs used to calculate the criterion for dinitrophenols are identical to the inputs used to calculate 2,4-Dinitrophenol. The criterion for

Dinitrophenols will be protective for all forms of dinitrophenols. (2,4-; 2,5-; and 2,6-dinitrophenol). The U.S. EPA recommended criterion for dinitrophenols is 10 ug/L.

Hexachlorocyclohexane (HCH)-technical – has several isomers, one of which goes by the common name "lindane". Lindane is found in prescription topical treatments and has been used as an insecticide on fruit, vegetables and forest crops. Technical grade HCH is classified as Group B2, "probable human carcinogen". U.S. EPA is recommending a cancer risk level (CRL) of 0.0066 ug/L.

Pentachlorobenzene – is generated as a by-product in a variety of industrial processes, such as solid waste incineration and combustion of coal. Air is likely the primary source by which the general population is exposed to pentachlorobenzene; however, water and food ingestion might also be significant. Based on the physical properties and available exposure information for pentachlorobenzene, air, fish, and shellfish are potentially significant sources. U.S. EPA is recommending a human health criterion of 0.1 ug/L.

§ 93.8d. Development of site-specific water quality criteria.

The Board proposes to add, to §93.8d(c), that DEP may require the use of the Biotic Ligand Model (BLM) for the development of new or updated site-specific criteria for copper in freshwater systems.

The Board also proposes to clarify, in §93.8d(f)(2) that DEP has developed a publicly available online resource to maintain a table of site-specific criteria that have been developed and are being used by DEP in permitting and other pollution control measures. This table will be routinely updated as new criteria are developed or other applications and implementation of existing site-specific criteria are added. Tables can be access at http://www.dep.pa.gov/Business/Water/CleanWater/WaterQuality/Pages/Site-Specific-Water-Quality-Criteria-In-PA.aspx.

§ 93.8e. Special criteria for the Great Lakes System.

As indicated previously, the Board proposes to clarify that, for any pollutant not listed in Table 6, criteria in Table 5 may be used to protect existing and designated uses in the Great Lakes System, or that criteria will be developed by DEP, as needed, in accordance with this chapter, and the methods described in Chapter 16.

Corrections to Drainage Lists – Sections 93.9a – 93.9z

The following changes to the drainage lists are proposed by the Board to clarify stream names and segment boundaries and designations.

The Board is proposing to consolidate and reformat several drainage lists to address the continual changes and updates occurring to the National Hydrography Dataset (NHD) flowline.

The NHD flowline forms the basis of DEP's Designated and Existing Use Geographic Information System (GIS) layers. The NHD flowline is established using the United States Geological Survey (USGS) Geographic Names Information System (GNIS), which is the Federal and national standard for geographic nomenclature. As such, DEP strives to maintain consistency with the GNIS database and the NHD flowline.

DEP routinely receives communications, both internal and external to the agency, concerning streams that appear to be missing from Chapter 93. Often, these streams were considered unnamed at the time the drainage list was established and therefore were captured under "unnamed tributaries" entries. These streams currently have a designated use even though they do not appear as named entries in Chapter 93. In contrast, there are a number of named tributaries in Chapter 93 that are not currently recognized by the USGS and are not represented by the NHD flowline. These may be unofficial local names. Consolidation within drainage lists will greatly reduce these issues.

In many parts of the drainage lists, the current format consists of a main stem entry for a stream, followed by unnamed tributaries to that stream, and then individually named tributaries within the basin. Often, most of the tributaries, both named and unnamed, have the same designated use. In some cases, an entire basin is the same designated use except for a few streams. Large stream basins may take up several pages within a drainage list and can be difficult for individuals to navigate and understand. Reformatting such large basins to consolidate portions of the code that have the same designated use enables readers to view that entire basin within a page or two. In addition, a condensed drainage list reduces the likelihood that errors will occur in transcription of the code during rulemaking procedures. DEP currently has several GIS mapping tools available, including eMapPA and WAVE, to assist staff as well as members of the public and the regulated community in locating streams within Pennsylvania, and they should be used in conjunction with the *Pennsylvania Code* and other available online mapping resources to determine official designated uses.

In addition, all river mile indexes (RMIs) in the drainage lists (Sections 93.9a to 93.9z) that are included in this triennial review will be converted to (x,y) coordinates – latitude and longitude. All of these conversions of RMIs in all of the drainage lists will not be included in this rulemaking package. Going forward, whenever changes are proposed to the *Pennsylvania Code*, associated RMIs will be converted to latitude and longitude. Eventually, all reference to RMIs in Sections 93.9a to 93.9z will be converted to latitude and longitude. The following additional proposed corrections do not change the current stream use designations, and only serve as clarifications and corrections:

Section 93.9b. Drainage List B.

A clarification is proposed for Section 93.9b. Currently, there are two entries in the code for the Lackawaxen River. However, the entire mainstem Lackawaxen River is designated HQ-TSF, MF (high quality trout stocked fishes, migratory fishes) from its origin at the confluence of West Branch Lackawaxen River and Van Auken Creek downstream to where it enters the Delaware River. It is recommended that the mainstem be covered by a single entry.

Section 93.9c. Drainage List C.
The Board proposes to clarify Chapter 93.9c. This will eliminate the confusion associated with two named tributaries to the Delaware River that are currently included under two separate entries for "unnamed tributaries". Spackmans Creek and Mill Creek will each be given their own entry which identifies them as tributaries to the Delaware River.

Section 93.9d. Drainage List D.
This correction to Section 93.9d will reformat the Tobyhanna Creek basin to eliminate any issues associated with named tributaries in the basin that are currently included under an "unnamed tributaries" entry.

The proposed correction will replace a bridge reference in the zone description for the Lehigh River. The correction will replace the PA 903 bridge with GIS coordinates. The Division of Water Quality Standards was notified that the PA 903 bridge was being relocated 1,000' upstream as part of a bridge replacement project.

The stream nomenclature for the Mauch Chunk Creek basin is being corrected to be consistent with the NHD Flowline. Accordingly, White Bear Creek forms the headwaters of this basin. White Bear Creek enters into Mauch Chunk Lake. Mauch Chunk Creek begins at the outlet of Mauch Chunk Lake. In addition, Beaverdam Run is being corrected to Beaver Run.

The proposed correction to the Jordan Creek basin will eliminate any confusion associated with named tributaries to Jordan Creek that are currently included under entries for "unnamed tributaries."

Section 93.9e. Drainage List E.
Proposed corrections to Section 93.9e will eliminate the confusion associated with named tributaries in the Delaware River basin that are included under the current listing of "unnamed tributaries". Rodges Run, Falls Creek, Swamp Creek, Smithtown Creek, and Biles Creek will be inserted into the Drainage List. DEP gained knowledge that these tributaries had been officially named subsequent to the inclusion of these streams under the listing of unnamed tributaries in Section 93.9e.

Section 93.9f. Drainage List F.
The proposed change will correct the hydrological order for Plum Creek and replace the RM reference with GIS coordinates. Plum Creek is a tributary to Tulpehocken Creek in Drainage List F and should have a 4 for hydrological order rather than a 5. Unnamed Tributary to Plum Creek at RM 0.45 should have a 5 for hydrological order rather than a 6.

The Manatawny Creek basin is being reformatted to be consistent with the NHD flowline and historical rulemakings. The corrections also clarify that the confluence of Pine Creek and Bieber Creek forms the Manatawny Creek basin.

Proposed corrections to Section 93.9f will eliminate the confusion associated with named tributaries in the Perkiomen Creek basin that are included under the current listing of "unnamed

tributaries." The Perkiomen Creek basin is being reformatted to incorporate Molasses Creek and Donny Brook.

Section 93.9g. Drainage List G.

The Board is proposing changes that will restore the correct designated use, as described in a rulemaking that was published as a final rule in 1985, to the waters described as "Goose Creek basin." According to the current NHD Flowline, the zone (referred to in the 1985 rulemaking as Goose Creek basin) that was redesignated in 1985 is currently described as the Chester Creek basin from the source to East Branch Chester Creek. The 1985 WQS Triennial Review (proposed rulemaking published at 14 Pa.B. 3473 (September 22, 1984); final rulemaking at 15 Pa.B. 544 (February 16, 1985)) redesignated "Goose Creek" from TSF (trout stocked fishes) to WWF (warm water fishes). The Preamble for that rulemaking describes "Goose Creek" as originating in West Goshen Township, Chester County, Pennsylvania and flowing southeastward for approximately five miles to its confluence with East Branch Chester Creek. The "Goose Creek" drainage area includes portions of West Chester Borough and West Goshen, Westtown, and Thornbury Townships in Chester County and a small portion of Thornbury Township, Delaware County. The West Goshen sewage treatment plant also discharges to Goose Creek. The Corrections Package (proposed publication at August 3, 1996 (26 Pa.B. 3637); final publication at June 28, 1997 (27 Pa.B. 3050)) changed the reference in section 93.9 G from Goose Creek to Unnamed Tributary to East Branch Chester Creek at RM 0.4 ("Goose Creek"). This change was made erroneously. The 1996 Preamble stated that "*Goose Creek is not found on topos or in Gazetteer of Streams, and is a local name for an UNT (#00605, near State Rt 92".* This change was incorrect because it directly contradicts the description for Goose Creek in the Preamble of the 1985 WQS Triennial Review. Because of this change, the section that is WWF was actually switched to a different stream in the Chester Creek basin. The Blue Eye Run Package was published as a proposed rulemaking at June 20, 2009 (39 Pa.B. 3043) and the final rulemaking was published at April 3, 2010 (40 Pa.B. 1734). DEP replaced the stream name listing for UNT 00605 to East Branch Chester Creek at RM 0.4 ("Goose Creek") with Westtown Run. This change was made to be consistent with an electronic topographical GIS map layer that named this stream Westtown Run. Westtown Run is also named as such in the 1997 topo quad. Westtown Run is not labeled on the 2010 or 2013 topo quad. Westtown Run is not named as such on the NHD Flowline. According to Chapter 93.9G, Westtown Run (stream code 00605) is currently designated WWF, MF but it should be TSF, MF.

Clarifying language is being proposed for two zone descriptions in the East Branch Brandywine Creek basin to indicate that the unnamed tributaries with mouths within East Brandywine and Uwchlan Townships are included in the HQ-TSF designation.

The Board proposes to insert the correct name for Stoney Creek. It currently appears in Section 93.9g as Stony Creek.

The Brandywine Creek basin is being reformatted to incorporate several named tributaries including Craigs Mill Run, Wilson Run, and Beaver Creek.

Section 93.9j. Drainage List J.
A clarification is proposed to Section 93.9j. Additional language is being added to the zone description for Roaring Brook to indicate that the downstream limit of the special protection portion of the basin does not include the Elmhurst Reservoir.

Section 93.9k. Drainage List K.
Newport Creek was inadvertently omitted from the code during a 1978-1979 rulemaking which reformatted a portion of Section 93.9k. The Board is proposing to correct this omission by inserting Newport Creek as a named tributary to the Susquehanna River.

Section 93.9l. Drainage List L.
The Board proposes to reformat the entire drainage list to eliminate the confusion associated with named tributaries in the West Branch Susquehanna River basin that are included under current listings of "unnamed tributaries," correct a number of misspelled streams and remove named tributaries that are, in fact, unnamed tributaries according to the GNIS database.

Section 93.9l is being updated to reflect the current NHD flowline for the headwaters of the Marsh Creek basin. The headwaters of the Marsh Creek basin originate from the confluence of Charleston Creek and Morris Branch, of which, Kelsey Creek is a tributary. Chapter 93 currently lists Charleston and Kelsey as tributaries to Marsh Creek.

Corrections are being proposed to the headwaters of Logan Branch within Bald Eagle Creek basin. Historically, UNT 23007 was considered to be a tributary to the Logan Branch (Stream Code 22997) and is currently listed as such in Section 93.9l. However, according to the NHD flowline, the headwaters of the Logan Branch is stream code 23007 and a portion of stream code 22997 from the source to confluence with 23007 is depicted as the unnamed tributary to Logan Branch. Due to the fact that the remaining portion of 22997 is still considered to be Logan Branch, UNT 23007 is being replaced with the following entry format: "Tributary at X;Y". This format should eliminate any confusion associated with using the 5-digit stream code.

Section 93.9m. Drainage List M.
Designated uses for the lower portions of Bowersox Run and Erb Run are currently missing from Section 93.9m. Presently, Chapter 93 only lists designated use information for each stream from its source to FAS (Federal Aid Secondary Highway) 690. Bowersox and Erb are not currently recognized by GNIS as the official names of these tributaries; therefore, the names will be replaced in section 93.9m with UNT 17823 (locally known as Bowersox Run) and UNT 17821 (locally known as Erb Run). These streams were included in Comprehensive Water Quality Management Program (COWAMP) Area 6. DER published a notice of recommended revisions to Water Quality Criteria on March 4, 1978 (8 Pa.B. 511) and solicited written testimony until May 18, 1978. According to the summary of public comments received by DER (dated December 5, 1978), numerous recommendations were received to designate specific waters used for public water supply as either Exceptional Value (EV) or High Quality (HQ) waters. The headwaters of Bowersox Run and Erb Run were recommended for upgrade to EV. DER did not agree with the EV recommendation, but it did agree that the water supply segments of those waters deserved a HQ designation. Bowersox Run and Erb Run, which did not appear as named tributaries in the March 4, 1978 notice, were included as named tributaries to Middle Creek in

the proposed rulemaking published on December 23, 1978 (8 Pa.B. 3665). However, only the upper HQ portions of the basin were included in the proposed rule. The lower portions of the basins from FAS 690 to the mouths were inadvertently omitted. This omission was carried over into the final rulemaking published September 8, 1979 (9 Pa.B. 3051). At the time of the March 4, 1978 publication, these streams were considered to be unnamed tributaries to Middle Creek and therefore carried a CWF designated use. The appropriate designated use for the lower portions of these two streams is currently CWF. The proposed changes will add entries for both streams for the lower segments to their mouths. The zone descriptions for the upper portions are also being updated for clarification purposes by replacing FAS 690 with T3008 (Paxtonville Road.)

Section 93.9n. Drainage List N.

The Board proposes to reformat the West Branch Juniata River basin in Section 93.9n to eliminate the confusion associated with named tributaries to the Raystown Branch of the Juniata River that are included under current listings of "unnamed tributaries."

Section 93.9o. Drainage List O.

The Board proposes to correct an omission that occurred during the 1978-1979 rulemaking. Trout Run originates in Perry County, flows through a small portion of western Cumberland County and eventually enters the Conodoguinet Creek in Franklin County. The March 1978 proposed rulemaking (8 Pa.B. 511) lists the entire Trout Run basin as a conservation area. It also lists the Trout Run basin from the source to the water supply dam as a wilderness trout stream. The September 1979 final rulemaking (9 Pa.B. 3051) designates the Trout Run basin from the source to the water supply dam as EV. The portion of Trout Run basin which lies downstream of the dam should have been designated as HQ, but it was inadvertently omitted from Chapter 93 and has continued to be missing.

During the previous triennial review, the Board deleted DO_4 from the Water Quality Standards. This standard applied to HQ-CWF streams. Since the criteria for HQ streams is based on the maintenance of existing water quality, the dissolved oxygen (DO) criterion for HQ-CWF streams was in contradiction to the expectation that existing quality will be protected and maintained for all High Quality streams. Chapter 93 no longer contains a DO_4 criterion. However, Section 93.9o contains one exception to the criteria that references DO_4, which is the Yellow Breeches Creek, main stem from LR 21012 to Mouth. The DO exception for the lower portion of the Yellow Breeches has appeared in the code since at least 1968 to protect the world-renowned trout fishery that exists in this stream. The Board recommends removing the reference to DO_4 and replacing it with equivalent language (DO = 7.0 mg/L, June 1 to Sept. 30). Since the DO_1 standard was also updated during the previous triennial review to a value more protective than 7.0 mg/L during October 1 to May 31, the more protective standard of DO_1 should be in place during that time period. Therefore, DO=7.0 mg/L will only apply during the time period stipulated to ensure the maximum level of protection.

Bow Creek and Boyds Run are proposed to be added to Section 93.9o as named tributaries. Bow Creek is a tributary to Swatara Creek. Boyds Run is a tributary to the Susquehanna River.

The Board is proposing corrections to the headwaters of Muddy Creek to be consistent with the NHD flowline. UNT 07784 is now the main stem of Muddy Creek and designated WWF. It was previously recognized by DEP as a tributary to Muddy Creek. The headwaters of Muddy Creek are now considered to be an unnamed tributary to Muddy Creek and designated TSF. No changes are being made to the designated uses of these streams as a result of these corrections. The stream segment protected for WWF will continue to be protected at that level, and the stream segment protected for TSF will continue to be protected for TSF.

In Section 93.9o, the Board proposes to relocate several misplaced stream entries in the Pequea Creek basin. These unnamed tributaries were referred to by river mile index and were inserted incorrectly into the drainage list. River mile index references will be removed from the entries and replaced with UNT 07451 and UNT 07452 and moved to their proper location within the code.

The Board is proposing a clarification to the zone description for the headwaters of Black Run to ensure that it is consistent with the NHD Flowline and the actual fluvial geomorphology while accurately portraying what was set forth in the Cooks Creek Package. DER's 1989 special protection report indicates "segments of Black Run flowing through Nottingham Park (basin upstream of confluence with UNT 07007" should be redesignated EV. The mouth of UNT 07006 was originally described as being downstream of the mouth of 07007 through reference to river mile. At the time of the Cooks Creek Package, the stream directory confirmed that 07006 was downstream from 07007. Since the Cooks Creek Package, road work in the area caused movement of the mouth of the stream and the NHD Flowline now depicts 07006 as entering Black Run upstream of 07007 at RM 2.50. The correction will replace "RM 2.50" with UNT 07006.

Reynolds Run was designated as a conservation area in 1973 and thus received a designated use of HQ-CWF in the 1979 final rulemaking. Several streams in the area including Reynolds Run were subsequently re-evaluated in 1989. An October 1989 stream report produced by the DEP showed that the streams were largely affected by agriculture and were actually supporting warm-water biota. The report recommended that McCreary Run and Reynolds Run be redesignated as HQ-TSF. The streams were approved for redesignation in the Cooks Creek Package (21 Pa.B. 5511; Nov. 30, 1991.) At that time, Chapter 93 was changed to reflect the redesignation to HQ-TSF; however, a duplicate entry for Reynolds Run was also inadvertently introduced at that time. During a later rulemaking package in 1997, the duplicate entry was removed, but the designation for Reynolds Run was also changed back to HQ-CWF. Since there is no known data or reports to suggest that Reynolds Run was achieving a use of HQ-CWF at that time, it is being viewed as an error in the code. The Board is proposing to restore the intended designation of HQ-TSF for Reynolds Run.

Section 93.9p. Drainage List P.

The entire drainage list is proposed for reformatting to eliminate the confusion associated with named tributaries in the Allegheny River basin that are included under current listings of "unnamed tributaries" and remove named tributaries that are, in fact, unnamed tributaries according to the GNIS database.

The proposed correction to Dingman Run will remove the zone description "Main Stem" and restore it to "Basin." Dingman Run was a placeholder in the code during a previous rulemaking package (French Creek Package) to change the entry above it, which is Mill Creek. During the rulemaking process, Dingman Run erroneously picked up "Main Stem" as the zone description.

Duplicate entries for Tunungwant Creek and McCrea Run were removed from Section 93.9p.

Section 93.9q. Drainage List Q.
The entire drainage list is proposed for reformatting to eliminate the confusion associated with named tributaries in the Allegheny River basin that are included under current listings of "unnamed tributaries" and remove named tributaries that are, in fact, unnamed tributaries according to the GNIS database.

The Board proposes to update the stream listing to include the correct name for Minister Creek. The stream is currently and incorrectly referred to as Minister Run.

Section 93.9r. Drainage List R.
The entire drainage list is proposed for reformatting to eliminate the confusion associated with named tributaries in the Clarion River basin that are included under current listings of "unnamed tributaries" and remove named tributaries that are, in fact, unnamed tributaries according to the GNIS database.

The Board is proposing to delete an erroneous entry for Mill Run and to update the stream listing to include the correct name for Cathers Run. The stream is currently and incorrectly referred to as Cather Run.

According to the GNIS database, Lost Run is not registered as an official name for stream code 50397. Lost Run will be replaced with UNT 50397.

Section 93.9s. Drainage List S.
In Section 93.9s, the Board proposes to update the stream listing to include several named tributaries to Mahoning Creek including Jackson Run, Hamilton Run, Cave Run, and Graffius Run. These four streams were previously unnamed tributaries. Wiskey Creek, which is a named tributary to the Allegheny River, is also being added to the drainage list.

The proposed correction to the Cowanshannock Creek basin will remove "Unnamed" from the entry "Unnamed Tributaries to Cowanshannock Creek; Basins, Huskins Run to Mouth" to incorporate several named tributaries that currently do not appear in the code (Spra Run, Mill Run, and Long Run.)

Section 93.9t. Drainage List T.
In Section 93.9t, the Board proposes to update the stream listing to include several named tributaries that currently do not appear in the code including Hoffman Run, Kaufman Run, and Hillside Run.

According to the GNIS database and the NHD flowline, Trout Run is not a direct tributary to the Little Conemaugh River. It is a tributary to Kane Run, which is a tributary to the Little Conemaugh. The proposed correction will remove Trout Run and insert Kane Run.

Section 93.9v. Drainage List V.
In Section 93.9v, the Board proposes to update the stream listing to include several named tributaries that currently do not appear in the code including Miller Run, Rice Run, Parsons Run and Lost Run.

Section 93.9w. Drainage List W.
The Board proposes to correct a misspelling for Shenango River in the fourth entry for unnamed tributaries to the Shenango River.

Section 93.9x. Drainage List X.
The Board proposes to update the stream listing to include the Bac_2 Bacteria criterion, which, until this rulemaking has been located in Table 3, Section 93.7. There has been confusion that the Bac_2 criterion should be applied statewide since this criterion was in Table 3 and the Critical Use is identified as PWS, which is listed as a statewide water use in Table 2. DEP's investigation has shown that the current-day Bac_2 was developed and implemented as a site-specific criterion (originally identified as f_2 in the Sanitary Water Board criteria). Dating back to the adoption of Article 301 Water Quality Criteria by the Sanitary Water Board in 1967, this criterion had been applied as an exception to select waters where water contact sport (WCS – 3.3) was removed. Originally, this coliform-based criterion applied to specific zones of the Delaware Estuary or several tributaries, and to portions of Erie Harbor and Presque Isle Bay. As a result of rulemakings through 1979, the references to Bac_2 in the lower Delaware and these tributaries was replaced by specific criteria adopted by the Delaware River Basin Commission. Therefore, since 1979 Bac_2 has exclusively only applied to the Lake Erie (Outer Erie Harbor and Presque Isle Bay) waters in the Harbor area and central channel dredged and maintained by United States Army Corps of Engineers. These proposed updates should provide that clarification.

Section 93.9z. Drainage List Z.
In Section 93.9z, the Board proposes to update the stream listing to include Thompson Run, which is a named tributary to Wills Creek that is presently not listed in Section 93.9z.

Exceptions for Fishable/Swimmable Waters

Part of the triennial review requires that states reexamine water body segments that do not meet the fishable or swimmable uses specified in Section 101(a)(2) of the Federal Clean Water Act. DEP evaluated the two Pennsylvania water bodies where the uses are not currently met: (1) the Harbor Basin and entrance channel to Outer Erie Harbor/Presque Isle Bay (Drainage List X, § 93.9x) and (2) several zones in the Delaware Estuary (Drainage Lists E and G, §§ 93.9e and 93.9g).

The swimmable use designation was deleted from the Harbor Basin and entrance channel demarcated by U.S. Coast Guard buoys and channel markers on Outer Erie Harbor/ Presque Isle Bay because pleasure boating and commercial shipping traffic pose a serious safety hazard in

this area. This decision was further supported by a Use Attainability Analysis (UAA) study conducted by DER in 1985. Because the same conditions and hazards exist today, no change to the designated use for Outer Erie Harbor/Presque Isle Bay is proposed.

In April 1989 DER cooperated with the Delaware River Basin Commission (DRBC), U.S. EPA and other DRBC signatory states on a comprehensive UAA study in the lower Delaware River and Delaware Estuary. This study resulted in appropriate recommendations relating to the swimmable use, which DRBC included in its regulations for water use classifications and water quality criteria for portions of the tidal Delaware River in May 1991. The appropriate DRBC standards were referenced in Sections 93.9e and 93.9g (Drainage Lists E and G) of Pennsylvania's water quality standards regulations in 1994. The primary water contact use remains excluded from the designated uses for river miles 108.4 to 81.8 because of continuing significant impacts from combined sewer overflows, and hazards associated with commercial shipping and navigation.

In addition, limited uses for Zones 3, 4, and upper Zone 5 of the Delaware Estuary basin were also incorporated into Sections 93.9e and 93.9g (Drainage Lists E and G), which also dates back to the original Article 301 Water Quality Criteria that were added to the Sanitary Water Board's Rules and Regulations in 1967 . These are described in Sections 93.9e and 93.9g (Drainage Lists E and G) as WWF (Maintenance Only) and MF (Passage Only) for tidal portions of the basin, from river mile 108.4 to the PA-DE State Border. The current designated uses within these Zones do not include propagation and thus refer to DRBC's standards which were developed to protect fish maintenance and passage only.

Recent data and observations, however, suggest recovery is occurring in propagation for some species in portions of these Zones. Therefore, DRBC initiated an evaluation of available data for resident and anadromous fishes collected since 2000, in an attempt to quantify spawning and early life stages, and the extent of successful reproduction for estuarine species.

Although this review continues, DRBC found that for all nine fish species evaluated - Atlantic Sturgeon, American Shad, Striped Bass, White Perch, Bay Anchovy, Atlantic Silverside, Alewife, Blueback Herring, and Atlantic Menhaden - successful reproduction was clearly demonstrated in one or more of the compromised estuary zones. In addition, moderate to strong reproduction was demonstrated for multiple species in each zone indicating substantial recovery in the propagation use for Zones 3, 4, and upper Zone 5. Weak and inconsistent spawning by Atlantic Sturgeon, and limited spatial recovery in spawning and rearing by American Shad and Striped Bass, suggested that full restoration of the propagation use is not supported by the currently available data for these species. It should be recognized that the demonstrated recovery in the propagation use for these Zones has occurred under the long-term implementation of the current criteria.

DEP continues to work in cooperation with the DRBC, U.S. EPA, and other DRBC signatory states to determine the appropriate criteria that should apply in the lower Delaware River and Delaware Estuary. The parties continue to work to prepare a resolution describing the Commission's next steps for improving the recovery taking place in the lower river and estuary. The parties remain committed to enhancing the lower Delaware River and Delaware Estuary.

Toward that end, DEP is requesting interested parties to submit any data on fish species recovery in the lower Delaware River and Delaware Estuary.

F. Consideration for Next Water Quality Standards Review

The Department is seeking comments on whether the definition of *Outstanding National, State, regional or local resource water* in § 93.1 should be revised in the next water quality standards review to clarify how conservation easements can be considered in an evaluation for a stream redesignation. The Department is also seeking comment on a definition of "conservation easements" to describe which types of easements may be considered in the stream evaluation. Based on the comments received during this review, the Department may recommend that the Board clarify the use of conservation easements in the water quality program in a future proposed rulemaking.

The existing regulations allow a stream that is protected for the high quality use to be redesignated to exceptional value use if it is an outstanding National, State, regional or local resource water. This term, along with related terms, are defined in § 93.1. Conservation easements protecting waters being evaluated for classification as exceptional value waters are often submitted with petitions for stream redesignations, since many are designed to protect water quality in perpetuity. In many conservation easement documents, resource management plans are included that describe water quality protections. The Department is seeking comments on suggested language to guide decisions concerning which types of conservation easements are appropriate for use in this stream redesignation context. Suggested language that the Department may consider recommending to the Board in a future proposed rulemaking is as follows (language added to the existing definition is in bold):

Outstanding National, State, regional or local resource water-- A surface water for which a National or State government agency has adopted water quality protective measures in a resource management plan, or regional or local governments have adopted coordinated water quality protective measures along a watershed corridor. **The term includes a surface water protected by one or more conservation easements situated along a watershed corridor, in a manner that provides protection to significant reaches of the corridor.**

Conservation easements-- Easements held in perpetuity, where a governmental unit with taxation powers, a national government agency, or a state government agency is the holder, long-term steward, or responsible beneficiary related to repair and perpetual maintenance of the easement. Such easements must be recorded, provide for the maintenance and enhancement of water quality through water quality protective measures and cannot be revised, rescinded, or amended by any party.

If commentators recommend alternative language, they are encouraged to provide justification for their language.

G. Benefits, Costs, and Compliance

Benefits

Overall, the Commonwealth, its citizens, and natural resources will benefit from these recommended changes because they provide the appropriate level of protection to preserve the integrity of existing and designated uses of surface waters in this Commonwealth. Protecting water quality provides economic value to present and future generations in the form of a clean water supply for human consumption, wildlife, irrigation and industrial use; recreational opportunities such as fishing (also for consumption), water contact sports and boating; and aquatic life protection. It is important to realize these benefits and to ensure opportunities and activities continue in a manner that is environmentally, socially and economically sound. Maintenance of water quality ensures its future availability for all uses.

Compliance Costs

The proposed amendments to Chapter 93 may impose additional compliance costs on the regulated community. These regulatory changes are necessary to improve total pollution control. The expenditures necessary to meet new compliance requirements may exceed that which is required under existing regulations.

The proposed amendments will be implemented through DEP's permit and approval actions. Persons with an existing discharge or proposing to add a new discharge point to a stream could be adversely affected if they need to provide a higher level of treatment or best management practices to meet any new standard established by this regulation. For example, increased costs may take the form of higher engineering, construction or operating cost for point source discharges. Treatment costs and best management practices are site-specific and depend upon the size of the discharge in relation to the size of the stream and many other factors. It is therefore not possible to precisely predict the actual change in costs. Economic impacts would primarily involve the potential for higher treatment costs for new or expanded discharges to streams to meet any new water quality standards requirements. The initial costs resulting from the installation of technologically advanced wastewater treatment processes and best management practices may be offset by potential savings from and increased value of improved water quality through more cost-effective and efficient treatment over time.

Compliance Assistance Plan

The regulatory revisions have been developed as part of an established program that has been implemented by the Department since the early 1980s. The revisions are consistent with and based on existing DEP regulations. The revisions extend appropriate protections to all waterbodies of this Commonwealth and are consistent with antidegradation requirements established by the Federal Clean Water Act (33 U.S.C.A §§1251–1387) and The Clean Streams Law. All surface waters in this Commonwealth are afforded a minimum level of protection through compliance with the water quality standards, which prevent pollution and protect existing water uses.

The proposed amendments will be implemented through DEP's permit and approval actions. For example, the National Pollutant Discharge Elimination System (NPDES) permitting program bases effluent limitations on the uses of the stream, and the water quality criteria developed to maintain those uses. These effluent limits are established to assure water quality is protected and maintained.

Paperwork Requirements

The proposed regulatory revisions should have no new direct paperwork impact on the Commonwealth, local governments and political subdivisions, or the private sector. These regulatory revisions are based on existing DEP regulations and simply mirror the existing use protection that is already in place for these streams.

H. Pollution Prevention

The Federal Pollution Prevention Act of 1990 (42 U.S.C.A. §§13101-13109) established a national policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. DEP encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally-friendly materials, more efficient use of raw materials, and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance.

Water quality standards are a major pollution prevention tool because they protect water quality and designated and existing uses. The proposed amendments will be implemented through DEP's permit and approval actions. For example, the National Pollutant Discharge Elimination System (NPDES) bases effluent limitations on the designated use of the stream and the water quality criteria necessary to achieve designated and existing uses.

I. Sunset Review

The Board is not proposing to establish a sunset date for these regulations because they are needed for the Department to carry out its statutory authority. The Department will continue to closely monitor these regulations for their effectiveness and recommend updates to the Board as necessary.

J. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on October 6, 2017, the Department submitted a copy of this proposed rulemaking and a copy of a Regulatory Analysis Form to the Independent Regulatory Review Commission (IRRC) and to the Chairpersons of the House and Senate Environmental Resources and Energy Committees. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed rulemaking within 30 days of the close of the public comment period. The comments, recommendations or objections must specify the regulatory review criteria in section 5.2 of the Regulatory Review Act (71 P.S. § 745.5b) which have not been met. The Regulatory Review Act specifies detailed procedures for review, prior to final publication of the rulemaking, by the Department, the General Assembly, and the Governor.

K. Public Comments

Interested persons are invited to submit to the Board written comments, suggestions, support or objections regarding the proposed rulemaking. Comments, suggestions, support or objections must be received by the Board by December 29, 2017.

Comments may be submitted to the Board online, by e-mail, by mail or express mail as follows.

Comments may be submitted to the Board by accessing eComment at http://www.ahs.dep.pa.gov/eComment.

Comments may be submitted to the Board by e-mail at RegComments@pa.gov. A subject heading of the proposed rulemaking and a return name and address must be included in each transmission.

If an acknowledgment of comments submitted online or by e-mail is not received by the sender within 2 working days, the comments should be retransmitted to the Board to ensure receipt. Comments submitted by facsimile will not be accepted.

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

L. Public Hearings

The Board will hold three public hearings for the purpose of accepting comments on this proposed rulemaking. The hearings will be held at 2 p.m. on the following dates:

December 6, 2017 Department of Environmental Protection
Northeast Regional Office
2nd Floor Conference Room
2 East Main Street
Norristown, PA 19401

December 8, 2017 Department of Environmental Protection
South Central Regional Office
Susquehanna Conference Room
909 Elmerton Avenue
Harrisburg, PA 17110

December 14, 2017 Department of Environmental Protection
Southwest Regional Office
Waterfront Conference Rooms A and B
400 Waterfront Drive
Pittsburgh, PA 15222

Persons wishing to present testimony at a hearing are requested to contact the Environmental Quality Board, P. O. Box 8477, Harrisburg, PA 17105-8477, (717) 787-4526 at least 1 week in advance of the hearing to reserve a time to present testimony. Oral testimony is limited to 5 minutes for each witness. Witnesses are requested to submit three written copies of their oral testimony to the hearing chairperson at the hearing. Organizations are limited to designating one witness to present testimony on their behalf at each hearing.

Persons in need of accommodations as provided for in the Americans with Disabilities Act of 1990 should contact the Board at (717) 787-4526 or through the Pennsylvania AT&T Relay Service at (800) 654-5984 (TDD) or (800) 654-5988 (voice users) to discuss how the Board may accommodate their needs.

PATRICK McDONNELL
Chairperson

ANNEX A

TITLE 25. ENVIRONMENTAL PROTECTION
PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION
Subpart C. PROTECTION OF NATURAL RESOURCES
ARTICLE II. WATER RESOURCES

CHAPTER 93. WATER QUALITY STANDARDS

* * * * *

§ 93.7. Specific water quality criteria.

(a) Table 3 displays specific water quality criteria and associated critical uses. The criteria associated with the Statewide water uses listed in § 93.4, Table 2 apply to all surface waters, unless a specific exception is indicated in § § 93.9a—93.9z. These exceptions will be indicated on a stream-by-stream or segment-by-segment basis by the words ''Add'' or ''Delete'' followed by the appropriate symbols described elsewhere in this chapter. Other specific water quality criteria apply to surface waters as specified in § § 93.9a—93.9z. All applicable criteria shall be applied in accordance with this chapter, Chapter 96 (relating to water quality standards implementation) and other applicable State and Federal laws and regulations.

TABLE 3

Parameter	*Symbol*	*Criteria*	*Critical Use**
		* * * * *	
Ammonia Nitrogen	Am	**[The maximum total ammonia nitrogen concentration (in mg/L) at all times shall be the numerical value given by: un-ionized ammonia nitrogen (NH_3-N) x ($\log^{-1}$[pK_T-pH] + 1), where: un-ionized ammonia nitrogen = $0.12\ x\ f(T)/f(pH)$** $f(pH) = 1 + 10^{1.03(7.32-pH)}$ $f(T) = 1, T \geq 10°C$ $f(T) = \frac{1 + 10^{(9.73-pH)}}{1 + 10^{(pK_T-pH)}}, T < 10°C$ **and** $pK_T = 0.090 + \left[\frac{2730}{(T+273.2)}\right]$**, the dissociation constant for ammonia in water.** **The average total ammonia nitrogen concentration over any 30 consecutive days shall be less than or equal to the numerical value given by:** **un-ionized ammonia nitrogen (NH_3-N) X ($\log^{-1}$[pK_T-pH] + 1), where:** **un-ionized ammonia nitrogen =** $0.025\ x\ f(T)/f(pH)$ $f(pH) = 1, pH \geq 7.7$ $f(pH) = 10^{0.74(7.7-pH)}, pH < 7.7$ $f(T) = 1, T \geq 10°C$ $f(T) = \frac{1 + 10^{(9.73-pH)}}{1 + 10^{(pK_T-pH)}}, T < 10°C$ **The pH and temperature used to derive the appropriate ammonia criteria shall be determined by one of the following methods:** **1) Instream measurements, representative of median pH and temperature—July through September.** **2) Estimates of median pH and temperature—July through September—based upon available data or values determined by the Department. For purposes of calculating effluent limitations based on this value the accepted design stream flow shall be the actual or estimated lowest 30-consecutive-day average flow that occurs once in 10 years.]**	CWF, WWF, TSF, MF

		In freshwater, the concentration of total ammonia nitrogen (TAN) shall not exceed (more than once in three years on average), the concentration calculated (in milligrams of TAN per liter) by the following: **1-hour average Criteria Maximum Concentration (CMC) acute criterion equation:** $$CMC = MIN\left(\left(\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}\right),\left(0.7249\times\left(\frac{0.0114}{1+10^{7.204-pH}}+\frac{1.6181}{1+10^{pH-7.204}}\right)\times\left(23.12\times10^{0.036\times(20-T)}\right)\right)\right)$$ **30-day average Criteria Continuous Concentration (CCC) chronic criterion equation:** $$CCC = 0.8876\times\left(\frac{0.0278}{1+10^{7.688-pH}}+\frac{1.1994}{1+10^{pH-7.688}}\right)\times\left(2.126\times10^{0.028\times(20-MAX(T,7))}\right)$$ **Chronic concentration is not to exceed 2.5 times the CCC as a 4-day average within 30 days (e.g. 2.5 X 1.9 mg TAN/L at pH 7 and 20°C or 4.8 mg TAN/L) more than once in 3 years on average.**	
		The pH and temperature used to derive the appropriate ammonia criteria shall be determined by instream measurements or best estimates, representative of the median pH and temperature of the receiving stream for the applicable time period and design conditions.	
Bacteria	Bac_1	**[(Fecal coliforms/ 100 ml)]** ***(Escherichia coli*/100 ml)** - During the swimming season (May 1 through September 30), the maximum **[fecal coliform]** ***E. coli*** level shall be a geometric mean of **[200]** **126** per 100 milliliters (ml) based on **[a minimum of five]** consecutive samples, each sample collected on different days during a 30-day period. No more than 10% of the total samples taken during a 30-day period may exceed **[400]** **410** per 100 ml. **(Fecal coliforms/ 100 ml)** For the remainder of the year, the maximum fecal coliform level shall be a geometric mean of 2,000 per 100 milliliters (ml) based on a minimum of five consecutive samples collected on different days during a 30-day period.	WC

	[Bac2	**(Coliforms/100 ml)—Maximum of 5,000/100 ml as a monthly average value, no more than this number in more than 20 of the samples collected during a month, nor more than 20,000/100 ml in more than 5% of the samples.**	**PWS]**
		* * * * *	

§ 93.8a. Toxic substances.

* * * * *

(b) Water quality criteria for toxic substances shall be established as described under Chapter 16 (relating to water quality toxics management strategy—statement of policy). The Department will develop water quality criteria for toxic substances not listed in Chapter 93, Table 5 in accordance with § 93.8d (relating to development of site-specific water quality criteria) and Chapter 16. **[Appendix A, Table 1A in Chapter 16 lists]** **The Department will maintain a publicly available online table of** site-specific human health and aquatic life criteria that have been recently developed or adopted by the Department based on approved methodologies and the best scientific information currently available. **For any analytical procedures or detection limits that are not EPA approved,** **[T]**the approved analytical procedures and detection limits for these substances will also be listed in Chapter 16. Chapter 16, along with changes made to it, is hereby specifically incorporated by reference.

* * * * *

(j) The requirements for discharges to and antidegradation requirements for the Great Lakes System are as follows:

* * * * *

(3) Statewide antidegradation requirements in this chapter and Chapter 96 (relating to water quality standards implementation) **[and in the Federal regulation in 40 CFR 131.32(a) (relating to Pennsylvania)]** as applicable, apply to all surface waters of the Great Lakes System.

* * * * *

§ 93.8c. Human health and aquatic life criteria for toxic substances.

(a) Table 5 (relating to water quality criteria for toxic substances) and **[Chapter 16, Appendix A, Table 1A (relating to site-specific water quality criteria for toxic substances)]** **the table of site-specific criteria maintained by the Department** list the aquatic life and human health criteria for toxic substances which the Department uses in development of effluent limitations in NPDES Permits and for other purposes. The human health criteria, which include probable modes of exposure (such as, but not limited to ingestion from drinking water and fish consumption, inhalation and dermal absorption), are further defined as to the specific effect (that is, cancer or threshold health effects). For those aquatic life criteria which are **[hardness related]** **a function of local water quality conditions** and **are** specified as a formula, such as several of the heavy metals, **[the Department will use the specific hardness of the receiving stream after mixing with the waste discharge in calculating criteria on a case-by-case basis]** **the hardness and pH values used to derive the appropriate water quality criteria shall be determined by instream measurements or best estimates, representative of the median concentrations or conditions of the receiving stream for the applicable time period and design conditions. The priority pollutants are a set of specific chemical pollutants regulated**

by EPA. The priority pollutant numbers (PP NO) used by the EPA to identify priority pollutants are included in Table 5 for reference purposes. The toxics without a PP NO are nonpriority pollutants or State-derived criteria.

(b) Some of these criteria may be superseded for the Delaware Estuary, Ohio River Basin, Lake Erie Basin, and Genesee River Basin under interstate and international compact agreements with the Delaware River Basin Commission, Ohio River Valley Sanitation Commission and International Joint Commission, respectively. **[The criteria in Table 5 do not apply to the Great Lakes System.]** Water quality criteria for the Great Lakes System are contained in § 93.8e (relating to special criteria for the Great Lakes System) and Table 6 (relating to Great Lakes Aquatic Life and Human Health Criteria). **Criteria in Table 5 may apply to the Great Lakes System for those substances not listed in Table 6.** Criteria may be developed for the Great Lakes System for substances other than those listed in **[§ 93.8e] Tables 5 and 6,** under the methodologies in § 16.61 (relating to special provisions for the Great Lakes system).

TABLE 5

WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

PP NO	*Chemical Name*	*CAS Number*	Fish and Aquatic Life Criteria *Criteria Continuous Concentrations (ug/L)*	Fish and Aquatic Life Criteria *Criteria Maximum Concentration (ug/L)*	Human *Health Criteria (ug/L)*	
1M	ANTIMONY	07440360	220	1100	5.6 †	H
2M	ARSENIC	07440382	150 (As3+)	340 (As3+)	10	H
3M	BERYLLIUM	07440417	N/A	N/A	N/A	-
4M	CADMIUM	07440439	*{1.101672-(ln[H]x0.041838)}x Exp(0.7409xln[H]-4.719) (ex: @H=100, CCC=0.25)	*{1.136672-(ln[H]x0.041838)}x Exp(1.0166xln[H]-3.924) (ex: @H=100, CMC=2.0)	N/A	-
5M	CHROMIUM III	16065831	*0.860xExp(0.819xln[H]+0.6848) (ex: @H=100, CCC=74)	*0.316xExp(0.819xln[H]+3.7256) (ex: @H=100, CMC=570)	N/A	-
5M	CHROMIUM VI	18540299	*[10]11	*16	N/A	-
6M	COPPER	07440508	*0.960xExp(0.8545xln[H]-1.702) (ex: @H=100, CCC=9.0)	*0.960xExp(0.9422xln[H]-1.700) (ex: @H=100, CMC=13)	N/A	-
7M	LEAD	07439921	*{1.46203-(ln[H]x0.145712)}x Exp(1.273xln[H]-4.705) (ex: @H=100, CCC=2.5)	*{1.46203-(ln[H]x0.145712)}x Exp(1.273xln[H]-1.460) (ex: @H=100, CMC=65)	N/A	-
8M	MERCURY	07439976	*0.77 (Hg2+)	*1.4 (Hg2+)	0.05	H
9M	NICKEL	07440020	*0.997xExp(0.846xln[H]+0.0584) (ex: @H=100, CCC=52)	*0.998xExp(0.846xln[H]+2.255) (ex: @H=100, CMC=470)	[610]600 †	H
10M	SELENIUM	07782492	*4.6	N/A	N/A	-
11M	SILVER	07440224	N/A	*0.850xExp(1.72xln[H]-6.590) (ex: @H=100, CMC=3.2)	N/A	-
12M	THALLIUM	07440280	13	65	0.24 †	H

13M	ZINC	07440666	*0.986xExp(0.8473xln[H]+0.884) (ex: @H=100, CCC=120)	*0.978xExp(0.8473xln[H]+0.884) (ex: @H=100, CMC=120)	N/A	-
14M	CYANIDE, FREE	00057125	5.2	22	**[140]4.0**	H
1A	2-CHLOROPHENOL	00095578	110	560	**[81]30**	H
2A	2,4-DICHLORO[-]PHENOL	00120832	340	1700	**[77]10**	H
3A	2,4-DIMETHYL[-]PHENOL	00105679	130	660	**[380]100**	H
4A	4,6-DINITRO-o-CRESOL **(2 METHYL-4,6-DINITROPHENOL)**	00534521	16	80	**[13]2.0**	H
5A	2,4-DINITRO[-]PHENOL	00051285	130	660	**[69]10**	H
E	**DINITROPHENOLS**	**25550587**	**N/A**	**N/A**	**10**	**H**
6A	2-NITROPHENOL	00088755	1600	8000	N/A	-
7A	4-NITROPHENOL	00100027	470	2300	N/A	-
8A	P-CHLORO-m-CRESOL **(3 METHYL-4-CHLOROPHENOL)**	00059507	30	160	**[N/A]500**	[-]**H**
9A	PENTACHLORO[-]PHENOL	00087865	Exp(1.005x[pH]-5.134) @pH= 6.5 7.8 9.0 Crit= 4.1 15 50	Exp(1.005x[pH]-4.869) @pH= 6.5 7.8 9.0 Crit= 5.3 19 65	**[0.27]0.03**	CRL
10A	PHENOL	00108952	N/A	N/A	**[10400]4000**	H
E	**2,4,5-TRICHLOROPHENOL**	**00095954**	**N/A**	**N/A**	**300**	**H**
11A	2,4,6-TRICHLOROPHENOL	00088062	91	460	**[1.4]1.5**	CRL
1V	ACROLEIN	00107028	3.0	3.0	**[6.0]3.0**	H
2V	ACRYLONITRILE	00107131	130	650	**[0.051]0.06**	CRL
3V	BENZENE	00071432	130	640	**[1.2]0.58**	CRL
5V	BROMOFORM	00075252	370	1800	**[4.3]7.0**	CRL
6V	CARBON TETRACHLORIDE	00056235	560	2800	**[0.23]0.4**	CRL
7V	CHLORO[-]BENZENE	00108907	240	1200	**[130]100**	H

8V	CHLORODIBRO[-] MO[-]METHANE	00124481	N/A	N/A	[0.40]0.8	CRL
9V	CHLOROETHANE	00075003	N/A	N/A	N/A	-
10V	2-CHLOROETHYL VINYL ETHER	00110758	3500	18000	N/A	-
11V	CHLOROFORM	00067663	390	1900	[5.7]6.5	[CRL]H
12V	DICHLOROBROMO- METHANE	00075274	N/A	N/A	[0.55].95	CRL
14V	1,1-DICHLORO[-]ETHANE	00075343	N/A	N/A	N/A	-
15V	1,2-DICHLORO[-]ETHANE	00107062	3100	15000	[0.38]9.9	CRL
16V	1,1-DICHLORO[-]ETHYLENE	00075354	1500	7500	[33.0]30	H
17V	1,2-DICHLORO[-]PROPANE	00078875	2200	11000	[N/A]0.90	[-]CRL
18V	1,3-DICHLORO[-]PROPYLENE	00542756	61	310	[0.34]0.27	CRL
19V	ETHYLBENZENE	00100414	580	2900	[530]68	H
20V	METHYL BROMIDE	00074839	110	550	[47]100	H
21V	METHYL CHLORIDE	0074873	5500	28000	N/A	-
22V	METHYLENE CHLORIDE	00075092	2400	12000	[4.6]20	CRL
23V	1,1,2,2-TETRA[-]CHLOROETHANE	00079345	210	1000	[0.17]0.2	CRL
24V	TETRACHLORO[-]ETHYLENE	00127184	140	700	[0.69]10	CRL
25V	TOLUENE	00108883	330	1700	[1300]57	H
26V	**[1,2-trans-DICHLORO-ETHYLENE]** **trans-1,2-DICHLOROETHYLENE**	00156605	1400	6800	[140]100	H
[—]D	1,2 cis-DICHLORO[-]ETHYLENE	00156592	N/A	N/A	[12]11	H
27V	1,1,1-TRICHLORO[-]ETHANE	00071556	610	3000	[N/A]10000	[-]H
28V	1,1,2-TRICHLORO[-]ETHANE	00079005	680	3400	[0.59]0.55	CRL
29V	TRICHLORO[-]ETHYLENE	00079016	450	2300	[2.5]0.6	CRL

31V	VINYL CHLORIDE	00075014	N/A	N/A	**[0.025]0.02**	CRL
1B	ACENAPHTHENE	00083329	17	83	**[670]70**	H
2B	ACENAPHTHYLENE	00208968	N/A	N/A	N/A	-
3B	ANTHRACENE	00120127	N/A	N/A	**[8300]300**	H
4B	BENZIDINE	00092875	59	300	**[0.000086] 0.0001**	CRL
5B	BENZO(a)-ANTHRACENE	00056553	0.1	0.5	**[0.0038] 0.001**	CRL
6B	BENZO(a)PYRENE	00050328	N/A	N/A	**[0.0038] 0.0001**	CRL
7B	3,4-BENZO-FLUORANTHENE **(BENZO(b)FLUORANTHENE)**	00205992	N/A	N/A	**[0.0038] 0.001**	CRL
8B	BENZO(ghi)-PERYLENE	00191242	N/A	N/A	N/A	-
9B	BENZO(k)-FLUORANTHENE	00207089	N/A	N/A	**[0.0038] 0.01**	CRL
E	**BIS(CHLOROMETHYL)ETHER**	**00542881**	**N/A**	**N/A**	**0.0002**	**CRL**
10B	BIS(2-CHLORO[-] ETHOXY)METHANE	00111911	N/A	N/A	N/A	-
11B	BIS(2-CHLORO[-] ETHYL)ETHER	00111444	6000	30000	0.030	CRL
12B	**[BIS(2-CHLORO-ISOPROPYL)ETHER] BIS(2-CHLORO-1-METHYLETHYL) ETHER**	00108601	N/A	N/A	**[1400]200**	H
13B	BIS(2-ETHYL[-] HEXYL)PHTHALATE	00117817	910	4500	**[1.2]0.32**	CRL
14B	4-BROMOPHENYL PHENYL ETHER	00101553	54	270	N/A	-
15B	BUTYLBENZYL PHTHALATE	00085687	35	140	**[150]0.1**	H
16B	2-CHLORO[-]NAPHTHALENE	00091587	N/A	N/A	**[1000]800**	H

17B	4-CHLORO[-]PHENYL PHENYL ETHER	07005723	N/A	N/A	N/A	-
18B	CHRYSENE	00218019	N/A	N/A	**[0.0038]** **0.12**	CRL
19B	DIBENZO(a,h)[-]ANTHRACENE	00053703	N/A	N/A	**[0.0038]** **0.0001**	CRL
20B	1,2-DICHLORO[-]BENZENE	00095501	160	820	**[420 for dichloro-benzene]** **1000**	H
21B	1,3-DICHLORO[-]BENZENE	00541731	69	350	**[See 20B]7.0**	H
22B	1,4-DICHLORO[-]BENZENE	00106467	150	730	**[See 20B]300**	H
23B	3,3-DICHLORO[-]BENZIDINE	00091941	N/A	N/A	**[0.021]0.05**	CRL
24B	DIETHYL PHTHALATE	00084662	800	4000	**[17000]600**	H
25B	DIMETHYL PHTHALATE	00131113	500	2500	**[270000]2000**	H
26B	DI-N-BUTYL PHTHALATE	00084742	21	110	**[2000]20**	H
27B	2,4-DINITRO[-]TOLUENE	00121142	320	1600	0.05 for dinitro-toluene	CRL
28B	2,6-DINITRO[-]TOLUENE	00606202	200	990	See 27B	CRL
29B	DI-N-OCTYL PHTHALATE	00117840	N/A	N/A	N/A	-
30B	1,2-DIPHENYL[-]HYDRAZINE	00122667	3	15	0.03	CRL
31B	FLUORANTHENE	00206440	40	200	**[130]20**	H
32B	FLUORENE	00086737	N/A	N/A	**[1100]50**	H
33B	HEXACHLORO[-]BENZENE	00118741	N/A	N/A	**[0.00028]** **0.00008**	CRL
34B	HEXACHLORO[-]BUTADIENE	00087683	2	10	**[0.44]0.01**	CRL
35B	HEXACHLORO[-] CYCLOPENTADIENE	00077474	1	5	**[40]4.0**	H

36B	HEXACHLORO-ETHANE	00067721	12	60	[1.4]0.1	CRL
37B	INDENO(1,2,3-cd)PYRENE	00193395	N/A	N/A	[0.0038] 0.001	CRL
38B	ISOPHORONE	00078591	2100	10000	[35]34	H
39B	NAPHTHALENE	00091203	43	140	N/A	-
40B	NITROBENZENE	00098953	810	4000	[17]10	H
41B	N-NITROSO[-]DIMETHYLAMINE	00062759	3400	17000	[0.00069] 0.0007 †	CRL
42B	N-NITROSODI-N-PROPYLAMINE	00621647	N/A	N/A	0.005 †	CRL
43B	N-NITROSO[-]DIPHENYLAMINE	00086306	59	300	3.3 †	CRL
E	**PENTACHLOROBENZENE**	**608-93-5**	**N/A**	**N/A**	**0.1**	**H**
44B	PHENANTHRENE	00085018	1	5	N/A	-
45B	PYRENE	00129000	N/A	N/A	[830]20	H
E	**1,2,4,5-TETRACHLOROBENZENE**	**00095943**	**N/A**	**N/A**	**0.03**	**H**
46B	1,2,4-TRICHLORO[-]BENZENE	00120821	26	130	[35]0.07	H
1P	ALDRIN	00309002	0.1	3	[0.000049] 0.0000008	CRL
2P	alpha-HEXACHLOROCYCLOHEXANE (HCH) [BHC]	00319846	N/A	N/A	[0.0026] 0.0004	CRL
3P	beta-HEXACHLOROCYCLOHEXANE (HCH) [BHC]	00319857	N/A	N/A	[0.0091] 0.008	CRL
4P	gamma-HEXACHLOROCYCLOHEXANE (HCH) [BHC] (LINDANE)	00058899	N/A	0.95	[0.098]4.2	H
5P	delta-BHC	00319868	N/A	N/A	N/A	-
6P	CHLORDANE	00057749	0.0043	2.4	[0.00080]	CRL

					0.0003	
E	**CHLOROPHENOXY HERBICIDE (2,4-D)**	**00094757**	**N/A**	**N/A**	**1000**	**H**
E	**CHLOROPHENOXY HERBICIDE (2,4,5-TP)**	**00093721**	**N/A**	**N/A**	**100**	**H**
7P	4,4-DDT	00050293	0.001	1.1	**[0.00022] 0.00003**	CRL
8P	4,4-DDE	00072559	0.001	1.1	**[0.00022] 0.00002**	CRL
9P	4,4-DDD	00072548	0.001	1.1	**[0.00031] 0.0001**	CRL
10P	DIELDRIN	00060571	0.056	0.24	**[0.000052] 0.000001**	CRL
11P	alpha-ENDOSUL[-]FAN	00959988	0.056	0.22	**[62 for endosulfan] 20**	H
12P	beta-ENDOSULFAN	33213659	0.056	0.22	**[See 11P]20**	H
13P	ENDOSULFAN SULFATE	01031078	N/A	N/A	**[N/A] 20**	**[-]H**
14P	ENDRIN	00072208	0.036	0.086	**[0.059]0.03**	H
15P	ENDRIN ALDEHYDE	07421934	N/A	N/A	**[0.29]1.0**	H
16P	HEPTACHLOR	00076448	0.0038	0.52	**[0.000079] 0.000006**	CRL
17P	HEPTACHLOR EPOXIDE	01024573	0.0038	0.5	**[0.000039] 0.00003**	CRL
E	**HEXACHLOROCYCLOHEXANE (HCH)-TECHNICAL**	**00608731**	**N/A**	**N/A**	**0.007**	**CRL**
E	**METOXYCHLOR**	**00072435**	**N/A**	**N/A**	**0.02**	**H**
18P	PCB		0.014	N/A	0.000064 for PCBs †	CRL

25P	TOXAPHENE	08001352	0.0002	0.73	**[0.00028]** **0.0007**	CRL
PP	2,3,7,8-TCDD	01746016	N/A	N/A	5.0 E-9 †	CRL
D	ACETONE	00067641	86000	450000	**[3500]700**	H
D	ACRYLAMIDE	00079061	N/A	N/A	0.07	CRL
D	ALUMINUM	07429905	N/A	750	N/A	-
D	BARIUM	07440393	4100	21000	**[2400]1000**	H
D	BENZENE METADISULFONIC ACID	00098486	1600000	2600000	N/A	-
D	BENZENE MONOSULFONIC ACID	00098113	1200000	2000000	N/A	-
D	BENZYL CHLORIDE	00100447	N/A	N/A	0.2	CRL
D	BORON	07440428	1600	8100	**[3100]600**	H
D	2-BUTOXY ETHANOL	00111762	N/A	N/A	700	H
D	COBALT	07440484	19	95	N/A	-
D	p-CRESOL	00106445	160	800	N/A	-
D	CYCLOHEXYLAMINE	00108918	N/A	N/A	1000	H
E	DIAZINON	00333415	0.17	0.17	N/A	-
D	FORMALDEHYDE	00050000	440	2200	**[700]1000**	H
D	2-HEXANONE	00591786	4300	21000	N/A	-
D	LITHIUM	07439932	N/A	N/A	N/A	-
D	METHYLETHYL KETONE	00078933	32000	230000	**[21000]300**	H
D	METHYLISO-BUTYL KETONE	00108101	5000	26000	N/A	-
D	METOLACHLOR	51218452	N/A	N/A	**[69]700**	H
D	NONYLPHENOL	**[00104405]** **84852153**	6.6	28	N/A	-
D	P-PHENOL SULFONIC ACID	00098679	1400000	3500000	N/A	-
D	**[I]1**-PROPANOL	00071238	46000	230000	N/A	-
D	2-PROPANOL	00067630	89000	440000	N/A	-

D	RESORCINOL	01084603	7200		28000	**[2700]3000**	H
D	STRONTIUM	07440246	N/A		N/A	4000	H
D	1,2,3-TRICHLOROPROPANE	00096184	N/A		N/A	**[210]26**	H
D	1,2,4-TRIMETHYLBENZENE	00095636	N/A		N/A	**[72]66**	H
D	1,3,5-TRIMETHYLBENZENE	00108678	N/A		N/A	**[72]66**	H
D	VANADIUM	07440622	100		510	N/A	-
D	XYLENE	01330207	210		1100	**[70000]10000**	H

* * * * *

Acronyms and Footnotes to Table 5

* Indicates dissolved metal criterion; others are total recoverable metals. Each listed dissolved criterion in Table 5 is equal to the corresponding total recoverable criterion before rounding (from the EPA National Ambient Water Quality Criteria Documents) multiplied by the conversion factor (from the Conversion Factors Table); a criterion that is expressed as a hardness (H)-based equation is shown in Table 5 as the conversion factor (listed) multiplied by the hardness criterion equation; an example criterion at hardness=100mg/L is included.

† Indicates criterion based on the exposure inputs of 2 liters per day of drinking water and consumption of 17.5 grams of fish per day, for protection of a 70 Kg person.

CAS—Chemical Abstract Service number

CRL—Cancer risk level at 1×10^{-6}

D – DEP developed criteria

E – EPA developed criteria

H—Threshold effect human health criterion; incorporates additional uncertainty factor for some Group C carcinogens.

ln [H]—Natural Logarithm of the Hardness of stream as mg/l $CaCO_3$

ug/L—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

§ 93.8d. Development of site-specific water quality criteria.

(a) The Department will consider a request for site-specific criteria when one or more of the following apply:

(1) There exist site-specific biological or chemical conditions of receiving waters which differ from conditions upon which the water quality criteria were based.

(2) More stringent criteria are needed for a parameter listed in § 93.7 (relating to specific water quality criteria) to protect more sensitive, intervening uses.

(3) There exists a need for a site-specific criterion for a substance not listed in § 93.8c, Table 5 (relating to water quality criteria for toxic substances).

(b) The request for site-specific criteria must include the results of scientific studies for the purpose of:

(1) Defining the areal boundaries for application of the site-specific criteria which will include the potentially affected wastewater dischargers identified by the Department, through various means, including, but not limited to, the total maximum daily load (TMDL) process described in Chapter 96 (relating to water quality standards implementation) or biological assessments.

(2) Developing site-specific criteria which protect the surface water's existing and designated uses.

(c) Scientific studies shall be performed in accordance with the procedures and guidance in the Water Quality Standards Handbook (EPA 1994), as amended and updated, including: "Guidance on the Determination and

Use of Water-Effect Ratios for Metals'' (February 1994); and the ''Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health'' (2000). **The Department may require the use of the Biotic Ligand Model (BLM) for the development of new or updated site-specific criteria for copper in freshwater systems**. Other guidance approved by the Department, which is based on other EPA-approved or scientifically defensible methodologies, may be used.

* * * * *

(f) If the Department determines that site-specific criteria are appropriate in accordance with subsection (a), the Department will do the following:

* * * * *

(2) Maintain **a** publicly available **[lists] online table** of site-specific criteria.

* * * * *

§ 93.8e. Special criteria for the Great Lakes System.

(a) *Special criteria.* The special provisions in this section apply for the Great Lakes System, which includes the streams, rivers, lakes and other bodies of surface water within the drainage basin of the Great Lakes in this Commonwealth.

(b) *Water quality criteria for the Great Lakes System.* Human health and aquatic life criteria for the Great Lakes System are contained in Table 6 (relating to Great Lakes aquatic life and human health criteria). For any pollutant not listed in the table, criteria **in Table 5 may be used** to protect existing and designated uses**, or criteria** will be developed by the Department, as needed**,** in accordance with this chapter and § 16.61 (relating to special provisions for the Great Lakes System).

* * * * *

§ 93.9. Designated water uses and water quality criteria.

* * * * *

DESIGNATED WATER USES AND WATER QUALITY CRITERIA

* * * * *

§ 93.9b. Drainage List
B.

Delaware River Basin in Pennsylvania
Lackawaxen River

Stream	Zone	County	Water Uses Protected	Exceptions to Specific Criteria

		* * * * * *		
3—Van Auken Creek	Basin	Wayne	HQ-TSF, MF	None
2—Lackawaxen River	**[Mainstem, confluence of West Branch Lackawaxen River and Van Auken Creek to Dyberry Creek] Main Stem**	**[Wayne] Pike**	HQ-TSF, MF	None
3—Tributaries to Lackawaxen River	Basins, confluence of West Branch Lackawaxen River and Van Auken Creek to Dyberry Creek	Wayne	HQ-CWF, MF	None
		* * * * * *		
3—Dyberry Creek	Basin, Big Brook to Mouth	Wayne	HQ-CWF, MF	None
[2—Lackawaxen River	**Main Stem, Dyberry Creek to Mouth**	**Wayne**	**HQ-TSF, MF**	**None]**
3—Tributaries to Lackawaxen River	Basins, Dyberry Creek to Wallenpaupack Creek	Wayne	HQ-CWF, MF	None
		* * * * * *		

§ 93.9c. Drainage List C.

Delaware River Basin in Pennsylvania

Delaware River

Stream	Zone	County	Water Uses Protected	Exceptions to Specific Criteria
		* * * * * *		
2—Hornbecks Creek	Basin	Pike	HQ-CWF, MF	None
2—Spackmans Creek	**Basin**	**Pike**	**HQ-CWF, MF**	**None**
2—Toms Creek	Basin	Pike	EV, MF	None
		* * * * * *		
2—Allegheny Creek	Basin	Northampton	CWF, MF	None
2—Mill Creek	**Basin**	**Northampton**	**CWF, MF**	**None**
2—Oughoughton Creek	Basin	Northampton	CWF, MF	None
		* * * * * *		

§ 93.9d. Drainage List D.

Delaware River Basin in Pennsylvania

Lehigh River

Stream	Zone	County	Water Uses Protected	Exceptions to Specific Criteria
1—Delaware River				
2—Lehigh River	Basin, Source to Tobyhanna Creek	Luzerne-Monroe-Carbon	EV, MF	None
3—Tobyhanna Creek	**[Main Stem] Basin, Source to Cross Keys Run**	Monroe[-Carbon]	HQ-CWF, MF	None
[4—Unnamed Tributaries to Tobyhanna Creek	**Basins**	**Monroe-Carbon**	**HQ-CWF, MF**	**None**
4—Jim Smith Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Pole Bridge Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Singer Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—East Branch Dresser Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Pollys Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Hummler Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None]**
4—Cross Keys Run	Basin	Monroe	EV, MF	None
3—Tobyhanna Creek	**Basin, Cross Keys Run to Frame Cabin Run**	**Monroe**	**HQ-CWF, MF**	**None**
4—Frame Cabin Run	Basin	Monroe	EV, MF	None
[4—Kistler Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Wagner Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Upper Tunkhannock Creek	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Wolfs Spring Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Deep Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Davey Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Red Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Tunkhannock Creek	**Basin**	**Monroe-Carbon**	**HQ-CWF, MF**	**None**

4—Shingle Mill Run	**Basin**	**Carbon**	**HQ-CWF, MF**	**None**
4—Twomile Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None**
4—Stony Run	**Basin**	**Monroe**	**HQ-CWF, MF**	**None]**
3—Tobyhanna Creek	**Basin, Frame Cabin Run to Mouth**	**Monroe-Carbon**	**HQ-CWF, MF**	**None**
2—Lehigh River	Basin, Tobyhanna Creek to Buck Mountain Creek	Carbon	HQ-CWF, MF	None
3—Buck Mountain Creek	Main Stem	Carbon	HQ-CWF, MF	None
4—Unnamed Tributaries to Buck Mountain Creek	Basin	Carbon	HQ-CWF, MF	None
4—Indian Run	Basin	Carbon	HQ-CWF, MF	None
4—Shafer Run	Basin	Carbon	EV, MF	None
2—Lehigh River	Main Stem, Buck Mountain Creek to **[PA 903 Bridge (at Jim Thorpe)]** **a point at 40° 52' 3.5" N; 75° 44' 9.3" W**	Carbon	HQ-CWF, MF	None
3—Unnamed Tributaries to Lehigh River	Basins, Buck Mountain Creek to **[PA 903 Bridge]** **the point at 40° 52' 3.5" N; 75° 44' 9.3" W**	Carbon	HQ-CWF, MF	None
3—Drakes Creek	Basin	Carbon	HQ-CWF, MF	None
	* * * * * *			
3—Robertson Run	Basin	Carbon	HQ-CWF, MF	None
2—Lehigh River	Main Stem, **[PA 903 Bridge]** **the point at 40° 52' 3.5" N; 75° 44' 9.3" W** to Allentown Dam	Lehigh	TSF, MF	None
3—Unnamed Tributaries to Lehigh River	Basins, **[PA 903 Bridge]** **the point at 40° 52' 3.5" N; 75° 44' 9.3" W** to Allentown Dam	Carbon-Lehigh	CWF, MF	None
3—Silkmill Run	Basin	Carbon	CWF, MF	None
3—Mauch Chunk Creek				
[3]5—[Mauch Chunk] White Bear Creek	Basin, Source to SR 902 Bridge	Carbon	EV, MF	None
[3]5—[Mauch Chunk] White Bear Creek	Basin, SR 902 Bridge to **[Mouth]** **inlet of Mauch Chunk Lake**	Carbon	CWF, MF	None

4—Mauch Chunk Lake	**Basin**	**Carbon**	**CWF, MF**	**None**
3—Mauch Chunk Creek	**Basin, Mauch Chunk Lake Dam to Mouth**	**Carbon**	**CWF, MF**	**None**
3—**[Beaverdam] Beaver** Run	Basin	Carbon	CWF, MF	None
3—Long Run	Basin	Carbon	CWF, MF	None
	* * * * * *			
4—Jordan Creek	Main Stem	Lehigh	TSF, MF	None
5—**[Unnamed]** Tributaries to Jordan Creek	Basins**, source to Mill Creek**	Lehigh	HQ-CWF, MF	None
[5—Switzer Creek	**Basin**	**Lehigh**	**HQ-CWF, MF**	**None**
5—Lyon Creek	**Basin**	**Lehigh**	**HQ-CWF, MF**	**None]**
5—Mill Creek	Basin	Lehigh	CWF, MF	None
[5—Hassen Creek	**Basin**	**Lehigh**	**HQ-CWF, MF**	**None]**
5—Tributaries to Jordan Creek	**Basins, Mill Creek to Mouth**	**Lehigh**	**HQ-CWF, MF**	**None**
3—Little Lehigh Creek	Basin, Jordan Creek to Mouth	Lehigh	HQ-CWF, MF	None
	* * * * * *			

§ 93.9e. Drainage List E.

Delaware River Basin in Pennsylvania

Delaware River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions to Specific Criteria**
	* * * * * *			
2—Frya Run	Basin	Northampton	HQ-CWF, MF	None
2—Cooks Creek	Basin	Bucks	EV, MF	None
2—Rodges Run	**Basin**	**Bucks**	**TSF, MF**	**None**
2—Gallows Run	Basin	Bucks	CWF, MF	None
2—Falls Creek	**Basin**	**Bucks**	**TSF, MF**	**None**
2—Swamp Creek	**Basin**	**Bucks**	**TSF, MF**	**None**
2—Tinicum Creek	Basin	Bucks	EV, MF	None
2—Smithtown Creek	**Basin**	**Bucks**	**TSF, MF**	**None**
2—Tohickon Creek	Basin, Source to Lake Nockamixon Dam	Bucks	TSF, MF	None

2—Tohickon Creek	Basin, Lake Nockamixon Dam to Deep Run	Bucks	CWF, MF	None
3—Deep Run	Basin	Bucks	WWF, MF	None
	* * * * * *			
1—Delaware Estuary	Tidal Portions of Basin, Head of Tide to Burlington-Bristol Bridge	Bucks	WWF, MF	See DRBC regulations—Water Quality Zone 2
2—Unnamed Tributaries to Delaware Estuary	Non-Tidal Portion of Basins, Head of Tide to Burlington-Bristol Bridge	Bucks	WWF, MF	None
2—Biles Creek	**Non-Tidal Portion of Basin**	**Bucks**	**WWF, MF**	**None**
2—Martins Creek	Non-Tidal Portion of Basin	Bucks	WWF, MF	None
2—Levittown Lake	Basin	Bucks	TSF, MF	None
	* * * * * *			

§ 93.9f. Drainage List F.

Delaware River Basin in Pennsylvania

Schuylkill River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
	* * * * * *			
3—Tulpehocken Creek	Main Stem, Blue Marsh Reservoir Dam to T 921	Berks	CWF, MF	None
4—Unnamed Tributaries to Tulpehocken Creek	Basins, Blue Marsh Reservoir Dam to T 922	Berks	WWF, MF	None
[5] 4—Plum Creek	Basin, Source to **[Unnamed Tributary at RM 0.45]** **UNT 01867 at 40° 22' 30.2"N; 76° 0' 45.2"W**	Berks	WWF, MF	None
[6] 5—**[Unnamed Tributary]** **UNT 01867** to Plum Creek **[at RM 0.45]**	Basin	Berks	WWF, MF	None
[5] 4—Plum Creek	Basin, UNT **01867** **[at RM 0.45]** to Mouth	Berks	CWF, MF	None
4—Cacoosing Creek	Basin, Source to Little Cacoosing Creek	Berks	CWF, MF	None
	* * * * * *			

3—UNTs to Schuylkill River	Basins, in Spring City and Phoenixville	Chester	WWF, MF	None
3—Manatawny Creek	**[Main Stem**	**Berks**	**CWF, MF**	**None**
4—Unnamed Tributaries to Manatawny Creek	**Basins**	**Berks**	**CWF, MF**	**None]**
4—Pine Creek	Basin	Berks	EV, MF	None
4—Bieber Creek	Basin	Berks	EV, MF	None
3—Manatawny Creek	**Basin, Confluence of Pine Creek and Bieber Creek to Oysterville Creek**	**Berks**	**CWF, MF**	**None**
[4—Little Manatawny Creek	**Basin**	**Berks**	**CWF, MF**	**None]**
4—Oysterville Creek	Basin, Source to T 634 Bridge **[(RM 2.6)]at 40° 23' 45.9" N; 75° 42' 30.0" W**	Berks	EV, MF	None
4—Oysterville Creek	Basin, T 634 Bridge **[(RM 2.6)]** to Confluence of UNT 01680 **at 40° 22' 44.6" N; 75° 43' 48.0" W**	Berks	HQ-CWF, MF	None
5—UNT 01680 to Oysterville Creek	Basin	Berks	CWF, MF	None
4—Oysterville Creek	Basin, UNT 01680 to Mouth	Berks	HQ-CWF, MF	None
3—Manatawny Creek	**Basin, Oysterville Creek to Trout Run**	**Berks**	**CWF, MF**	**None**
[4—Furnace Run	**Basin**	**Berks**	**CWF, MF**	**None]**
4—Trout Run	Basin	Berks	EV, MF	None
3—Manatawny Creek	**Basin, Trout Run to Ironstone Creek**	**Berks**	**CWF, MF**	**None**
4—Ironstone Creek	Basin	Berks	TSF, MF	None
3—Manatawny Creek	**Basin, Ironstone Creek to Mouth**	**Berks**	**CWF, MF**	**None**
3—Sprogels Run	Basin	Montgomery	WWF, MF	None
	* * * * * * *			
3—Perkiomen Creek	Basin, Source to SR 1010 Bridge at Hereford	Berks	HQ-CWF, MF	None
3—Perkiomen Creek	Main Stem, SR 1010 Bridge to Green Lane Reservoir Dam	Montgomery	TSF, MF	None
4—**[UNTs] Tributaries** to Perkiomen Creek	Basins, SR 1010 Bridge to **[Green Lane Reservoir Dam] Hosensack Creek**	Montgomery	TSF, MF	None
4—Hosensack Creek	Basin	Montgomery	CWF, MF	None

4—Tributaries to Perkiomen Creek	**Basins, Hosensack Creek to West Branch Perkiomen Creek**	**Montgomery**	**TSF, MF**	**None**
4—West Branch Perkiomen Creek	Basin, Source to SR 1022 Bridge **[(RM 12.9)]at 40° 26' 49.6" N; 75° 37' 16.2" W**	Berks	CWF, MF	None
4—West Branch Perkiomen Creek	Basin, SR 1022 Bridge to SR 2069 Bridge **[(RM 8.0)]at 40° 23' 45.8" N; 75° 36' 31.5"W**	Berks	EV, MF	None
4—West Branch Perkiomen Creek	Basin, SR 2069 Bridge to Mouth	Montgomery	CWF, MF	None
4—Tributaries to Perkiomen Creek	**Basins, West Branch Perkiomen Creek to Unami Creek**	**Montgomery**	**TSF, MF**	**None**
3—Perkiomen Creek	Main Stem, Green Lane Reservoir Dam to Mouth	Montgomery	WWF, MF	None
[4—Unnamed Tributaries to Perkiomen Creek	**Basins, Green Lane Reservoir Dam to Mouth**	**Montgomery**	**TSF, MF**	**None**
4—Macoby Creek	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Deep Creek	**Basin**	**Montgomery**	**TSF, MF**	**None]**
4—Unami Creek	Basin	Montgomery	HQ-TSF, MF	None
4—Tributaries to Perkiomen Creek	**Basins, Unami Creek to Swamp Creek**	**Montgomery**	**TSF, MF**	**None**
4—Swamp Creek	Basin, Source to Dam in Bechtelsville **[(RM 15.5)]at 40° 22' 24.9" N; 75° 37' 51.5" W**	Berks	HQ-CWF, MF	None
4—Swamp Creek	Basin, Dam in Bechtelsville to **[Route]SR** 100 Bridge	Berks	CWF, MF	None
4—Swamp Creek	Basin, **[Route]SR** 100 Bridge to Mouth	Montgomery	TSF, MF	None
4—Tributaries to Perkiomen Creek	**Basins, Swamp Creek to Mouth**	**Montgomery**	**TSF, MF**	**None**
[4—Mine Run	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—East Branch Perkiomen Creek	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Lodal Creek	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Schoolhouse Run	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Doe Run	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Skippack Creek	**Basin**	**Montgomery**	**TSF, MF**	**None**
4—Mine Run	**Basin**	**Montgomery**	**TSF, MF**	**None]**

3—Valley Creek	Basin	Montgomery—Chester	EV, MF	None
3—UNTs to Schuylkill River	Basins, Valley Creek to UNT 00926 at **[RM 18.9]**<u>**40° 4' 23" N; 75° 17' 6.8" W**</u>	Montgomery	WWF, MF	None

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§ 93.9g. Drainage List G.

Delaware River Basin in Pennsylvania

Delaware River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
	* * * * * *			
2—Ridley Creek	Non-Tidal Portions of Basin, LR 23013 Bridge to Mouth	Delaware	WWF, MF	None
2—Chester Creek	Basin <u>**(locally known as Goose Creek basin)**</u>, Source to East Branch Chester Creek	Chester	**[TSF]**<u>**WWF**</u>, MF	None
3—East Branch Chester Creek	Basin**[, Source to Westtown Run]**	Chester	TSF, MF	None
[4—Westtown Run	**Basin**	**Chester**	**WWF, MF**	**None**
3—East Branch Chester Creek	**Basin, Westtown Run to Mouth**	**Chester**	**TSF, MF**	**None]**
2—Chester Creek	Basin, East Branch Chester Creek to Rocky Run	Delaware	TSF, MF	None
	* * * * * *			
2—Chester Creek	Nontidal Portions of Basin, Dutton Mills Road Bridge to Mouth	Delaware	WWF, MF	None
2—**[Stony]** <u>**Stoney**</u> Creek	Non-Tidal Portions of Basin	Delaware	WWF, MF	None
2—Marcus Hook Creek	Non-Tidal Portions of Basin	Delaware	WWF, MF	None
	* * * * * *			
4—East Branch Brandywine Creek	Main Stem, Shamona Creek to Confluence with West Branch	Chester	WWF, MF	None

5—**[Unnamed]** Tributaries to East Branch Brandywine Creek	Basins, Shamona Creek to **[Confluence with West Branch (except in East Brandywine and Uwchlan Townships)]UNT 00322 at 40° 1' 29.5"N; 75° 42' 22.6" W**	Chester	**[WWF, MF]HQ-TSF, MF**	None
5—**[Unnamed]** Tributaries to East Branch Brandywine Creek	Basins, **[in East Brandywine and Uwchlan Townships]UNT 00322 to Beaver Creek**	Chester	**[HQ-TSF, MF]WWF, MF**	None
5—Beaver Creek	Basin	Chester	CWF, MF	None
5— Tributaries to East Branch Brandywine Creek	**Basins, Beaver Creek to Confluence with West Branch**	**Chester**	**WWF, MF**	**None**
5—Valley Creek	Basin, Source to Broad Run	Chester	CWF, MF	None
	* * * * * *			
3—Brandywine Creek	**[Main Stem] Basin,** Confluence of East and West Branches to **[PA-DE State Border] Pocopson Creek**	Chester-Delaware	WWF, MF	None
[4—Unnamed Tributaries to Brandywine Creek	**Basins (all sections in PA), Confluence of East and West Branches to PA-DE State Border**	**Chester-Delaware**	**WWF, MF**	**None**
4—Plum Run	**Basin**	**Chester**	**WWF, MF**	**None**
4—Radley Run	**Basin**	**Chester**	**WWF, MF**	**None]**
4—Pocopson Creek	Basin	Chester	TSF, MF	None
3—Brandywine Creek	**Basin (all sections in PA), Pocopson Creek to PA-DE State Border**	**Chester-Delaware**	**WWF, MF**	**None**
[4—Bennetts Run	**Basin**	**Chester**	**WWF, MF**	**None**
4—Brinton Run	**Basin**	**Chester**	**WWF, MF**	**None**
4—Ring Run	**Basin**	**Chester**	**WWF, MF**	**None**
4—Harvey Run	**Basin**	**Chester**	**WWF, MF**	**None]**
3—Brandywine Creek (DE)				
4—**[Unnamed]** Tributaries to Brandywine Creek	Basins (all sections in PA), PA-DE State Border to Mouth	Delaware	WWF, MF	None
	* * * * * *			

§ 93.9j. Drainage List J.

Susquehanna River Basin in Pennsylvania
Lackawanna River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
3—Meadow Brook	Basin	Lackawanna	CWF, MF	None
3—Roaring Brook	Basin, Source to **Inlet of** Elmhurst Reservoir	Lackawanna	HQ-CWF, MF	None
3—Roaring Brook	Basin, **Inlet of** Elmhurst Reservoir to Mouth	Lackawanna	CWF, MF	None
3—Stafford Meadow Brook	Basin, Source to Farthest Downstream Crossing of Scranton-Moosic Corporate Boundary	Lackawanna	HQ-CWF, MF	None
	* * * * * *			

§ 93.9k. Drainage List K.

Susquehanna River Basin in Pennsylvania
Susquehanna River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
2—Warrior Creek	Basin	Luzerne	CWF, MF	None
2—Nanticoke Creek	Basin	Luzerne	CWF, MF	None
2—Newport Creek	**Basin**	**Luzerne**	**CWF, MF**	**None**
2—Harvey Creek	Basin, Source to Pikes Creek	Luzerne	HQ-CWF, MF	None
3—Pikes Creek	Basin	Luzerne	HQ-CWF, MF	None
2—Harvey Creek	Basin, Pikes Creek to Mouth	Luzerne	CWF, MF	None
	* * * * * *			

§ 93.9l. Drainage List L.

Susquehanna River Basin in Pennsylvania
West Branch Susquehanna River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
1—Susquehanna River				
2—West Branch Susquehanna River	Main Stem	Northumberland	WWF, MF	None
3—**[Unnamed]** Tributaries to West Branch Susquehanna River	Basins, Source to **[Moshannon Creek]** **Cush Cushion Creek**	Cambria-Indiana-Clearfield	CWF, MF	None
[3—Leslie Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Hoppel Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Fox Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Browns Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Walnut Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Porter Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Moss Creek	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Douglas Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Emeigh Run	**Basin**	**Cambria**	**CWF, MF**	**None**
3—Peg Run	**Basin**	**Cambria**	**CWF, MF**	**None]**
3—Cush Cushion Creek	Basin	Indiana	HQ-CWF, MF	None
[3—Kilns Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Kings Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Shyrock Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Boiling Spring Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Sawmill Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Rock Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Cush Creek	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Martin Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—North Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Deer Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Bear Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Whisky Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Cush Cushion Creek to Chest Creek**	**Clearfield**	**CWF, MF**	**None**
3—Chest Creek	Basin, Source to Patton Water Supply	Cambria	HQ-CWF, MF	None
3—Chest Creek	Basin, Patton Water Supply to Rogues Harbor Run	Clearfield	CWF, MF	None
4—Rogues Harbor Run	Basin	Clearfield	EV, MF	None
3—Chest Creek	Basin, Rogues Harbor Run to Pine Run	Clearfield	CWF, MF	None

4—Pine Run	Basin	Clearfield	EV, MF	None
3—Chest Creek	Basin, Pine Run to Mouth	Clearfield	CWF, MF	None
[3—Miller Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Laurel Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Haslett Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Curry Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—McCracken Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Bell Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Hiles Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Passmore Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Porter Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Chest Creek to Anderson Creek**	**Clearfield**	**CWF, MF**	**None**
3—Anderson Creek	Basin, Source to DuBois Dam	Clearfield	HQ-CWF, MF	None
3—Anderson Creek	Basin, DuBois Dam to Bear Run	Clearfield	CWF, MF	None
4—Bear Run	Basin, Source to Pike Twp. Municipal Authority Dam	Clearfield	HQ-CWF, MF	None
4—Bear Run	Basin, Pike Twp. Municipal Authority Dam to Mouth	Clearfield	CWF, MF	None
3—Anderson Creek	Basin, Bear Run to Mouth	Clearfield	CWF, MF	None
[3—Hogback Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Hartshorn Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Anderson Creek to Montgomery Creek**	**Clearfield**	**CWF, MF**	**None**
3—Montgomery Creek	Basin, Source to Montgomery Dam	Clearfield	HQ-CWF, MF	None
3—Montgomery Creek	Basin, Montgomery Dam to Mouth	Clearfield	CWF, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, Montgomery Creek to Moose Creek**	**Clearfield**	**CWF, MF**	**None**
3—Moose Creek	Basin, Source to Dam	Clearfield	HQ-CWF, MF	None
3—Moose Creek	Basin, Dam to Mouth	Clearfield	CWF, MF	None
[3—Wolf Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Moose Creek to Clearfield Creek**	**Clearfield**	**CWF, MF**	**None**
3—Clearfield Creek	Main Stem	Clearfield	WWF, MF	None

4—[Unnamed] Tributaries to Clearfield Creek	Basins, Source to Sandy Run	Cambria[-Clearfield]	CWF, MF	None
[4—Bradley Run	Basin	Cambria	CWF, MF	None
4—Beaverdam Run	Basin	Cambria	CWF, MF	None
4—Swartz Run	Basin	Cambria	CWF, MF	None
4—Little Laurel Run	Basin	Cambria	CWF, MF	None
4—Indian Run	Basin	Cambria	CWF, MF	None
4—Laurel Run	Basin	Cambria	CWF, MF	None
4—Brubaker Run	Basin	Cambria	CWF, MF	None]
4—Sandy Run	Basin	Cambria	HQ-CWF, MF	None
[4—Powell Run	Basin	Cambria	CWF, MF	None
4—Fallentimber Run	Basin	Cambria	CWF, MF	None
4—Beaverdam Run	Basin	Cambria	CWF, MF	None
4—Turner Run	Basin	Clearfield	CWF, MF	None
4—Blain Run	Basin	Clearfield	CWF, MF	None
4—North Witmer Run	Basin	Clearfield	CWF, MF	None
4—DeWitt Run	Basin	Clearfield	CWF, MF	None
4—Pine Run	Basin	Clearfield	CWF, MF	None
4—Dotts Hollow	Basin	Clearfield	CWF, MF	None
4—Cofinan Run	Basin	Clearfield	CWF, MF	None
4—Blue Run	Basin	Clearfield	CWF, MF	None
4—Buck Run (Porter Run)	Basin	Clearfield	CWF, MF	None
4—Maplepole Run	Basin	Clearfield	CWF, MF	None]
4—Tributaries to Clearfield Creek	Basins, Sandy Run to Muddy Run	Cambria	CWF, MF	None
4—Muddy Run	Basin, Source to Little Muddy Run	Clearfield	CWF, MF	None
5—Little Muddy Run	Basin, Source to Janesville Sportsman Dam	Clearfield	HQ-CWF, MF	None
5—Little Muddy Run	Basin, Janesville Sportsman Dam to Mouth	Clearfield	CWF, MF	None
4—Muddy Run	Basin, Little Muddy Run to Mouth	Clearfield	CWF, MF	None
[4—Japling Run	Basin	Clearfield	CWF, MF	None
4—Pine Run	Basin	Clearfield	CWF, MF	None
4—Lost Run	Basin	Clearfield	CWF, MF	None
4—Upper Morgan Run	Basin	Clearfield	CWF, MF	None
4—Potts Run	Basin	Clearfield	CWF, MF	None
4—Dunlap Run	Basin	Clearfield	CWF, MF	None
4—Lytle Run	Basin	Clearfield	CWF, MF	None

4—Cherry Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Raccoon Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Sanhourn Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Camp Hope Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Morgan Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Tributaries to Clearfield Creek	**Basins, Muddy Run to Little Clearfield Creek**	**Clearfield**	**CWF, MF**	**None**
4—Little Clearfield Creek	Basin	Clearfield	HQ-CWF, MF	None
[4—Long Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Roaring Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Tributaries to Clearfield Creek	**Basins, Little Clearfield Creek to Mouth**	**Clearfield**	**CWF, MF**	**None**
[3—Abes Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Clearfield Creek to Lick Run**	**Clearfield**	**CWF, MF**	**None**
3—Lick Run	Basin	Clearfield	HQ-CWF, MF	None
[3—Devils Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Bloody Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Lick Run to Trout Run**	**Clearfield**	**CWF, MF**	**None**
3—Trout Run	Basin	Clearfield	HQ-CWF, MF	None
[3—Millstone Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Surveyor Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Bear Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Bald Hill Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Moravian Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Deer Creek	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Big Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Willholm Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Sandy Creek	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Alder Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Rolling Stone Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Mowry Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Basin Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Rock Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Potter Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
3—Rupley Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**

3—Tributaries to West Branch Susquehanna River	**Basins, Trout Run to Moshannon Creek**	**Clearfield**	**CWF, MF**	**None**
3—Moshannon Creek	Basin, Source to Roup Run	Clearfield-Centre	HQ-CWF, MF	None
4—Roup Run	**Basin**	**Centre**	**CWF, MF**	**None**
3—Moshannon Creek	Main Stem, Roup Run to Mouth	Clearfield-Centre	TSF, MF	None
4—**[UNTs] Tributaries** to Moshannon Creek	Basins, Roup Run to **[Mouth] Moutain Branch**	Clearfield-Centre	CWF, MF	None
[4—Roup Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Whiteside Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Mountain Branch	Basin, Source to Trim Root Run	Centre	HQ-CWF, MF	None
5—Trim Root Run	Basin	Centre	HQ-CWF, MF	None
4—Mountain Branch	Basin, Trim Root Run to Mouth	Centre	CWF, MF	None
[4—Bear Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Beaver Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Big Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Tributaries to Moshannon Creek	**Basins, Mountain Branch to Trout Run**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Trout Run	Basin, Source to Montola Dam	Centre	HQ-CWF, MF	None
4—Trout Run	Basin, Montola Dam to Mouth	Centre	CWF, MF	None
[4—Shimel Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Tributaries to Moshannon Creek	**Basins, Trout Run to Laurel Run**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Laurel Run	Basin, Source to Simeling Run	Clearfield	CWF, MF	None
5—Simeling Run	Basin	Clearfield	HQ-CWF, MF	None
4—Laurel Run	Basin, Simeling Run to Mouth	Clearfield	CWF, MF	None
4—Tributaries to Moshannon Creek	**Basins, Laurel Run to Cold Stream**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Cold Stream	Basin, Source to US 322	Centre	HQ-CWF, MF	None
4—Cold Stream	Basin, US 322 to Mouth	Centre	CWF, MF	None
[4—Emigh Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Onemile Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Hawk Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Wolf Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Sulphur Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**

4—Tributaries to Moshannon Creek	**Basins, Cold Stream to Black Bear Run**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Black Bear Run	Basin	Centre	EV, MF	None
4—Tributaries to Moshannon Creek	**Basins, Black Bear Run to Sixmile Run**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Sixmile Run	Basin	Centre	HQ-CWF, MF	None
[4—Tark Hill Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Potter Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Laurel Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Browns Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Grassflat Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Weber Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
4—Crawford Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Tributaries to Moshannon Creek	**Basins, Sixmile Run to Black Moshannon Creek**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Black Moshannon Creek	**[Main Stem] Basin, Source to Benner Run**	Centre	HQ-CWF, MF	None
[5—Unnamed Tributaries to Black Moshannon Creek	**Basins**	**Centre**	**HQ-CWF, MF**	**None**
5—Shirks Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
5—Smays Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
5—North Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
5—Benner Run	Basin, Source to Pine Haven Camp	Centre	EV, MF	None
5—Benner Run	Basin, Pine Haven Camp to Mouth	Centre	HQ-CWF, MF	None
[5—Hall Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
5—Myers Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
4—Black Moshannon Creek	**Basin, Benner Run to Rock Run**	**Centre**	**HQ-CWF, MF**	**None**
5—Rock Run	Basin	Centre	EV, MF	None
[5—Pine Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
5—Hicklen Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
4—Black Moshannon Creek	**Basin, Rock Run to Mouth**	**Centre**	**HQ-CWF, MF**	**None**
[4—Sevenmile Run	**Basin**	**Centre**	**CWF, MF**	**None]**

4—Tributaries to Moshannon Creek	**Basins, Black Moshannon Creek to Ames Run**	**Clearfield-Centre**	**CWF, MF**	**None**
4—Ames Run	Basin	Clearfield	HQ-CWF, MF	None
4—Tributaries to Moshannon Creek	**Basins, Ames Run to Mouth**	**Clearfield-Centre**	**CWF, MF**	**None**
3—**[Unnamed]** Tributaries to West Branch Susquehanna River	Basins, Moshannon Creek to **[RM 121.36]** **Mosquito Creek**	Clearfield-Centre**[- Clinton]**	HQ-CWF, MF	None
[3—Redlick Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
3—Mosquito Creek	**[Main Stem]** **Basin, Source to Twelvemile Run**	**Elk**-Clearfield	HQ-CWF, MF	None
[4—Unnamed Tributaries to Mosquito Creek	**Basins**	**Elk- Clearfield**	**HQ-CWF, MF**	**None**
4—Pebble Run	**Basin**	**Elk**	**HQ-CWF, MF**	**None**
4—Beaver Run	**Basin**	**Elk**	**HQ-CWF, MF**	**None**
4—McNerny Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Meeker Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Panther Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None]**
4—Twelvemile Run	Basin	Clearfield	EV, MF	None
[4—Gifford Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Susman Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None]**
3—Mosquito Creek	**Basin, Twelvemile Run to Cole Run**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Cole Run	Basin	Clearfield	EV, MF	None
[4—Grimes Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Dutch Hollow	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
4—Curleys Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None]**
3—Mosquito Creek	**Basin, Cole Run to Mouth**	**Clearfield**	**HQ-CWF, MF**	**None**
[3—Laurel Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
3—Saltlick Run	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**

3—Upper Three Runs	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
3—Lower Three Runs	**Basin**	**Clearfield**	**HQ-CWF, MF**	**None**
3—Sterling Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Mosquito Creek to Loop Run**	**Clearfield-Centre-Clinton**	**HQ-CWF, MF**	**None**
3—Loop Run	Basin	Clinton	CWF, MF	None
[3—Spruce Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Loop Run to UNT 25562 at 41° 9' 40.2"N; 78° 0' 3.9"W**	**Centre-Clinton**	**HQ-CWF, MF**	**None**
3—**[Unnamed Tributary to West Branch Susque- hanna River at RM 121.36]** **UNT 25562**	Basin	Clinton	CWF, MF	None
3—**[Unnamed]** Tributaries to West Branch Susquehanna River	Basins, **[RM 121.36 to Queens Run]** **UNT 25562 to Little Bougher Run**	**Centre-**Clinton	HQ-CWF, MF	None
[3—Bougher Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
3—Little Bougher Run	Basin	Clinton	CWF, MF	None
[3—Leaning Pine Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Moores Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None**
3—Sugarcamp Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Birch Island Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Black Stump Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Grove Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Fields Run	**Basin**	**Centre**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Little Bougher Run to Yost Run**	**Centre-Clinton**	**HQ-CWF, MF**	**None**
3—Yost Run	Basin	Centre	EV, MF	None
[3—Morris Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**

3—Dry Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Yost Run to Burns Run**	**Centre-Clinton**	**HQ-CWF, MF**	**None**
3—Burns Run	Basin	Centre	EV, MF	None
[3—Jews Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Burns Run to Sinnemahoning Creek**	**Centre-Clinton-Cameron**	**HQ-CWF, MF**	**None**
3—Sinnemahoning Creek				
4—Bennett Branch Sinnemahoning Creek	**[Main Stem] Basin,** Source to **[Mill Run] South Branch Bennett Branch**	Cameron	CWF, MF	None
[5—Unnamed Tributaries to Bennett Branch Sinnemahoning Creek	**Basins**	**Clearfield-Elk-Cameron**	**CWF, MF**	**None**
5—McCracken Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
5—South Branch Bennett Branch	Basin	Clearfield	HQ-CWF, MF	None
[5—Heath Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Bark Camp Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Mountain Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Matley Hollow	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Bennett Branch Sinnemahoning Creek	**Basin, South Branch Bennett Branch to Wilson Run**	**Clearfield**	**CWF, MF**	**None**
5—Wilson Run	Basin, Source to East Branch Wilson Run	Clearfield	CWF, MF	None
6—East Branch Wilson Run	Basin	Clearfield	HQ-CWF, MF	None
5—Wilson Run	Basin, East Branch Wilson Run to Mouth	Clearfield	CWF, MF	None
[5—Moose Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Horning Run	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Lamb Hollow	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Horning Hollow	**Basin**	**Clearfield**	**CWF, MF**	**None**
5—Mill Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
4—Bennett Branch Sinnemahoning Creek	**Basin, Wilson Run to Mill Run**	**Clearfield**	**CWF, MF**	**None**
5—Mill Run	**Basin**	**Clearfield**	**CWF, MF**	**None**

4—Bennett Branch Sinnemahoning Creek	Main Stem, Mill Run to Confluence with Driftwood Branch	Cameron	WWF, MF	None
[5—Tyler Run	**Basin**	**Clearfield**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Mill Run to Cherry Run**	**Clearfield-Cameron-Elk**	**CWF, MF**	**None**
5—Cherry Run	Basin, Source to Shawmut Dam	Elk	HQ-CWF, MF	None
5—Cherry Run	Basin, Shawmut Dam to Mouth	Elk	CWF, MF	None
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Cherry Run to Kersey Run**	**Elk**	**CWF, MF**	**None**
5—Kersey Run	Basin, Source to Byrnes Run	Elk	CWF, MF	None
6—Byrnes Run	Basin	Elk	EV, MF	None
5—Kersey Run	Basin, Byrnes Run to Mouth	Elk	CWF, MF	None
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Kersey Run to Laurel Run**	**Elk**	**CWF, MF**	**None**
5—Laurel Run	Basin	Elk	HQ-CWF, MF	None
[5—Bakemans Run	**Basin**	**Elk**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Laurel Run to Medix Run**	**Elk**	**CWF, MF**	**None**
5—Medix Run	Basin	Elk	HQ-CWF, MF	None
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Medix Run to Trout Run**	**Elk**	**CWF, MF**	**None**
5—Trout Run	Basin, Source to Spring Run	Elk	CWF, MF	None
6—Spring Run	Basin, Source to UNT 24721 **at 41° 20' 25.0"N; 78° 29' 52.9" W**	Elk	CWF, MF	None
7—UNT 24721 to Spring Run	Basin	Elk	CWF, MF	None
6—Spring Run	Basin, UNT 24721 to Stony Brook	Elk	HQ-CWF, MF	None
7—Stony Brook	Basin	Elk	CWF, MF	None
6—Spring Run	Basin, Stony **[Run]Brook** to Mouth	Elk	CWF, MF	None
5—Trout Run	Basin, Spring Run to Mouth	Elk	CWF, MF	None
[5—Jimmy Run	**Basin**	**Elk**	**CWF, MF**	**None**
5—Johnson Run	**Basin**	**Elk**	**CWF, MF**	**None**

5—Wainwright Run	**Basin**	**Elk**	**CWF, MF**	**None**
5—Charlies Run	**Basin**	**Elk**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Trout Run to Dents Run**	**Elk**	**CWF, MF**	**None**
5—Dents Run	Basin	Elk	HQ-CWF, MF	None
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Dents Run to Hicks Run**	**Elk**	**CWF, MF**	**None**
5—Hicks Run				
6—East Branch Hicks Run	Basin Source to Confluence with West Branch	Elk	HQ-CWF, MF	None
6—West Branch Hicks Run	Basin, Source to Confluence with East Branch	Elk	EV, MF	None
5—Hicks Run	Basin, Confluence of East and West Branches to Mouth	Cameron	HQ-CWF, MF	None
[5—Hicks Hollow	**Basin**	**Cameron**	**CWF, MF**	**None**
5—Beaverdam Run	**Basin**	**Cameron**	**CWF, MF**	**None**
5—Stone Quarry Hollow	**Basin**	**Cameron**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Hicks Run to Miller Run**	**Cameron**	**CWF, MF**	**None**
5—Miller Run	Basin	Cameron	HQ-CWF, MF	None
[5—Water Plug Hollow	**Basin**	**Cameron**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Miller Run to Mix Run**	**Cameron**	**CWF, MF**	**None**
5—Mix Run	Basin, Source to English Draft Run	Elk	EV, MF	None
6—English Draft Run	Basin	Elk	HQ-CWF, MF	None
5—Mix Run	Basin, English Draft Run to Mouth	Cameron	HQ-CWF, MF	None
[5—Little Dent Run	**Basin**	**Cameron**	**CWF, MF**	**None**
5—Nanny Run	**Basin**	**Cameron**	**CWF, MF**	**None**
5—Boyer Run	**Basin**	**Cameron**	**CWF, MF**	**None]**
5—Tributaries to Bennett Branch Sinnemahoning Creek	**Basins, Mix Run to Confluence with Driftwood Branch**	**Cameron**	**CWF, MF**	**None**
	* * * * * *			
4—Driftwood Branch Sinnemahoning Creek	Main Stem, Elk Fork to Confluence with Bennett Branch	Cameron	TSF, MF	None

5—**[Unnamed]** Tributaries to Driftwood Branch Sinnemahoning Creek	Basins, Elk Fork to **[Confluence with Bennett Branch]** **Cooks Run**	Cameron	HQ-CWF, MF	None
[5—Big Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Bobby Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
5—Cooks Run	Basin	Cameron	EV, MF	None
[5—Johns Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Britton Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
5—Tributaries to Driftwood Branch Sinnemahoning Creek	**Basins, Cooks Run to Clear Creek**	**Cameron**	**HQ-CWF, MF**	**None**
5—Clear Creek	Basin, Source to Mud Run	Cameron	EV, MF	None
6—Mud Run	Basin	Cameron	HQ-CWF, MF	None
5—Clear Creek	Basin, Mud Run to Mouth	Cameron	HQ-CWF, MF	None
[5—Ferguson Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—North Creek	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Swesey Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Dodge Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Eddy Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Wheaton Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—West Creek	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
5—Tributaries to Driftwood Branch Sinnemahoning Creek	**Basins, Clear Creek to Sinnemahoning Portage Creek**	**Cameron**	**HQ-CWF, MF**	**None**
5—Sinnemahoning Portage Creek	Basin, Source to Cowley Run	Cameron	EV, MF	None
6—Cowley Run	Basin	Cameron	EV, MF	None
5—Sinnemahoning Portage Creek	Basin, Cowley Run to Mouth	Cameron	CWF, MF	None
[5—Bauer Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Canoe Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Hunts Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**

5—Stillhouse Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Square Timber Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
5—Tributaries to Driftwood Branch Sinnemahoning Creek	**Basins, Sinnemahoning Portage Creek to Sterling Run**	**Cameron**	**HQ-CWF, MF**	**None**
5—Sterling Run				
6—Finley Run	Basin, Source to **[Unnamed Tributary at R.M. 1.7] UNT 25003 at 41° 25' 54.7" N; 78° 15' 34.2" W**	Cameron	HQ-CWF, MF	None
7—UNT 25003	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
6—Finley Run	Basin, **[Unnamed Tributary at R.M. 1.7] UNT 25003** to Confluence with Portable Run	Cameron	CWF, MF	None
6—Portable Run	Basin, Source to Confluence with Finley Run	Cameron	CWF, MF	None
5—Sterling Run	Basin, Confluence of Portable Run and Finley Run to Tannery Hollow Run	Cameron	CWF, MF	None
6—Tannery Hollow Run	Basin	Cameron	EV, MF	None
5—Sterling Run	Basin, Tannery Hollow Run to Mouth	Cameron	CWF, MF	None
[5—Mason Grove Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Wash Mason Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—John Mason Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Big Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Dry Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Tanglefoot Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Nelson Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Grindstone Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Johnson Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**

5—Tributaries to Driftwood Branch Sinnemahoning Creek	**Basins, Sterling Run to Confluence with Bennett Branch**	**Cameron**	**HQ-CWF, MF**	**None**
3—Sinnemahoning Creek	Main Stem, Confluence of Bennett and Driftwood Branches to Mouth	Clinton	WWF, MF	None
4—**[Unnamed]** Tributaries to Sinnemahoning Creek	Basins, Confluence of Bennett and Driftwood Branches to **[Mouth]** **First Fork**	Cameron**[-Clinton]**	HQ-CWF, MF	None
[4—Grove Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
4—First Fork Sinnemahoning Creek	Basin, Source to Big Nelson Run	Cameron	HQ-CWF, MF	None
5—Big Nelson Run	Basin, Source to Right Branch Big Nelson Run	Potter	HQ-CWF, MF	None
6—Right Branch Big Nelson Run	Basin	Potter	EV, MF	None
5—Big Nelson Run	Basin, Right Branch Big Nelson Run to Mouth	Potter	HQ-CWF, MF	None
4—First Fork Sinnemahoning Creek	**[Main Stem]** **Basin**, Big Nelson Run to **[Stevenson Dam]** **East Fork Sinnemahoning Creek**	Cameron	HQ-CWF, MF	None
[5—Unnamed Tributaries to First Fork Sinnemahoning Creek	**Basins, Big Nelson Run to Stevenson Dam**	**Potter-Cameron**	**HQ-CWF, MF**	**None**
5—Fish Basket Hollow	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
5—Little Nelson Run	**Basin**	**Potter**	**HQ-CWF, MF**	**None]**
5—East Fork Sinnemahoning Creek	Basin, Source to **UNT 24255 at 40° 38' 35.5" N; 77° 51' 9.5" W (known as** Dolliver Trail**)**	Potter	EV, MF	None
6—UNT 24255	**Basin**	**Potter**	**EV, MF**	**None**
5—East Fork Sinnemahoning Creek	**[Main Stem]** **Basin**, **[Dolliver Trail]** **UNT 24255** to **[Mouth]** **Stony Lick Run**	Potter	HQ-CWF, MF	None
[6—Unnamed Tributaries to East Fork Sinnemahoning Creek	**Basins, Dolliver Trail to Mouth**	**Potter**	**HQ-CWF, MF**	**None**
6—Shinglebolt Hollow	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
6—Horton Run	**Basin**	**Potter**	**HQ-CWF, MF**	**None]**

6—Stony Lick Run	Basin	Potter	EV, MF	None
[6—Wild Boy Run	Basin	Potter	HQ-CWF, MF	None
6—Jackson Lick Run	Basin	Potter	HQ-CWF, MF	None
6—Graveyard Hollow	Basin	Potter	HQ-CWF, MF	None
6—Stony Run	Basin	Potter	HQ-CWF, MF	None
6—Jamison Run	Basin	Potter	HQ-CWF, MF	None
6—Little Joe Run	Basin	Potter	HQ-CWF, MF	None
6—Camp Run	Basin	Potter	HQ-CWF, MF	None
6—Gravel Lick Run	Basin	Potter	HQ-CWF, MF	None
6—Mud Lick Run	Basin	Potter	HQ-CWF, MF	None
6—Williams Run	Basin	Potter	HQ-CWF, MF	None
6—Marvin Run	Basin	Potter	HQ-CWF, MF	None]
5—East Fork Sinnemahoning Creek	Basin, Stony Lick Run to Birch Run	Potter	HQ-CWF, MF	None
6—Birch Run	Basin	Potter	EV, MF	None
[6—Long Hollow	Basin	Potter	HQ-CWF, MF	None
6—Jordan Hollow	Basin	Potter	HQ-CWF, MF	None
6—Schoolhouse Run	Basin	Potter	HQ-CWF, MF	None
6—Black Stump Hollow	Basin	Potter	HQ-CWF, MF	None
6—Upper Vag Hollow	Basin	Potter	HQ-CWF, MF	None
6—Hunter Hollow	Basin	Potter	HQ-CWF, MF	None
6—Avery Hollow	Basin	Potter	HQ-CWF, MF	None
6—Bentley Hollow	Basin	Potter	HQ-CWF, MF	None]
5—East Fork Sinnemahoning Creek	Basin, Birch Run to Mouth	Potter	HQ-CWF, MF	None
[5—Elk Lick Run	Basin	Potter	HQ-CWF, MF	None
5—Schoolhouse Run	Basin	Potter	HQ-CWF, MF	None

5—Dry Hollow	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
5—Pine Island Run	**Basin**	**Potter**	**HQ-CWF, MF**	**None]**
4—First Fork Sinnemahoning Creek	**Basin, East Fork Sinnemahoning Creek to Bailey Run**	**Potter**	**HQ-CWF, MF**	**None**
5—Bailey Run	Basin, Source to Little Bailey Run	Potter	EV, MF	None
6—Little Bailey Run	Basin	Potter	HQ-CWF, MF	None
5—Bailey Run	Basin, Little Bailey Run to Mouth	Potter	HQ-CWF, MF	None
[5—Barrett Slide	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
5—Mahon Run	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
5—Berge Run	**Basin**	**Potter**	**HQ-CWF, MF**	**None**
5—Upper Logue Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Logue Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Owl Hollow	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Norcross Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Rattlesnake Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Muley Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Mill Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
4—First Fork Sinnemahoning Creek	**Basin, Bailey Run to Lushbaugh Run**	**Potter**	**HQ-CWF, MF**	**None**
5—Lushbaugh Run	Basin	Cameron	EV, MF	None
[5—Brooks Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Little Bailey Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None**
5—Short Bend Run	**Basin**	**Cameron**	**HQ-CWF, MF**	**None]**
4—First Fork Sinnemahoning Creek	**Basin, Lushbaugh Run to Stevenson Dam**	**Potter**	**HQ-CWF, MF**	**None**
4—First Fork Sinnemahoning Creek	Main Stem, Stevenson Dam to Mouth	Cameron	HQ-TSF, MF	None
5—**[Unnamed]** Tributaries to First Fork Sinnemahoning Creek	Basins, Stevenson Dam to Mouth	Cameron	HQ-CWF, MF	None

[5—Woodrock Run	Basin	Cameron	HQ-CWF, MF	None
5—Roaring Run	Basin	Cameron	HQ-CWF, MF	None
5—Bronson Run	Basin	Cameron	HQ-CWF, MF	None
5—Joes Run	Basin	Cameron	HQ-CWF, MF	None
5—Guys Hollow	Basin	Cameron	HQ-CWF, MF	None
5—Lick Island Run	Basin	Cameron	HQ-CWF, MF	None
5—Pumpkin Hollow	Basin	Cameron	HQ-CWF, MF	None
5—Arksill Run	Basin	Cameron	HQ-CWF, MF	None
5—Pepperhill Run	Basin	Cameron	HQ-CWF, MF	None
5—Riddles Hollow	Basin	Cameron	HQ-CWF, MF	None
5—Whiteoak Run	Basin	Cameron	HQ-CWF, MF	None
5—Board Rock Hollow	Basin	Cameron	HQ-CWF, MF	None
5—Ellicott Run	Basin	Cameron	HQ-CWF, MF	None]
[4—Wykoff Run	Basin	Cameron	HQ-CWF, MF	None
4—Upper Jerry Run	Basin	Cameron	HQ-CWF, MF	None
4—Lower Jerry Run	Basin	Cameron	HQ-CWF, MF	None
4—Pfoutz Run	Basin	Clinton	HQ-CWF, MF	None
4—Montour Run	Basin	Clinton	HQ-CWF, MF	None
4—Round Island Run	Basin	Clinton	HQ-CWF, MF	None
4—Mill Run	Basin	Clinton	HQ-CWF, MF	None
4—Commissioners Run	Basin	Clinton	HQ-CWF, MF	None
4—Wistar Run	Basin	Clinton	HQ-CWF, MF	None
4—Moccasin Run (Moccasin Falls Run)	Basin	Clinton	HQ-CWF, MF	None
4—Upper Stimpson Run	Basin	Clinton	HQ-CWF, MF	None]

4—Tributaries to Sinnemahoning Creek	**Basins, First Fork to Mouth**	**Cameron-Clinton**	**HQ-CWF, MF**	**None**
3—Cooks Run	Basin, Source to Onion Run	Clinton	EV, MF	None
4—Onion Run	Basin	Clinton	EV, MF	None
3—Cooks Run	Basin, Onion Run to Crowley Hollow Run	Clinton	HQ-CWF, MF	None
4—Crowley Hollow Run	Basin	Clinton	CWF, MF	None
3—Cooks Run	Basin, Crowley Hollow Run to Mouth	Clinton	CWF, MF	None
[3—Milligan Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Smith Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—North Smith Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Cooks Run to Fish Dam Run**	**Clinton**	**HQ-CWF, MF**	**None**
3—Fish Dam Run	Basin	Clinton	EV, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, Fish Dam Run to Kettle Creek**	**Clinton**	**HQ-CWF, MF**	**None**
3—Kettle Creek	Basin, Source to Inlet of Kettle Creek Reservoir	Clinton	EV, MF	None
	* * * * * *			
3—Kettle Creek	Basin, Twomile Run to Mouth	Clinton	TSF, MF	None
[3—Dry Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Kettle Creek to Barney Run**	**Clinton**	**HQ-CWF, MF**	**None**
3—Barney Run	Basin	Clinton	EV, MF	None
[3—Shintown Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Hall Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Barney Run to Drury Run**	**Clinton**	**HQ-CWF, MF**	**None**
3—Drury Run	Basin, Source to Sandy Run	Clinton	EV, MF	None
4—Sandy Run	Basin	Clinton	HQ-CWF, MF	None
3—Drury Run	Basin, Sandy Run to Woodley Draft	Clinton	HQ-CWF, MF	None

4—Woodley Draft	Basin	Clinton	CWF, MF	None
3—Drury Run	Basin, Woodley Draft to Mouth	Clinton	CWF, MF	None
[3—Brewery Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Peters Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Drury Run to Paddy Run**	**Clinton**	**HQ-CWF, MF**	**None**
3—Paddy Run	Basin	Clinton	EV, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, Paddy Run to UNT 23593 at 40° 18' 5.0" N; 77° 43' 36.8" W (known as Boggs Hollow)**	**Clinton**	**HQ-CWF, MF**	**None**
3—**UNT 23593 [Boggs Hollow]**	Basin	Clinton	EV, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, UNT 23593 to Young Womans Creek**	**Clinton**	**HQ-CWF, MF**	**None**
3—Young Womans Creek	Basin, Source to Left Branch Young Womans Creek	Clinton	EV, MF	None
3—Young Womans Creek	Basin, Left Branch Young Womans Creek to Mouth	Clinton	HQ-CWF, MF	None
[3—Caldwell Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Dry Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Hyner Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Little McCloskey Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Big McCloskey Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Huff Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Schoolhouse Hollow	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Goodman Hollow	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Johnson Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Ritchie Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Green Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**

3—Rattlesnake Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Grugan Hollow	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Mill Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Baker Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—McCloskey Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Ferney Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—East Ferney Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
3—Holland Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Young Woman's Creek to Tangascootack Creek**	**Clinton**	**HQ-CWF, MF**	**None**
3—**[Tangascootak] Tangascootack** Creek	**[Main Stem] Basin, Source to North Fork Tangascootack Creek**	Clinton	CWF, MF	None
[4—Unnamed Tributaries to Tangascootak Creek	**Basins**	**Clinton**	**CWF, MF**	**None]**
4—North Fork **[Tangascootak] Tangascootack** Creek	Basin	Clinton	HQ-CWF, MF	None
[4—Bird Run	**Basin**	**Clinton**	**CWF, MF**	**None]**
3—Tangascootack Creek	**Basin, North Fork Tangascootack Creek to Mouth**	**Clinton**	**CWF, MF**	**None**
3—Tributaries to West Branch Susquehanna River	**Basins, Tangascootack Creek to Lick Run**	**Clinton**	**HQ-CWF, MF**	**None**
3—Lick Run	Basin, Source to Farthest Upstream Crossing of LR 18011 (SR 1001)	Clinton	EV, MF	None
3—Lick Run	Basin, Farthest Upstream Crossing of LR 18011 to Mouth	Clinton	HQ-CWF, MF	None
[3—Queens Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Lick Run to and including Queens Run**	**Clinton**	**HQ-CWF, MF**	**None**

3—**[Unnamed]** Tributaries to West Branch Susquehanna River	**Basins,** Queens Run to **[Pine Creek] Bald Eagle Creek**	Clinton**[-Lycoming]**	CWF, MF	None
[3—Sugar Run	**Basin**	**Clinton**	**CWF, MF**	**None**
3—Reeds Run	**Basin**	**Clinton**	**CWF, MF**	**None]**
3—Bald Eagle Creek	Basin, Source to Laurel Run (at Port Matilda)	Centre	CWF, MF	None
	* * * * * *			
3—Bald Eagle Creek	Main Stem, Laurel Run to Nittany Creek	Centre	TSF, MF	None
4—**[Unnamed]** Tributaries to Bald Eagle Creek	Basins, Laurel Run **(at Port Matilda)** to **[Nittany Creek] Laurel Run at 40° 51' 47.8" N; 77° 56' 7.3" W**	Centre	CWF, MF	None
[4—Mudlick Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Laurel Run	Basin	Centre	EV, MF	None
[4—Dicks Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Dewitt Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Tributaries to Bald Eagle Creek	**Basins, Laurel Run to Wallace Run**	**Centre**	**CWF, MF**	**None**
4—Wallace Run	Basin, Source to **[Unnamed Tributary] UNT 23105** at **[Gum Stump]at 40° 58' 44.2" N; 77° 50' 59.3" W**	Centre	EV, MF	None
5—**[Unnamed Tributary at Gum Stump]UNT 23105**	Basin	Centre	EV, MF	None
4—Wallace Run	Basin, **[Unnamed Tributary at Gum Stump]UNT 23105** to Mouth	Centre	HQ-CWF, MF	None
[4—Moose Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Tributaries to Bald Eagle Creek	**Basins, Wallace Run to Spring Creek**	**Centre**	**CWF, MF**	**None**
4—Spring Creek	Main Stem, Source to PA 550 Bridge	Centre	HQ-CWF, MF	None
	* * * * * *			
5—UNTs to Spring Creek	Basins, PA 550 Bridge to Mouth	Centre	CWF, MF	None
5—Logan Branch	Basin, Source to **[UNT 23007 at RM 7.16] Confluence with Tributary at 40° 49' 56.6"N; 77° 45' 18.8" W**	Centre	**[CWF, MF] HQ-CWF, MF**	None

6—**[UNT 23007 at RM 7.16 (locally McBrides Run)]** **Tributary at 40° 49' 56.6"N; 77° 45' 18.8" W**	Basin	Centre	**[HQ-CWF, MF]** **CWF, MF**	None
5—Logan Branch	Basin, **[UNT 23007]** **Confluence with Tributary at 40° 49' 56.6"N; 77° 45' 18.8" W** to T 371 Bridge	Centre	CWF, MF	None
5—Logan Branch	Main Stem, T-371 Bridge to Mouth	Centre	HQ-CWF, MF	None
6—**[Unnamed]** Tributaries to Logan Branch	Basins, T-371 Bridge to Mouth	Centre	CWF, MF	None
5—Buffalo Run	Basin, Source to T 942 Bridge at **[RM 0.66 (near Coleville)]** **40° 54' 35.4" N; 77° 47' 37.3" W**	Centre	HQ-CWF, MF	None
5—Buffalo Run	Basin, T 942 Bridge to Mouth	Centre	CWF, MF	None
[4—Antis Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Tributaries to Bald Eagle Creek	**Basins, Spring Creek to Nittany Creek**	**Centre**	**CWF, MF**	**None**
4—Nittany Creek	Basin, Source to I-80	Centre	CWF, MF	None
4—Nittany Creek	Basin, I-80 to Mouth	Centre	HQ-CWF, MF	None
3—Bald Eagle Creek	Main Stem, Nittany Creek to Mouth	Centre	WWF, MF	None
4—**[Unnamed]** Tributaries to Bald Eagle Creek	Basins, Nittany Creek to **[Mouth]** **Lick Run**	Centre**[-Clinton]**	CWF, MF	None
[4—Bullit Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Greens Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Lick Run	Basin	Centre	HQ-CWF, MF	None
[4—Hunters Run	**Basin**	**Centre**	**CWF, MF**	**None**
4—Marsh Creek	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Tributaries to Bald Eagle Creek	**Basins, Lick Run to Beech Creek**	**Centre**	**CWF, MF**	**None**
4—Beech Creek				
5—South Fork Beech Creek	Basin, Source to Stinktown Run	Centre	CWF, MF	None
6—Stinktown Run	Basin	Centre	HQ-CWF, MF	None
5—South Fork Beech Creek	Basin, Stinktown Run to Mouth	Centre	CWF, MF	None
5—North Fork Beech Creek	Basin, Source to Confluence with South Fork	Centre	CWF, MF	None

4—Beech Creek	**[Main Stem] Basin,** Confluence of South and North **[Branches] Forks** to **[Mouth] Rock Run**	**[Clinton-]**Centre	CWF, MF	None
[5—UNTs to Beech Creek	**Basins, Confluence of South and North Branches to Mouth**	**Clinton-Centre**	**CWF, MF**	**None]**
5—Rock Run	Basin	Centre	EV, MF	None
[5—Sandy Run	**Basin**	**Centre**	**CWF, MF**	**None**
5—Wolf Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Beech Creek	**Basin, Rock Run to Panther Run**	**Centre**	**CWF, MF**	**None**
5—Panther Run	Basin	Centre	EV, MF	None
[5—Eddy Lick Run	**Basin**	**Centre**	**CWF, MF**	**None**
5—Logway Run	**Basin**	**Centre**	**CWF, MF**	**None**
5—Council Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Beech Creek	**Basin, Panther Run to Two Rock Run**	**Centre**	**CWF, MF**	**None**
5—Two Rock Run	Basin	Centre	EV, MF	None
[5—Three Rock Run	**Basin**	**Centre**	**CWF, MF**	**None]**
4—Beech Creek	**Basin, Two Rock Run to Hayes Run**	**Centre**	**CWF, MF**	**None**
5—Hayes Run	Basin	Centre	EV, MF	None
4—Beech Creek	**Basin, Hayes Run to Big Run**	**Centre**	**CWF, MF**	**None**
5—Big Run				
6—Middle Branch Big Run	Basin, Source to **[Thornapple Run] UNT 22666 at 41° 10' 47.7" N; 77° 45' 58.0" W**	Clinton	EV, MF	None
7—**[Thornapple Run] UNT 22666**	Basin	Clinton	CWF, MF	None
6—Middle Branch Big Run	Basin, **[Thornapple Run] UNT 22666** to Confluence with East Branch	Clinton	CWF, MF	None
6—East Branch Big Run	Basin, Source to **[RM 4.5] a point at 41° 11' 15.5 N; 77° 43' 51.5" W**	Clinton	EV, MF	None
6—East Branch Big Run	Basin, **[RM 4.5] From the point at 41° 11' 15.5 N; 77° 43' 51.5" W** to Confluence with Middle Branch	Clinton	CWF, MF	None
5—Big Run	**[Main Stem] Basin,** Confluence of Middle and East Branches to **[Mouth] West Branch Big Run**	Clinton	CWF, MF	None

[6—Unnamed Tributaries to Big Run	**Basins, Confluence of Middle and East Branches to Mouth**	**Clinton**	**CWF, MF**	**None]**
6—West Branch Big Run	Basin	Clinton	EV, MF	None
5—Big Run	**Basin, West Branch Big Run to Mouth**	**Clinton**	**CWF, MF**	**None**
4—Beech Creek	**Basin, Big Run to Monument Run**	**Clinton**	**CWF, MF**	**None**
5—Monument Run	Basin	Clinton	HQ-CWF, MF	None
[5—Twin Run	**Basin**	**Clinton**	**CWF, MF**	**None**
5—Bitner Run	**Basin**	**Clinton**	**CWF, MF**	**None**
5—Sugar Run	**Basin**	**Clinton**	**CWF, MF**	**None]**
4—Beech Creek	**Basin, Monument Run to Mouth**	**Clinton**	**CWF, MF**	**None**
[4—Laurel Run	**Basin**	**Clinton**	**CWF, MF**	**None]**
4—Tributaries to Bald Eagle Creek	**Basins, Beech Creek to Fishing Creek**	**Clinton**	**CWF, MF**	**None**
4—Fishing Creek	Basin, Source to Cherry Run	Clinton	HQ-CWF, MF	None
5—Cherry Run	Basin	Clinton	EV, MF	None
4—Fishing Creek	**[Main Stem]** **Basin,** Cherry Run to **[Long Run]** **Little Fishing Creek**	Clinton	HQ-CWF, MF	None
[5—Unnamed Tributaries to Fishing Creek	**Basins, Cherry Run to Long Run**	**Clinton**	**HQ-CWF, MF**	**None]**
5—Little Fishing Creek	**[Main Stem]** **Basin, Source to Roaring Run**	Clinton	HQ-CWF, MF	None
[6—Unnamed Tributaries to Little Fishing Creek	**Basins**	**Centre-Clinton**	**HQ-CWF, MF**	**None]**
6—Roaring Run	Basin, Source to Camp Krislund	Centre	EV, MF	None
6—Roaring Run	Basin, Camp Krislund to Mouth	Centre	HQ-CWF, MF	None
5—Little Fishing Creek	**Basin, Roaring Run to Mouth**	**Clinton**	**HQ-CWF, MF**	**None**
4—Fishing Creek	**Basin, Little Fishing Creek to Long Run**	**Clinton**	**HQ-CWF, MF**	**None**
[5—Cedar Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None]**
5—Long Run	Basin	Clinton	HQ-CWF, MF	None
4—Fishing Creek	Basin, Long Run to Mouth	Clinton	CWF, MF	None
4—Tributaries to Bald Eagle Creek	**Basins, Fishing Creek to Harveys Run**	**Clinton**	**CWF, MF**	**None**

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3—Tributaries to West Branch Susquehanna River	**Basins, Bald Eagle Creek to McElhattan Creek**	**Clinton**	**CWF, MF**	**None**
3—McElhattan Creek	Basin, Source to Keller Reservoir Water Supply Intake	Clinton	HQ-CWF, MF	None
3—McElhattan Creek	Basin, Keller Water Supply Intake to Mouth	Clinton	CWF, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, McElhattan Creek to Chatham Run**	**Clinton**	**CWF, MF**	**None**
3—Chatham Run	Basin, Source to Chatham Water Co. Intake	Clinton	HQ-CWF, MF	None
3—Chatham Run	Basin, Chatham Water Co. Intake to Mouth	Clinton	CWF, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, Chatham Run to Henry Run**	**Clinton**	**CWF, MF**	**None**
3—Henry Run	Basin	Clinton	HQ-CWF, MF	None
3—Tributaries to West Branch Susquehanna River	**Basins, Henry Run to Pine Creek**	**Clinton**	**CWF, MF**	**None**
3—Pine Creek	Basin, Source to South Branch Pine Creek	Potter	HQ-CWF, MF	None
4—South Branch Pine Creek	Basin	Potter	HQ-CWF, MF	None
3—Pine Creek	Main Stem, South Branch Pine Creek to Marsh Creek	Tioga	EV, MF	None
4—**[Unnamed]** Tributaries to Pine Creek	Basins, South Branch Pine Creek to **[Marsh Creek]** **Johnson Brook**	Potter**[-Tioga]**	HQ-CWF, MF	None
4—Johnson Brook	Basin, Source to **[Farthest Downstream Crossing of]** State Game Lands No. 64 Border **at 41° 45' 8.2" N; 77° 37' 59.2" W**	Potter	EV, MF	None
4—Johnson Brook	Basin, **[Farthest Downstream Crossing of]** State Game Lands No. 64 Border **at 41° 45' 8.2" N; 77° 37' 59.2" W** to Mouth	Potter	HQ-CWF, MF	None
[4—Phoenix Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Elk Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**

4—Benaur Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None]**
4—Tributaries to Pine Creek	**Basins, Johnson Brook to Long Run**	**Potter-Tioga**	**HQ-CWF, MF**	**None**
4—Long Run	Basin	Tioga	CWF, MF	None
[4—Lick Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Shin Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Painter Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Steele Run Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Woodruff Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Schanbacher Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Bee Tree Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Herrington Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None]**
4—Tributaries to Pine Creek	**Basins, Long Run to Marsh Creek**	**Potter-Tioga**	**HQ-CWF, MF**	**None**
4—Marsh Creek	**[Main Stem, Source to Straight Run**	**Tioga**	**WWF, MF**	**None**
5—Unnamed Tributaries to Marsh Creek	**Basins, Source to Straight Run**	**Tioga**	**CWF, MF**	**None]**
5—Charleston Creek	Basin**, Source to Confluence with Morris Branch**	Tioga	WWF, MF	None
5—Morris Branch	**Basin, Source to Kelsey Creek**	**Tioga**	**CWF, MF**	**None**
[5] 6—Kelsey Creek	Basin	Tioga	WWF, MF	None
5—Morris Branch	**Basin, Kelsey Creek to Confluence with Charleston Creek**	**Tioga**	**CWF, MF**	**None**
4—Marsh Creek	**Main Stem, Confluence of Charleston Creek and Morris Branch to Straight Run**	**Tioga**	**WWF, MF**	**None**
[5—Horse Thief Run	**Basin**	**Tioga**	**CWF, MF**	**None]**
5—Tributaries to Marsh Creek	**Basins, Confluence of Charleston Creek and Morris Branch to Baldwin Run**	**Tioga**	**CWF, MF**	**None**
5—Baldwin Run	Basin	Tioga	HQ-CWF, MF	None
[5—Hibard Hollow	**Basin**	**Tioga**	**CWF, MF**	**None**

5—Fuller Hollow	**Basin**	**Tioga**	**CWF, MF**	**None**
5—Wolf Run	**Basin**	**Tioga**	**CWF, MF**	**None**
5—Heise Run	**Basin**	**Tioga**	**CWF, MF**	**None**
5—Smith Run	**Basin**	**Tioga**	**CWF, MF**	**None**
5—Gee Hollow	**Basin**	**Tioga**	**CWF, MF**	**None]**
5—Tributaries to Marsh Creek	**Basins, Baldwin Run to Canada Run**	**Tioga**	**CWF, MF**	**None**
5—Canada Run	Basin	Tioga	HQ-CWF, MF	None
[5—Dantz Run	**Basin**	**Tioga**	**CWF, MF**	**None]**
5—Tributaries to Marsh Creek	**Basins, Canada Run to Straight Run**	**Tioga**	**CWF, MF**	**None**
5—Straight Run	Basin	Tioga	HQ-CWF, MF	None
4—Marsh Creek	**[Main Stem] Basin,** Straight Run to **[Mouth] Asaph Run**	Tioga	CWF, MF	None
[5—Unnamed Tributaries to Marsh Creek	**Basins, Straight Run to Mouth**	**Tioga**	**CWF, MF**	**None]**
5—Asaph Run	Basin	Tioga	HQ-CWF, MF	None
[5—Gray Hollow	**Basin**	**Tioga**	**CWF, MF**	**None**
5—Kinney Hollow	**Basin**	**Tioga**	**CWF, MF**	**None]**
4—Marsh Creek	**Basin, Asaph Run to Mouth**	**Tioga**	**CWF, MF**	**None**
3—Pine Creek	Main Stem, Marsh Creek to Mouth	Lycoming-Clinton	HQ-TSF, MF	None
4—**[Unnamed]** Tributaries to Pine Creek	Basins, Marsh Creek to **[Mouth] Pine Island Run**	Tioga-Lycoming-Clinton	HQ-CWF, MF	None
[4—Strap Mill Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Darling Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Owassee Slide Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Pinafore Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Bear Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Little Fourmile Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Fourmile Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Stowell Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Burdic Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**

4—Horse Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Tumbling Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Little Slate Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Ice Break Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Campbells Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Straight Creek	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Good Spring Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Rail Island Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None]**
4—Pine Island Run	Basin	Tioga	EV, MF	None
[4—Benjamin Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Dillon Hollow	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Clay Mine Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Water Tank Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Bohen Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Stone Quarry Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Jerry Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None]**
4—Tributaries to Pine Creek	**Basins, Pine Island Run to Babb Creek**	**Tioga**	**HQ-CWF, MF**	**None**
4—Babb Creek	Main Stem	Tioga	CWF, MF	None
	* * * * * *			
4—Trout Run	Basin	Lycoming	HQ-CWF, MF	None
4—Tributaries to Pine Creek	**Basins, Babb Creek to Cedar Run**	**Tioga-Lycoming**	**HQ-CWF, MF**	**None**
4—Cedar Run	Basin	Lycoming	EV, MF	None
[4—Jacobs Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Gamble Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Elk Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Hilborn Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**

4—Tributaries to Pine Creek	**Basins, Cedar Run to Slate Run**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Slate Run	Basin	Lycoming	EV, MF	None
[4—Little Slate Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Naval Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Callahan Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Bonnell Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Wolf Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Ross Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
4—Tributaries to Pine Creek	Basins, Slate Run to Mill Run	Lycoming	HQ-CWF, MF	None
4—Mill Run	Basin, Source to Bull Run	Lycoming	EV, MF	None
5—Bull Run	Basin	Lycoming	HQ-CWF, MF	None
4—Mill Run	Basin, Bull Run to Mouth	Lycoming	HQ-CWF, MF	None
[4—Trout Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Miller Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Truman Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Bluestone Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Solomon Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Shanty Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—McClure Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Callahan Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Browns Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Dry Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Upper Pine Bottom Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Lower Pine Bottom Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Bull Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
4—Tributaries to Pine Creek	**Basins, Mill Run to Little Pine Creek**	**Lycoming**	**HQ-CWF, MF**	**None**

4—Little Pine Creek				
5—Texas Creek (Zimmerman Creek)	Basin, Source to Confluence with Blockhouse Creek	Lycoming	HQ-CWF, MF	None
5—Blockhouse Creek	Basin, Source to Flicks Run	Lycoming	CWF, MF	None
6—Flicks Run	Basin	Lycoming	HQ-CWF, MF	None
5—Blockhouse Creek	Basin, Flicks Run to Confluence with Texas Creek	Lycoming	CWF, MF	None
4—Little Pine Creek	Main Stem, Confluence of Texas and Blockhouse Creeks to Little Pine Creek Dam	Lycoming	CWF, MF	None
5—**[Unnamed]** Tributaries to Little Pine Creek	Basin, Confluence of Texas and Blockhouse Creeks to **[Little Pine Creek Dam]** **English Run**	Lycoming	HQ-CWF, MF	None
[5—Bear Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Bonnell Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Lick Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
5—English Run	Basin	Lycoming	CWF, MF	None
[5—Coal Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Rogers Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
5—Tributaries to Little Pine Creek	**Basins, English Run to Otter Run**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Otter Run	Basin	Lycoming	CWF, MF	None
[5—Carsons Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—McKees Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Panther Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Naval Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Love Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
5—Tributaries to Little Pine Creek	**Basins, Otter Run to Little Pine Creek Dam**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Little Pine Creek	Main Stem, Little Pine Creek Dam to Mouth	Lycoming	TSF, MF	None

5—[Unnamed] Tributaries to Little Pine Creek	Basins, Little Pine Creek Dam to Mouth	Lycoming	HQ-CWF, MF	None
[5—English Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Boone Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Dam Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Ramsey Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Bonnell Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Tombs Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Gamble Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Furnace Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Sulphur Run	**Basin**	**Clinton**	**HQ-CWF, MF**	**None**
4—Nichols Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
3—[Unnamed] Tributaries to North Bank of West Branch Susquehanna River	Basins, Pine Creek to Loyalsock Creek **except Larrys Creek and Lycoming Creek**	Lycoming	WWF, MF	None
3—Larrys Creek	**Basin, Source to Second Fork Larrys Creek**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Second Fork Larrys Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Larrys Creek	**Basin, Second Fork to First Fork**	**Lycoming**	**WWF, MF**	**None**
4—First Fork Larrys Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Larrys Creek	**Basin, First Fork to Mouth**	**Lycoming**	**WWF, MF**	**None**
3—Lycoming Creek	**Main Stem, Source to Long Run**	**Lycoming**	**CWF, MF**	**None**
4—Tributaries to Lycoming Creek	**Basins, Source to Red Run**	**Tioga-Lycoming**	**HQ-CWF, MF**	**None**
4—Red Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Tributaries to Lycoming Creek	**Basins, Red Run to Long Run**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Long Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Lycoming Creek	**Basin, Long Run to Mouth**	**Lycoming**	**CWF, MF**	**None**

3—**[Unnamed]** Tributaries to South Bank of West Branch Susquehanna River	Basins, Pine Creek to Loyalsock Creek **except Aughanbaugh Run, Antes Creek and Big Run**	Lycoming	CWF, MF	None
3—Aughanbaugh Run	Basin	Lycoming	HQ-CWF, MF	None
	* * * * * *			
3—Antes Creek	Basin, Morgan Valley Run to Mouth	Lycoming	CWF, MF	None
[3—Stewards Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Larrys Creek	**Basin, Source to Second Fork**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Second Fork Larrys Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Larrys Creek	**Basin, Second Fork to First Fork**	**Lycoming**	**WWF, MF**	**None**
4—First Fork Larrys Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Larrys Creek	**Basin, First Fork to Mouth**	**Lycoming**	**WWF, MF**	**None]**
3—Big Run	Basin	Lycoming	HQ-CWF, MF	None
[3—Pine Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Quenshukeny Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Bender Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
3—Daugherty Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Mosquito Creek	**Basin**	**Lycoming**	**CWF, MF**	**None**
3—Lycoming Creek	**Main Stem, Source to Long Run**	**Tioga-Lycoming**	**CWF, MF**	**None**
4—Unnamed Tributaries to Lycoming Creek	**Basins, Source to Long Run**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Cascade Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Sugar Works Run	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Mill Creek	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Roaring Branch	**Basin**	**Tioga**	**HQ-CWF, MF**	**None**
4—Abbott Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Red Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Rock Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Frozen Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**

4—Heylmun Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Pleasant Stream	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Slacks Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Shoemakers Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Grays Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Hagermans Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Glendenen Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Trout Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Wolf Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Daugherty Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Hoagland Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Long Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
3—Lycoming Creek	**Basin, Long Run to Mouth**	**Lycoming**	**WWF, MF**	**None**
3—Grafius Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Hagermans Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
3—Millers Run	**Basin**	**Lycoming**	**WWF, MF**	**None]**
3—Loyalsock Creek	Basin, Source to Pole Bridge Run	Lycoming	CWF, MF	None
4—Pole Bridge Run	Basin	Sullivan	HQ-CWF, MF	None
3—Loyalsock Creek	**[Main Stem]** **Basin**, Pole Bridge Creek to **[Sullivan-Lycoming Border]** **Shanerburg Run**	Sullivan**[-Lycoming]**	CWF, MF	None
[4—Unnamed Tributaries to Loyalsock Creek	**Basins, Pole Bridge Creek to Little Loyalsock Creek**	**Sullivan**	**CWF, MF**	**None]**
4—Shanerburg Run	Basin, Source to **[End of Jeep Trail (about 1.5 Miles from Mouth)]** **a point at 41° 25' 57.5"N; 76° 32' 12.9" W**	Sullivan	EV, MF	None
4—Shanerburg Run	Basin, **[End of Jeep Trail]** **the point at 41° 25' 57.5"N; 76° 32' 12.9" W** to Mouth	Sullivan	HQ-CWF, MF	None

3—Loyalsock Creek	**Basin, Shanerburg Run to Tamarack Run**	**Sullivan**	**CWF, MF**	**None**
4—Tamarack Run	Basin	Sullivan	HQ-CWF, MF	None
3—Loyalsock Creek	**Basin, Tamarack Run to Big Run**	**Sullivan**	**CWF, MF**	**None**
4—Big Run	Basin	Sullivan	HQ-CWF, MF	None
[4—Double Run	**Basin**	**Sullivan**	**CWF, MF**	**None**
4—High Rock Run	**Basin**	**Sullivan**	**CWF, MF**	**None**
4—Little Loyalsock Creek	**Basin**	**Sullivan**	**CWF, MF**	**None]**
3—Loyalsock Creek	**Basin, Big Run to Little Loyalsock Creek**	**Sullivan**	**CWF, MF**	**None**
4—Little Loyalsock Creek	**Basin**	**Sullivan**	**CWF, MF**	**None**
3—Loyalsock Creek	**Main Stem, Little Loyalsock Creek to Sullivan-Lycoming County Border at 41° 24' 7.8" N; 76° 44' 39.5" W**	**Sullivan**	**CWF, MF**	**None**
4—**[Unnamed]** Tributaries to Loyalsock Creek	Basins, Little Loyalsock Creek to **[Sullivan-Lycoming County Border]** **Ketchum Run**	Sullivan	HQ-CWF, MF	None
[4—Scar Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None]**
4—Ketchum Run	Basin	Sullivan	EV, MF	None
[4—Cape Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Barkshed Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Joes Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Elk Creek	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Slab Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Mill Creek	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Huckle Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Dry Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None]**
4—Tributaries to Loyalsock Creek	**Basins, Ketchum Run to Ogdonia Creek**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Ogdonia Creek	Basin, Source to Kettle Creek	Sullivan	HQ-CWF, MF	None
5—Kettle Creek	Basin	Sullivan	EV, MF	None

4—Ogdonia Creek	Basin, Kettle Creek to Mouth	Sullivan	HQ-CWF, MF	None
4—Tributaries to Loyalsock Creek	**Basins, Ogdonia Creek to Sullivan-Lycoming County Border at 41° 24' 7.8" N; 76° 44' 39.5" W**	**Sullivan**	**HQ-CWF, MF**	**None**
3—Loyalsock Creek	Main Stem, Sullivan-Lycoming County Border to **[Mouth]** **PA 973 Bridge at 41° 19' 30.8" N; 76° 54' 42.6" W**	Lycoming	TSF, MF	None
4—**[Unnamed]** Tributaries to Loyalsock Creek	Basins, Sullivan-Lycoming County Border to **[PA 973 Bridge]** **Plunketts Creek**	Lycoming	HQ-CWF, MF	None
4—Plunketts Creek	**[Main Stem]** **Basin, Source to Noon Branch**	Lycoming	HQ-CWF, MF	None
[5—Unnamed Tributaries to Plunketts Creek	**Basins**	**Sullivan-Lycoming**	**HQ-CWF, MF**	**None**
5—Reibsan Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
5—Mock Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
5—Noon Branch	Basin, Source to Wolf Run	Lycoming	EV, MF	None
6—Wolf Run	Basin	Lycoming	HQ-CWF, MF	None
5—Noon Branch	Basin, Wolf Run to Mouth	Lycoming	HQ-CWF, MF	None
4—Plunketts Creek	**Basin, Noon Branch to King Run**	**Lycoming**	**HQ-CWF, MF**	**None**
5—King Run	Basin, Source to Engle Run	Lycoming	HQ-CWF, MF	None
6—Engle Run	Basin	Lycoming	EV, MF	None
5—King Run	Basin, Engle Run to Mouth	Lycoming	HQ-CWF, MF	None
[5—Dry Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
4—Plunketts Creek	**Basin, King Run to Mouth**	**Lycoming**	**HQ-CWF, MF**	**None**
[4—Bear Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Little Bear Creek	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Dry Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Butternut Grove Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Wallis Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**

4—Tributaries to Loyalsock Creek	**Basins, Plunketts Creek to PA 973 Bridge**	**Lycoming**	**HQ-CWF, MF**	**None**
[4—Unnamed Tributaries to Loyalsock Creek	**Basins, PA 973 Bridge to Mouth**	**Lycoming**	**TSF, MF**	**None**
4—Mill Creek (West)	**Basin**	**Lycoming**	**TSF, MF**	**None**
4—Mill Creek (East)	**Basin**	**Lycoming**	**TSF, MF**	**None]**
3—Loyalsock Creek	**Basin, PA 973 Bridge to Mouth**	**Lycoming**	**TSF, MF**	**None**
3—**[Unnamed]** Tributaries to West Branch Susquehanna River	Basins, Loyalsock Creek to **[Mouth]** **Muncy Creek**	Lycoming-Northumberland-Union	WWF, MF	None
[3—Tules Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Turkeys Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Carpenters Run	**Basin**	**Lycoming**	**WWF, MF**	**None]**
3—Muncy Creek	Basin, Source to second SR 2002 Bridge upstream of Sonestown at **[RM 26.4]** **41° 21' 24.5" N; 76° 31' 34.9" W**	Sullivan	EV, MF	None
3—Muncy Creek	Main Stem, Second SR 2002 Bridge upstream of Sonestown **[at RM 26.4]** to US 220 Bridge at Muncy Valley **at 41° 20' 36.3" N; 76° 35' 8.1" W**	Sullivan	CWF, MF	None
4—**[UNTs]** **Tributaries** to Muncy Creek	Basins, Second SR 2002 Bridge upstream of Sonestown **[at RM 26.4]** to US 220 Bridge at Muncy Valley	Sullivan	HQ-CWF, MF	None
[4—Slip Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None**
4—Big Run	**Basin**	**Sullivan**	**HQ-CWF, MF**	**None]**
3—Muncy Creek	Main Stem, US 220 Bridge at Muncy Valley to Mouth	Lycoming	TSF, MF	None
4—**[Unnamed]** Tributaries to Muncy Creek	Basins, US 220 Bridge at Muncy Valley to Laurel Run	Sullivan-Lycoming	HQ-CWF, MF	None
[4—Trout Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Spring Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Rock Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**

4—Lick Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Big Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None**
4—Roaring Run	**Basin**	**Lycoming**	**HQ-CWF, MF**	**None]**
4—Laurel Run	Basin	Lycoming	HQ-CWF, MF	None
4—**[Unnamed]** Tributaries to Muncy Creek	Basins, Laurel Run to Mouth	Lycoming	CWF, MF	None
[4—Pine Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Gregs Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Sugar Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Little Muncy Creek	**Basin**	**Lycoming**	**CWF, MF**	**None**
4—Wolf Run	**Basin**	**Lycoming**	**CWF, MF**	**None**
3—Glade Run	**Basin**	**Lycoming**	**WWF, MF**	**None**
3—Turkey Run	**Basin**	**Lycoming**	**WWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Muncy Creek to Black Hole Creek**	**Lycoming**	**WWF, MF**	**None**
3—Black Hole Creek	Basin	Lycoming	TSF, MF	None
[3—Black Run	**Basin**	**Lycoming**	**WWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Black Hole Creek to White Deer Hole Creek**	**Lycoming-Northumberland-Union**	**WWF, MF**	**None**
3—White Deer Hole Creek	Basin, Source to Spring Creek	Union	HQ-CWF, MF	None
4—Spring Creek	Basin	Union	TSF, MF	None
3—White Deer Hole Creek	Basin, Spring Creek to Mouth	Union	TSF, MF	None
[3—Delaware Run	**Basin**	**Northumberland**	**WWF, MF**	**None**
3—Dry Run	**Basin**	**Northumberland**	**WWF, MF**	**None**
3—Spring Run	**Basin**	**Northumberland**	**WWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, White Deer Hole Creek to White Deer Creek**	**Northumberland-Union**	**WWF, MF**	**None**
3—White Deer Creek	Basin	Union	HQ-CWF, MF	None
[3—Warrior Run	**Basin**	**Northumberland**	**WWF, MF**	**None**
3—Muddy Run	**Basin**	**Northumberland**	**WWF, MF**	**None**

3—Limestone Run	**Basin**	**Northumberland**	**WWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, White Deer Creek to Buffalo Creek**	**Northumberland-Union**	**WWF, MF**	**None**
3—Buffalo Creek	Basin, Source to LR 59042 (SR 3005) Bridge **at 40° 55' 24.0" N; 77° 7' 41.9" W**	Union	HQ-CWF, MF	None
3—Buffalo Creek	**[Main Stem] Basin**, LR 59042 **Bridge** to **[Rapid Run] North Branch Buffalo Creek**	Union	CWF, MF	None
[4—Unnamed Tributaries to Buffalo Creek	**Basins, LR 59042 Bridge to Rapid Run**	**Union**	**CWF, MF**	**None]**
4—North Branch Buffalo Creek	Basin, Source to Mifflinburg Water Supply Dam	Union	EV, MF	None
4—North Branch Buffalo Creek	Basin, Mifflinburg Water Supply Dam to Mouth	Union	HQ-CWF, MF	None
3—Buffalo Creek	**Basin, North Branch Buffalo Creek to Rapid Run**	**Union**	**CWF, MF**	**None**
4—Rapid Run	Basin	Union	HQ-CWF, MF	None
3—Buffalo Creek	Main Stem, Rapid Run to Mouth	Union	TSF, MF	None
4—**[Unnamed]** Tributaries to Buffalo Creek	Basins, Rapid Run to **[Mouth] Stony Run**	Union	CWF, MF	None
4—Stony Run	Basin	Union	HQ-CWF, MF	None
[4—Beaver Run	**Basin**	**Union**	**CWF, MF**	**None]**
4—Tributaries to Buffalo Creek	**Basins, Stony Run to Spruce Run**	**Union**	**CWF, MF**	**None**
4—Spruce Run	Basin, Source to eastern boundary of Bald Eagle State Forest at **[RM 5.09]41° 1' 43.8" N; 77° 0' 5.4" W**	Union	EV, MF	None
4—Spruce Run	Basin, Eastern boundary of Bald Eagle State Forest **[at RM 5.09]** to Mouth	Union	HQ-CWF, MF	None
[4—Little Buffalo Creek	**Basin**	**Union**	**CWF, MF**	**None]**
4—Tributaries to Buffalo Creek	**Basins, Spruce Run to Mouth**	**Union**	**CWF, MF**	**None**
[3—Limestone Run	**Basin**	**Union**	**WWF, MF**	**None**

3—Chillisquaque Creek	**Basin**	**Northumberland**	**WWF, MF**	**None**
3—Turtle Creek	**Basin**	**Union**	**WWF, MF**	**None**
3—Winfield Creek	**Basin**	**Union**	**WWF, MF**	**None**
3—Winfield Creek	**Basin**	**Union**	**WWF, MF**	**None]**
3—Tributaries to West Branch Susquehanna River	**Basins, Buffalo Creek to Mouth**	**Northumberland-Union**	**WWF, MF**	**None**

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§ 93.9m. Drainage List M.

Susquehanna River Basin in Pennsylvania

Susquehanna River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
4—Kern Run	Basin	Snyder	CWF, MF	None
4—**UNT 17823 at 40° 46' 30.7" N; 77° 4' 8.9" W (locally known as** Bowersox Run**)**	Basin, Source to **[FAS 690] T3008**	Snyder	HQ-CWF, MF	None
4—UNT 17823	**Basin, T3008 to Mouth**	**Snyder**	**CWF, MF**	**None**
4—**UNT 17821 at 40° 46' 38.9" N; 77° 3' 29.1" W (locally known as** Erb Run**)**	Basin, Source to **[FAS 690] T3008**	Snyder	HQ-CWF, MF	None
4—UNT 17821	**Basin, T3008 to Mouth**	**Snyder**	**CWF, MF**	**None**
4—Susquehecka Creek (Freeburg Run)	Basin	Snyder	CWF, MF	None
	* * * * * *			
2—Gurdy Run	Basin	Dauphin	WWF, MF	None
2—Armstrong Creek	Basin, Source to **[Unnamed Tributary]UNT 16835** at **[RM 9.86]40° 30' 31.1" N; 76° 50' 43.2" W**	Dauphin	CWF, MF	None
3—**[Unnamed Tributary to Armstrong Creek at RM 9.86]UNT 16835**	Basin, Source to SR 1003 Bridge **at 40° 29' 45.1" N; 76° 47' 56.8" W**	Dauphin	**[HW-CWF] HQ-CWF,** MF	None

3—**[Unnamed Tributary to Armstrong Creek at RM 9.86]**<u>UNT 16835</u>	Basin, SR 1003 Bridge to Mouth	Dauphin	CWF, MF	None
2—Armstrong Creek	Basin, **[Unnamed Tributary at RM 9.86]**<u>UNT 16835</u> to LR 22028 (SR 4001) Bridge	Dauphin	CWF, MF	None
2—Armstrong Creek	Basin, LR 22028 Bridge to Mouth	Dauphin	TSF, MF	None

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§ 93.9n. Drainage List N.

Susquehanna River Basin in Pennsylvania

Juniata River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
3—Raystown Branch Juniata River	Basin, Source to Breastwork Run	Somerset	CWF, MF	None
4—Breastwork Run	Basin	Somerset	HQ-CWF, MF	None
3—Raystown Branch Juniata River	Basin, Breastwork Run to Somerset-Bedford County Border <u>**at 39° 58' 49.3" N; 78° 45' 41.9" W**</u>	Somerset-Bedford	CWF, MF	None
3—Raystown Branch Juniata River	Main Stem, Somerset-Bedford County Border to Bedford-Huntingdon County Border <u>**at 40° 13' 49.5" N; 78° 14' 18.2" W**</u>	Bedford-Huntingdon	TSF, MF	None
4—**[Unnamed]** Tributaries to Raystown Branch	Basins, Somerset-Bedford County Border to **[Bedford-Huntingdon County Border]** <u>**Shobers Run**</u>	Bedford	WWF, MF	None
[4—Spicer Brook	**Basin**	**Bedford**	**WWF, MF**	**None**
4—Shawnee Branch	**Basin**	**Bedford**	**WWF, MF**	**None**
4—Buffalo Run	**Basin**	**Bedford**	**WWF, MF**	**None**
4—Cumberland Valley Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Shobers Run	Basin	Bedford	HQ-CWF, MF	None
<u>**4—Tributaries to Raystown Branch**</u>	<u>**Basins, Shobers Run to Dunning Creek**</u>	<u>**Bedford**</u>	<u>**WWF, MF**</u>	<u>**None**</u>

4—Dunning Creek	**[Main Stem] Basin, Source to Stone Creek**	Bedford	WWF, MF	None
[5—Unnamed Tributaries to Dunning Creek	**Basins**	**Bedford**	**WWF, MF**	**None**
5—Rocklick Creek	**Basin**	**Bedford**	**WWF, MF**	**None**
5—Bearfoot Run	**Basin**	**Bedford**	**WWF, MF**	**None**
5—Georges Creek	**Basin**	**Bedford**	**WWF, MF**	**None]**
5—Stone Creek	Basin, Source to Confluence with UNT 14908 at **[RM 0.34] 40° 8' 55" N; 78° 33' 59.5" W**	Bedford	WWF, MF	None
6—**[Unnamed Tributary (UNT)] UNT** 14908 **[to Stone Creek]**	Basin	Bedford	CWF, MF	None
5—Stone Creek	Basin, UNT 14908 to Mouth	Bedford	CWF, MF	None
4—Dunning Creek	**Basin, Stone Creek to Bobs Creek**	**Bedford**	**WWF, MF**	**None**
5—Bobs Creek	Basin, Source to Pavia Run	Bedford	HQ-CWF, MF	None
6—Pavia Run	Basin	Bedford	HQ-CWF, MF	None
5—Bobs Creek	Basin, Pavia Run to Mouth	Bedford	CWF, MF	None
[5—Adams Run	**Basin**	**Bedford**	**WWF, MF**	**None**
5—Oppenheimer Run	**Basin**	**Bedford**	**WWF, MF**	**None**
5—Brush Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Dunning Creek	**Basin, Bobs Creek to Imlertown Run**	**Bedford**	**WWF, MF**	**None**
5—Imlertown Run	Basin	Bedford	TSF, MF	None
4—Dunning Creek	**Basin, Imlertown Run to Pleasant Valley Run**	**Bedford**	**WWF, MF**	**None**
5—Pleasant Valley Run	Basin	Bedford	CWF, MF	None
4—Dunning Creek	**Basin, Pleasant Valley Run to Mouth**	**Bedford**	**WWF, MF**	**None**
4—Tributaries to Raystown Branch	**Basins, Dunning Creek to Cove Creek**	**Bedford**	**WWF, MF**	**None**
4—Cove Creek	Basin	Bedford	EV, MF	None
[4—Snakespring Valley Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Cove Creek to Clear Creek**	**Bedford**	**WWF, MF**	**None**
4—Clear Creek	Basin	Bedford	TSF, MF	None
[4—Greys Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Clear Creek to Brush Creek**	**Bedford**	**WWF, MF**	**None**

4—Brush Creek	Basin, Source to Fulton-Bedford County Border **at 39° 57' 6.3" N; 78° 14' 20.3" W**	Fulton-Bedford	HQ-CWF, MF	None
4—Brush Creek	Basin, Fulton-Bedford County Border to Mouth	Bedford	WWF, MF	None
[4—Tub Mill Run	**Basin**	**Bedford**	**WWF, MF**	**None**
4—French Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Brush Creek to Sherman Valley Branch**	**Bedford**	**WWF, MF**	**None**
4—Sherman Valley Run	Basin	Bedford	CWF, MF	None
[4—Pipers Run	**Basin**	**Bedford**	**WWF, MF**	**None**
4—Sandy Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Sherman Valley Branch to Yellow Creek**	**Bedford**	**WWF, MF**	**None**
4—Yellow Creek	Basin	Bedford	HQ-CWF, MF	None
[4—Sixmile Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Yellow Creek to Ravers Run**	**Bedford**	**WWF, MF**	**None**
4—Ravers Run	Basin	Bedford	TSF, MF	None
[4—Shoup Run	**Basin**	**Bedford**	**WWF, MF**	**None]**
4—Tributaries to Raystown Branch	**Basins, Ravers Run to Bedford-Huntingdon County Border at 40° 13' 49.5" N; 78° 14' 18.2" W**	**Bedford**	**WWF, MF**	**None**
3—Raystown Branch Juniata River	**[Main Stem] Basin**, Bedford-Huntingdon County Border to **[Mouth] Tatman Run**	Huntingdon	WWF, MF	None
[4—Unnamed Tributaries to Raystown Branch	**Basins, Bedford-Huntingdon County Border to Mouth**	**Huntingdon**	**WWF, MF**	**None**
4—Shy Beaver Creek	**Basin**	**Huntingdon**	**WWF, MF**	**None]**
4—Tatman Run	Basin	Huntingdon	HQ-CWF, MF	None
[4—Coffee Run	**Basin**	**Huntingdon**	**WWF, MF**	**None]**
3—Raystown Branch Juniata River	**Basin, Tatman Run to Great Trough Creek**	**Huntingdon**	**WWF, MF**	**None**
4—Great Trough Creek	Basin	Huntingdon	TSF, MF	None
[4—James Creek	**Basin**	**Huntingdon**	**WWF, MF**	**None**
4—Hawns Run	**Basin**	**Huntingdon**	**WWF, MF**	**None]**
3—Raystown Branch Juniata River	**Basin, Great Trough Creek to Mouth**	**Huntingdon**	**WWF, MF**	**None**

3—Unnamed Tributaries to Juniata River	Basins, Raystown Branch to Kishacoquillas Creek	Huntingdon-Mifflin	HQ-CWF, MF	None

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§ 93.9o. Drainage List O.

Susquehanna River Basin in Pennsylvania

Susquehanna River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
2—Conodoguinet Creek	Basin, Letterkenny Reservoir Dam to Trout Run	Franklin	CWF, MF	None
3—Trout Run	Basin, Source to Water Supply Dam	Franklin	EV, MF	None
3—Trout Run	**Basin, Water Supply Dam to Mouth**	**Franklin**	**HQ-CWF, MF**	**None**
2—Conodoguinet Creek	Basin, Trout Run to PA 997 at Roxbury	Franklin	CWF, MF	None
	* * * * * *			
3—Old Town Run	Basin	Cumberland	HQ-CWF, MF	None
2—Yellow Breeches Creek	Main Stem, LR 21012 to Mouth	Cumberland-York-Dauphin	CWF, MF	*[Delete* DO_1 *Add* DO_4*] Add* **DO=Minimum 7.0 mg/L, June 1 to Sept. 30**
3—Unnamed Tributaries to Yellow Breeches Creek	Basins, LR 21012 to Mouth	Cumberland-York	CWF, MF	None
	* * * * * *			
3—Indiantown Run	Basin, Inlet of Memorial Lake to Mouth	Lebanon	WWF, MF	None
3—Quittapahilla Creek	Basin	Lebanon	TSF, MF	None
3—Bow Creek	**Basin**	**Dauphin**	**WWF, MF**	**None**
3—Manada Creek	Basin, Source to I-81 **at 40° 21' 48.6" N; 76° 42' 20.0" W**	Dauphin	CWF, MF	None
3—Manada Creek	Basin, I-81 to Mouth	Dauphin	WWF, MF	None
	* * * * * *			
2—Wilson Run	Basin	York	WWF, MF	None
2—Boyds Run	**Basin**	**York**	**WWF, MF**	**None**

2—Conestoga River	Main Stem, UNT 07792 at **[RM 43.05]**<u>**40° 8' 57.4" N; 76° 5' 24.9" W**</u> downstream to Mouth	Lancaster	WWF, MF	None
3—UNTs to Conestoga River	Basins, UNT 07792 to Mouth	Berks-Lancaster	WWF, MF	None
<u>**3—Muddy Creek**</u>	<u>**Basin, Source to UNT at 40° 13' 9.9" N; 76° 1' 16.7" W**</u>	<u>**Lancaster**</u>	<u>**WWF, MF**</u>	<u>**None**</u>
<u>**4—UNT at 40° 13' 9.9" N; 76° 1' 16.7" W**</u>	<u>**Basin**</u>	<u>**Lancaster**</u>	<u>**TSF, MF**</u>	<u>**None**</u>
<u>**3—Muddy Creek**</u>	<u>**Main Stem, UNT at 40° 13' 9.9" N; 76° 1' 16.7" W to Little Muddy Creek**</u>	<u>**Lancaster**</u>	<u>**TSF, MF**</u>	<u>**None**</u>
<u>**4—Unnamed Tributaries to Muddy Creek**</u>	<u>**Basins, UNT at 40° 13' 9.9" N; 76° 1' 16.7" W to Little Muddy Creek**</u>	<u>**Lancaster**</u>	<u>**WWF, MF**</u>	<u>**None**</u>
[3—Muddy Creek	**Main Stem, Source to Little Muddy Creek**	**Lancaster**	**TSF, MF**	**None**
4—Unnamed Tributaries to Muddy Creek	**Basins, Source to Little Muddy Creek**	**Berks-Lancaster**	**WWF, MF**	**None]**
4—Rock Run	Basin	Lancaster	HQ-TSF, MF	None
	* * * * * *			
2—Pequea Creek	Main Stem, PA 897 to Mouth	Lancaster	WWF, MF	None
3—Unnamed Tributaries to Pequea Creek	Basins, PA 897 to Eshleman Run	Lancaster	CWF, MF	None
3—White Horse Run	Basin	Lancaster	WWF, MF	None
3—Umbles Run	Basin	Lancaster	HQ-CWF, MF	None
3—Houston Run	Basin	Lancaster	CWF, MF	None
3—Eshleman Run	Basin	Lancaster	CWF, MF	None
[3—Unnamed Tributaries to Pequea Creek	**Basins, Eshleman Run to RM 3.35**	**Lancaster**	**WWF, MF**	**None**
3—Unnamed Tributary to Pequea Creek at RM 3.35	**Basin**	**Lancaster**	**HQ-CWF, MF**	**None**
3—Unnamed Tributaries to Pequea Creek	**Basins, RM 3.35 to RM 3.20**	**Lancaster**	**WWF, MF**	**None**
3—Unnamed Tributary to Pequea Creek at RM 3.20	**Basin**	**Lancaster**	**CWF, MF**	**None**

3—Unnamed Tributaries to Pequea Creek	**Basins, RM 3.20 to Mouth**	**Lancaster**	**WWF, MF**	**None]**
3—Watson Run	Basin	Lancaster	WWF, MF	None
3—Walnut Run	Basin	Lancaster	WWF, MF	None
3—Little Beaver Creek	Basin	Lancaster	TSF, MF	None
3—Big Beaver Creek	Basin	Lancaster	TSF, MF	None
3—Huber Run	Basin	Lancaster	CWF, MF	None
3—Goods Run	Basin	Lancaster	TSF, MF	None
3—Silver Mine Run	Basin	Lancaster	TSF, MF	None
3—Climbers Run	Main Stem	Lancaster	CWF, MF	None
4—Unnamed Tributaries to Climbers Run	Basins	Lancaster	CWF, MF	None
4—Trout Run	Basin	Lancaster	HQ-CWF, MF	None
3—Unnamed Tributaries to Pequea Creek	**Basins, Eshleman Run to UNT 07452**	**Lancaster**	**WWF, MF**	**None**
3—UNT 07452 to Pequea Creek at 39° 54' 20.6" N; 76° 19' 41.8" W	**Basin**	**Lancaster**	**HQ-CWF, MF**	**None**
3—Unnamed Tributaries to Pequea Creek	**Basins, UNT 07452 to UNT 07451**	**Lancaster**	**WWF, MF**	**None**
3—UNT 07451 to Pequea Creek at 39° 54' 12.4" N; 76° 19' 43.0"W	**Basin**	**Lancaster**	**CWF, MF**	**None**
3—Unnamed Tributaries to Pequea Creek	**Basins, UNT 07451 to Mouth**	**Lancaster**	**WWF, MF**	**None**
	* * * * * *			
2—Octoraro Creek	Main Stem, Confluence of East and West Branches to PA-MD State Border	Lancaster-Chester	WWF; MF	None
3—Unnamed Tributaries to Octoraro Creek	Basins, (all sections in PA) Confluence of East and West Branches to **[RM 13.60]**<u>**UNT 07001 at 39° 44' 1.7" N; 76° 5' 32.9" W**</u>	Lancaster-Chester	TSF[;], MF	None
3—Tweed Creek	Basin	Chester	TSF[;], MF	None
3—McCreary Run	Basin	Lancaster	HQ-TSF[;], MF	None
3—Blackburn Run	Basin	Chester	TSF[;], MF	None

3—Black Run	Basin, Source to **[Unnamed Tributary at RM 2.50]** **UNT 07006 at 39° 44' 25.5" N; 76° 3' 15.9" W**	Chester	EV**[;]**, MF	None
4—**[Unnamed Tributary to Black Run at RM 2.50]** **UNT 07006**	Basin	Chester	TSF**[;]**, MF	None
3—Black Run	Basin, **[Unnamed Tributary at RM 2.50]** **UNT 07006** to Mouth	Chester	TSF**[;]**, MF	None
3—Hog Run	Basin	Chester	TSF**[;]**, MF	None
3—**[Unnamed Tributary]**UNT 07001 to Octoraro Creek at **[RM 13.60]** **39° 44' 1.7" N; 76° 5' 32.9" W**	Basin	Chester	EV**[;]**, MF	None
3—Unnamed Tributaries to Octoraro Creek	Basins, **[RM 13.60]** **UNT 07001** to PA-MD State Border	Lancaster-Chester	TSF**[;]**, MF	None
3—Reynolds Run	Basin	Lancaster	**[HQ-CWF, MF]** **HQ-TSF, MF**	None
2—Octoraro Creek (MD)				

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§ 93.9p. Drainage List
P.

Ohio River Basin in Pennsylvania
Allegheny River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
1—Ohio River				
2—Allegheny River	**[Main Stem]** **Basin**, Source to **[PA-NY State Border]** **Woodcock Creek**	McKean	CWF	None
[3—Unnamed Tributaries to Allegheny River	**Basins (all sections in PA), Source to PA-NY State Border**	**Potter-McKean**	**CWF**	**None]**
3—Woodcock Creek	Basin	Potter	HQ-CWF	None
[3—Gross Hollow	**Basin**	**Potter**	**CWF**	**None]**

2—Allegheny River	**Basin, Woodcock Creek to UNT 58543 at 41° 49' 58.8" N; 77° 53' 51.9" W (locally known as Wambold Hollow)**	**Potter**	**CWF**	**None**
3—UNT 58543 (Wambold Hollow)	Basin	Potter	HQ-CWF	None
[3—Pigeon Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Toombs Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Kohler Hollow	**Basin**	**Potter**	**CWF**	**None]**
2—Allegheny River	**Basin, UNT 58543 to Dwight Creek**	**Potter**	**CWF**	**None**
3—Dwight Creek	Basin	Potter	HQ-CWF	None
[3—Peet Brook	**Basin**	**Potter**	**CWF**	**None**
3—Lent Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Prosser Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Baker Creek	**Basin**	**Potter**	**CWF**	**None]**
2—Allegheny River	**Basin, Dwight Creek to Steer Run**	**Potter**	**CWF**	**None**
3—Steer Run	Basin	Potter	HQ-CWF	None
[3—Reese Hollow	**Basin**	**Potter**	**CWF**	**None]**
2—Allegheny River	**Basin, Steer Run to Mill Creek**	**Potter**	**CWF**	**None**
3—Mill Creek	Basin, Source to North Hollow	Potter	HQ-CWF	None
3—Mill Creek	Basin, North Hollow to Mouth	Potter	CWF	None
2—Allegheny River	**Basin, Mill Creek to Dingman Run**	**Potter**	**CWF**	**None**
3—Dingman Run	**[Main Stem] Basin**	Potter	HQ-CWF	None
[3—Earl Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Pump Station Hollow	**Basin**	**Potter**	**CWF**	**None**
3—Elm Flat	**Basin**	**Potter**	**CWF**	**None**
3—Gleason Hollow	**Basin**	**Potter**	**CWF**	**None]**
2—Allegheny River	**Basin, Dingman Run to Reed Run**	**Potter**	**CWF**	**None**
3—Reed Run	Basin	Potter	HQ-CWF	None
[3—Trout Brook	**Basin**	**Potter**	**CWF**	**None]**
2—Allegheny River	**Basin, Reed Run to Laninger Creek**	**Potter**	**CWF**	**None**
3—Laninger Creek	Basin	Potter	HQ-CWF	None
2—Allegheny River	**Basin, Laninger Creek to Fishing Creek**	**Potter**	**CWF**	**None**

3—Fishing Creek	**[Main Stem] Basin, Source to East Branch Fishing Creek**	Potter	CWF	None
[4—Unnamed Tributaries to Fishing Creek	**Basins**	**Potter**	**CWF**	**None]**
4—East Branch Fishing Creek	Basin	Potter	HQ-CWF	None
3—Fishing Creek	**Basin, East Branch Fishing Creek to Mouth**	**Potter**	**CWF**	**None**
[3—Card Creek	**Basin**	**Potter**	**CWF**	**None**
3—Sartwell Creek	**Basin**	**McKean**	**CWF**	**None]**
2—Allegheny River	**Basin, Fishing Creek to Allegheny Portage Creek**	**Potter-McKean**	**CWF**	**None**
3—Allegheny Portage Creek	Main Stem, Source to **[Brown Hollow] UNT 58235 at 41° 42' 18.6" N; 78° 11' 43.6" W**	Potter	TSF	None
4—**[Unnamed]** Tributaries To Allegheny Portage Creek	Basins, **Source to UNT 58235 (locally known as Brown Hollow)**	Potter**[-McKean]**	CWF	None
[4—Planing Mill Hollow	**Basin**	**Potter**	**CWF**	**None]**
4—**[Brown Hollow] UNT 58235**	Basin	Potter	HQ-CWF	None
3—Allegheny Portage Creek	Main Stem, **[Brown Hollow] UNT 58235** to Scaffold Lick Run	McKean	HQ-CWF	None
[4—Indian Run	**Basin**	**McKean**	**CWF**	**None**
4—Heath Hollow	**Basin**	**McKean**	**CWF**	**None]**
4—Tributaries To Allegheny Portage Creek	**Basins, UNT 58235 to Fair Run**	**Potter-McKean**	**CWF**	**None**
4—Fair Run	Basin	McKean	HQ-CWF	None
[4—Rock Run	**Basin**	**McKean**	**CWF**	**None**
4—Scaffold Lick Run	**Basin**	**McKean**	**CWF**	**None]**
4—Tributaries To Allegheny Portage Creek	**Basins, Fair Run to Scaffold Lick Run**	**McKean**	**CWF**	**None**
4—Scaffold Lick Run	**Basin**	**McKean**	**CWF**	**None**
3—Allegheny Portage Creek	Main Stem, Scaffold Lick Run to Mouth	McKean	TSF	None
[4—Cady Hollow	**Basin**	**McKean**	**CWF**	**None**
4—Hamilton Run	**Basin**	**McKean**	**CWF**	**None**
4—Tramroad Hollow	**Basin**	**McKean**	**CWF**	**None**
4—Combs Creek	**Basin**	**McKean**	**CWF**	**None]**

4—Tributaries To Allegheny Portage Creek	**Basins, Scaffold Lick Run to Mouth**	**McKean**	**CWF**	**None**
[3—Lillibridge Creek	**Basin**	**McKean**	**CWF**	**None]**
2—Allegheny River	**Basin, Allegheny Portage Creek to Skinner Creek**	**McKean**	**CWF**	**None**
3—Skinner Creek	Basin	McKean	HQ-CWF	None
[3—Twomile Creek	**Basin**	**McKean**	**CWF**	**None**
3—Annin Creek	**Basin**	**McKean**	**CWF**	**None**
3—Rock Run	**Basin**	**McKean**	**CWF**	**None**
3—Open Brook	**Basin**	**McKean**	**CWF**	**None**
3—Newell Creek	**Basin**	**McKean**	**CWF**	**None]**
2—Allegheny River	**Basin, Skinner Creek to Potato Creek**	**McKean**	**CWF**	**None**
3—Potato Creek				
4—East Branch Potato Creek	Basin**[s]**, Source to Confluence with Havens Run	McKean	HQ-CWF	None
4—Havens Run	Basin, Source to Confluence with East Branch	McKean	CWF	None
3—Potato Creek	Main Stem, Confluence of East Branch and Havens Run to Cole Creek	McKean	TSF	None
4—**[Unnamed]** Tributaries to Potato Creek	Basins, Confluence of East Branch and Havens Run to **[Cole Creek]** **West Branch Potato Creek**	McKean	CWF	None
[4—Indian Run	**Basin**	**McKean**	**CWF**	**None**
4—Frog Camp Hollow	**Basin**	**McKean**	**CWF**	**None**
4—Kimball Hollow	**Basin**	**McKean**	**CWF**	**None]**
4—West Branch Potato Creek	Basin	McKean	HQ-CWF	None
[4—Sackett Hollow	**Basin**	**McKean**	**CWF**	**None]**
4—Tributaries to Potato Creek	**Basins, West Branch Potato Creek to Brewer Run**	**McKean**	**CWF**	**None**
4—Brewer Run	Basin	McKean	HQ-CWF	None
[4—Evans Hollow	**Basin**	**McKean**	**CWF**	**None]**
4—Tributaries to Potato Creek	**Basins, Brewer Run to Red Mill Brook**	**McKean**	**CWF**	**None**
4—Red Mill Brook	**[Main Stem]** **Basin, Source to UNT 57891 at 41° 42' 42.7" N; 78° 28' 31.6" W (locally known as Wernwag Hollow)**	McKean	CWF	None

[5—Unnamed Tributaries to Red Mill Brook	Basins	McKean	CWF	None]
5—UNT 57891 [Wernwag Hollow]	Basin	McKean	HQ-CWF	None
[5—Browns Mill Hollow	Basin	McKean	CWF	None
5—Combs Hollow	Basin	McKean	CWF	None]
4—Red Mill Brook	Basin, UNT 57891 to Mouth	McKean	CWF	None
4—Tributaries to Potato Creek	Basins, Red Mill Brook to Colegrove Brook	McKean	CWF	None
4—Colegrove Brook	Basin	McKean	HQ-CWF	None
4—Tributaries to Potato Creek	Basins, Colegrove Brook to Robbins Brook	McKean	CWF	None
4—Robbins Brook	Basin	McKean	HQ-CWF	None
[4—Walcott Brook	Basin	McKean	CWF	None]
4—Tributaries to Potato Creek	Basins, Robbins Brook to Boyer Brook	McKean	CWF	None
4—Boyer Brook	Basin	McKean	HQ-CWF	None
4—Tributaries to Potato Creek	Basins, Boyer Brook to Daly Brook	McKean	CWF	None
4—Daly Brook	Basin	McKean	HQ-CWF	None
4—Tributaries to Potato Creek	Basins, Daly Brook to Marvin Creek	McKean	CWF	None
4—Marvin Creek	[Main Stem] Basin, Source to UNT 57809 at 41° 41' 43.1" N; 78° 36' 1.0" W (locally known as Sherman Run)	McKean	CWF	None
[5—Unnamed Tributaries to Marvin Creek	Basins	McKean	CWF	None]
5—UNT 57809 [Sherman Run]	Basin	McKean	HQ-CWF	None
4—Marvin Creek	Basin, UNT 57809 to UNT 57801 at 41° 42' 23.1" N; 78° 35' 4.7" W (locally known as Santeen Run)	McKean	CWF	None
5—UNT 57801 [Santeen Run]	Basin	McKean	HQ-CWF	None
[5—Wildcat Hollow	Basin	McKean	CWF	None]
4—Marvin Creek	Basin, UNT 57801 to Warner Brook	McKean	CWF	None

5—Warner Brook	Basin	McKean	HQ-CWF	None
4—Marvin Creek	**Basin, Warner Brook to Stanton Brook**	**McKean**	**CWF**	**None**
5—Stanton Brook	Basin	McKean	HQ-CWF	None
[5—Bloomster Hollow	**Basin**	**McKean**	**CWF**	**None]**
4—Marvin Creek	**Basin, Stanton Brook to Blacksmith Run**	**McKean**	**CWF**	**None**
5—Blacksmith Run	Basin, **[from]** Source to Smethport Water Intake	McKean	HQ-CWF	None
5—Blacksmith Run	Basin, **[From]** Smethport Water Intake to Mouth	McKean	CWF	None
4—Marvin Creek	**Basin, Blacksmith Run to Mouth**	**McKean**	**CWF**	**None**
4—Tributaries to Potato Creek	**Basins, Marvin Creek to Cole Creek**	**McKean**	**CWF**	**None**
4—Cole Creek	**[Basin, Source to South Branch Cole Creek**	**McKean**	**CWF**	**None]**
5—South Branch Cole Creek	Basin, **Source to Confluence with North Branch**	McKean	EV	None
5—North Branch Cole Creek	**Basin, Source to Confluence with South Branch**	**McKean**	**CWF**	**None**
4—Cole Creek	Basin, **[South Branch Cole Creek] Confluence of North and South Branches** to Mouth	McKean	CWF	None
3—Potato Creek	Main Stem, Cole Creek to Mouth	McKean	WWF	None
4—**[Unnamed]** Tributaries to Potato Creek	Basins, Cole Creek to Mouth	McKean	CWF	None
[4—Pierce Brook	**Basin**	**McKean**	**CWF**	**None]**
[3—Carpenter Creek	**Basin**	**McKean**	**CWF**	**None**
3—Canfield Creek	**Basin**	**McKean**	**CWF**	**None**
3—Barden Brook	**Basin**	**McKean**	**CWF**	**None**
3—Knapp Creek	**Main Stem**	**McKean**	**CWF**	**None**
4—Unnamed Tributaries to Knapp Creek	**Basins**	**McKean**	**CWF**	**None**
4—Tram Hollow Run	**Basin**	**McKean**	**CWF**	**None**
4—Kansas Branch	**Basin**	**McKean**	**CWF**	**None**
4—South Branch Knapp Creek	**Basin**	**McKean**	**CWF**	**None**
3—Indian Creek (NY)				

4—Unnamed Tributaries to Indian Creek	**Basins (all sections in PA), Source to PA-NY State Border**	**McKean**	**CWF**	**None**
3—Indian Creek	**Main Stem, PA-NY State Border to Mouth**	**McKean**	**CWF**	**None**
4—Unnamed Tributaries to Indian Creek	**Basins (all sections in PA), PA-NY State Border to Mouth**	**McKean**	**CWF**	**None**
4—North Branch Indian Creek	**Basin (all sections in PA)**	**McKean**	**CWF**	**None**
3—Mix Creek	**Basin (all sections in PA)**	**McKean**	**CWF**	**None**
3—McCrea Run	**Basin**	**McKean**	**CWF**	**None**
3—Tunungwant Creek	**Main Stem, Confluence of East and West Branches to PA-NY State Border**	**McKean**	**WWF**	**None**
3—McCrea Run	**Basin**	**McKean**	**CWF**	**None]**
2—Allegheny River	**Basin (all sections in PA), Potato Creek to PA-NY State Border at 41° 59' 58.2" N; 78° 21' 0.6" W**	**McKean**	**CWF**	**None**
2—Allegheny River (NY)				
3—Unnamed Tributaries to Allegheny River	Basins (all sections in PA), PA-NY State Border to Tunungwant Creek	McKean	CWF	None
3—Oswayo Creek	Basin, Source to **[Brizzee Hollow]** **Hemlock Hollow Run**	Potter	CWF	None
4—**Hemlock Hollow Run (locally known as** Brizzee Hollow**)**	Basin	Potter	HQ-CWF	None
3—Oswayo Creek	Basin, **[Brizzee Hollow]** **Hemlock Hollow Run** to South Branch Oswayo Creek	Potter	HQ-CWF	None
4—South Branch Oswayo Creek	Basin	Potter	EV	None
3—Oswayo Creek	Basin, South Branch Oswayo Creek to Clara Creek	Potter	HQ-CWF	None
4—Clara Creek	**Basin, Source to Bradley Run**	**Potter**	**CWF**	**None**
5—Bradley Run	**Basin**	**Potter**	**HQ-CWF**	**None**
4—Clara Creek	**Basin, Bradley Run to Mouth**	**Potter**	**CWF**	**None**

3—Oswayo Creek	**[Main Stem]** **Basin**, Clara Creek to **[Honeoye Creek]** **Elevenmile Creek**	Potter	CWF	None
[4—Unnamed Tributaries to Oswayo Creek	**Basins, Clara Creek to Honeoye Creek**	**Potter**	**CWF**	**None**
4—Clara Creek	**Main Stem**	**Potter**	**CWF**	**None**
5—Unnamed Tributaries to Clara Creek	**Basins**	**Potter**	**CWF**	**None**
5—Bradley Run	**Basin**	**Potter**	**HQ-CWF**	**None]**
4—Elevenmile Creek	Basin	Potter	HQ-CWF	None
[4—Canada Run	**Basin**	**Potter**	**CWF**	**None**
4—Wildcat Creek	**Basin**	**Potter**	**CWF**	**None]**
3—Oswayo Creek	**Basin, Elevenmile Creek to Cow Run**	**Potter**	**CWF**	**None**
4—Cow Run	Basin	Potter	HQ-CWF	None
3—Oswayo Creek	**Basin, Cow Run to Honeoye Creek**	**Potter**	**CWF**	**None**
4—Honeoye Creek (NY)				
5—**[Unnamed]** Tributaries to Honeoye Creek	Basins (all sections in PA), Source to PA-NY State Border **at 41° 59' 58.2" N; 78° 1' 53.1" W**	Potter	CWF	None
4—Honeoye Creek	**[Main Stem]** **Basin (all sections in PA)**, PA-NY State Border **at 42° 0' 1.1" N; 78° 6' 34.4" W** to **[Mouth]** **Butter Creek**	Potter	CWF	None
[5—Unnamed Tributaries to Honeoye Creek	**Basins (all sections in PA), PA-NY State Border to Mouth**	**Potter**	**CWF**	**None]**
5—Butter Creek	Basin	Potter	HQ-CWF	None
[5—Plank Creek	**Basin**	**Potter**	**CWF**	**None]**
4—Honeoye Creek	**Basin (all sections in PA), Butter Creek to Mouth**	**Potter**	**CWF**	**None**
3—Oswayo Creek	Main Stem, Honeoye Creek to PA-NY State Border **at 41° 59' 57.7" N; 78° 18' 9.2" W**	McKean	WWF	None
4—**[Unnamed]** Tributaries to Oswayo Creek	Basins (all sections in PA), Honeoye Creek to **[PA-NY State Border]** **Janders Run**	Potter-McKean	CWF	None
4—Janders Run	Basin	McKean-Potter	HQ-CWF	None
[4—Horse Run	**Basin (all sections in PA)**	**McKean**	**CWF**	**None]**

4—Tributaries to Oswayo Creek	**Basins (all sections in PA), Janders Run to Bell Run**	**Potter-McKean**	**CWF**	**None**
4—Bell Run	[Main Stem] **Basin, Source to Taylor Brook**	McKean	CWF	None
[5—Unnamed Tributaries to Bell Run	**Basins**	**McKean**	**CWF**	**None**
5—Shaytown Branch	**Basin**	**Potter**	**CWF**	**None**
5—Chapman Brook	**Basin**	**McKean**	**CWF**	**None]**
5—Taylor Brook	Basin	McKean	HQ-CWF	None
4—Bell Run	**Basin, Taylor Brook to Mouth**	**McKean**	**CWF**	**None**
[4—Kings Run	**Basin**	**McKean**	**CWF**	**None]**
4—Tributaries to Oswayo Creek	**Basins (all sections in PA), Bell Run to Mouth**	**Potter-McKean**	**CWF**	**None**
3—Oswayo Creek (NY)				
4—**[Unnamed]** Tributaries to Oswayo Creek	Basins (all sections in PA), PA-NY State Border **at 41° 59' 57.7" N; 78° 18' 9.2" W** to Mouth	McKean	CWF	None
3—Tunungwant Creek				
4—East Branch Tunungwant Creek	Basin, Source to Railroad Run	McKean	HQ-CWF	None
5—Railroad Run	Basin	McKean	EV	None
4—East Branch Tunungwant Creek	Basin, Railroad Run to T-331 Bridge **at 41° 53' 10.3" N; 78° 39' 18.1" W**	McKean	HQ-CWF	None
4—East Branch Tunungwant Creek	Main Stem, T-331 Bridge to SR 4002 Bridge **at 41° 55' 46.1" N; 78° 38' 51.3" W**	McKean	HQ-CWF	None
5—**[Unnamed]** Tributaries to East Branch Tunungwant Creek	Basins, T-331 Bridge to [SR 4002] **Minard Run**	McKean	CWF	None
[5—Sheppard Run	**Basin**	**McKean**	**CWF**	**None]**
5—Minard Run	Basin	McKean	EV	None
5—Tributaries to East Branch Tunungwant Creek	**Basins, Minard Run to SR 4002**	**McKean**	**CWF**	**None**
4—East Branch Tunungwant Creek	Basin, SR 4002 to Confluence with West Branch	McKean	CWF	None
4—West Branch Tunungwant Creek	Basin, Source to Marilla Brook	McKean	HQ-CWF	None

5—Marilla Brook	Basin, [Above]**Source to** Bradford Water Dam	McKean	HQ-CWF	None
5—Marilla Brook	**[Main Stem] Basin,** Bradford Water Dam to **[Mouth] Gilbert Brook**	McKean	CWF	None
[6—Unnamed Tributaries to Marilla Brook	**Basins, Bradford Water Dam to Mouth**	**McKean**	**CWF**	**None]**
6—Gilbert Brook	Basin	McKean	HQ-CWF	None
5—Marilla Brook	**Basin, Gilbert Brook to Mouth**	McKean	CWF	None
4—West Branch Tunungwant Creek	Basin, Marilla Brook to Confluence with East Branch	McKean	CWF	None
3—Tunungwant Creek	Main Stem, Confluence of East and West Branches to PA-NY State Border **at 41° 59' 59.1" N; 78° 37' 21.7" W**	McKean	WWF	None
4—**[Unnamed]** Tributaries to Tunungwant Creek	Basins (all sections in PA), Confluence of East and West Branches to **[PA-NY State Border] Kendall Creek**	McKean	CWF	None
4—Kendall Creek	Basin	McKean	WWF	None
[4—Bolivar Run	**Basin (all sections in PA)**	**McKean**	**CWF**	**None**
4—Foster Brook	**Basin (all sections in PA)**	**McKean**	**CWF**	**None]**
4—Tributaries to Tunungwant Creek	**Basins (all sections in PA), Kendall Creek to PA-NY State Border**	**McKean**	**CWF**	**None**
3—Tunungwant Creek (NY)				
4—**[Unnamed]** Tributaries to Tunungwant Creek	Basins (all sections in PA) PA-NY State Border to Mouth	McKean	CWF	None

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§ 93.9q. Drainage List Q.

Ohio River Basin in Pennsylvania

Allegheny River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**

1—Ohio River				
2—Allegheny River (NY)				
3—Unnamed Tributaries to Allegheny River	Basins (all sections in PA), Tunungwant Creek to PA-NY State Border **at 41° 59' 55.4" N; 78° 57' 14.6" W**	McKean-Warren	CWF	None
3—Quaker Run (NY)				
4—**[Unnamed]** Tributaries to Quaker Run	Basins (all sections in PA)	McKean	HQ-CWF	None
[4—Willis Creek	**Basin (all sections in PA)**	**McKean**	**HQ-CWF**	**None**
4—Coon Run	**Basin (all sections in PA)**	**McKean**	**HQ-CWF**	**None**
4—Yeager Brook	**Basin (all sections in PA)**	**McKean**	**HQ-CWF**	**None]**
3—Wolf Run	Basin, (all sections in PA)	McKean	HQ-CWF	None
3—State Line Run	Basin (all sections in PA)	Warren	CWF	None
2—Allegheny River	Main Stem, PA-NY State Border **at 41° 59' 55.4" N; 78° 57' 14.6" W** to Clarion River	Clarion	WWF	None
3—**[Unnamed]** Tributaries to Allegheny River	Basins, PA-NY State Border to **[French Creek] Willow Creek**	**[Venango] Warren**	CWF	None
3—Willow Creek	Basin (all sections in PA)	Warren	HQ-CWF	None
[3—Carr Brook	**Basin**	**Warren**	**CWF**	**None**
3—Hooks Brook	**Basin**	**Warren**	**CWF**	**None**
3—Williams Brook	**Basin**	**Warren**	**CWF**	**None**
3—Tracy Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Willow Creek to Cornplanter Run**	**Warren**	**CWF**	**None**
3—Cornplanter Run	Basin	Warren	HQ-CWF	None
[3—Whisky Run	**Basin**	**Warren**	**CWF**	**None**
3—Johnnycake Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Cornplanter Run to Hodge Run**	**Warren**	**CWF**	**None**
3—Hodge Run	Basin	Warren	HQ-CWF	None
3—Tributaries to Allegheny River	**Basins, Hodge Run to Sugar Run**	**Warren**	**CWF**	**None**
3—Sugar Run	Basin	Warren	HQ-CWF	None
[3—Billies Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Sugar Run to Kinzua Creek**	**Warren**	**CWF**	**None**
3—Kinzua Creek	Basin, Source to Wintergreen Run	McKean	CWF	None

4—Wintergreen Run	Basin	McKean	CWF	None
3—Kinzua Creek	Main Stem, Wintergreen Run to Mouth	Warren	CWF	None
4—**[Unnamed]** Tributaries to Kinzua Creek	Basins, Wintergreen Run to **[Mouth]** **South Branch Kinzua Creek**	McKean**[-Warren]**	HQ-CWF	None
[4—Windfall Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Camp Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Turnup Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Thundershower Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Libby Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Whiting Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Markham Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Meade Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Little Meade Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Root Run	**Basin**	**McKean**	**HQ-CWF**	**None]**
4—South Branch Kinzua Creek	**[Main Stem]** **Basin, Source to Hubert Run**	McKean	HQ-CWF	None
[5—Unnamed Tributaries to South Branch Kinzua Creek	**Basins**	**McKean**	**HQ-CWF**	**None**
5—Glad Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Watermill Run	**Basin**	**McKean**	**HQ-CWF**	**None]**
5—Hubert Run	Basin	McKean	CWF	None
4—South Branch Kinzua Creek	**Basin, Hubert Run to Mouth**	**McKean**	**HQ-CWF**	**None**
[4—Mud Lick Run	**Basin**	**McKean**	**HQ-CWF**	**None]**
4—Tributaries to Kinzua Creek	**Basins, South Branch Kinzua Creek to Chappel Fork**	**McKean**	**HQ-CWF**	**None**
4—Chappel Fork	Main Stem	McKean	CWF	None
5—**[Unnamed]** Tributaries to Chappel Fork	Basins**, Source to Mouth**	McKean	HQ-CWF	None
[5—Buck Lick Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Crary Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—White Gravel Creek	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Bump Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—North Fork	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Coon Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Briggs Run	**Basin**	**McKean**	**HQ-CWF**	**None**
5—Hemlock Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Morrison Run	**Basin**	**McKean**	**HQ-CWF**	**None**

4—Dutchman Run	**Basin**	**McKean**	**HQ-CWF**	**None**
4—Dewdrop Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Campbell Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Wolf Run	**Basin**	**Warren**	**HQ-CWF**	**None]**
4—Tributaries to Kinzua Creek	**Basins, Chappel Fork to Mouth**	**McKean-Warren**	**HQ-CWF**	**None**
3—Tributaries to Allegheny River	**Basins, Kinzua Creek to Jackson Run**	**Warren**	**CWF**	**None**
3—Jackson Run	Basin	Warren	HQ-CWF	None
3—Tributaries to Allegheny River	**Basins, Jackson Run to Bent Run**	**Warren**	**CWF**	**None**
3—Bent Run	Basin	Warren	HQ-CWF	None
3—Tributaries to Allegheny River	**Basins, Bent Run to Hemlock Run**	**Warren**	**CWF**	**None**
3—Hemlock Run	Basin	Warren	HQ-CWF	None
3—Tributaries to Allegheny River	**Basins, Hemlock Run to Browns Run**	**Warren**	**CWF**	**None**
3—Browns Run	Basin, Source to Dutchman Run	Warren	EV	None
	* * * * * * *			
3—Browns Run	Basin, Morrison Run to Mouth	Warren	CWF	None
3—Tributaries to Allegheny River	**Basins, Browns Run to Glade Run**	**Warren**	**CWF**	**None**
3—Glade Run	Basin, Source to Concrete Channel	Warren	CWF	None
3—Glade Run	Basin, Concrete Channel **at 41° 49' 48.1" N; 79° 7' 11.7" W** to Mouth**[, (a distance of approximately 1,500 ft)]**	Warren	WWF	None
[3—Ott Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Glade Run to Conewango Creek**	**Warren**	**CWF**	**None**
3—Conewango Creek (NY)				
4—**[Unnamed]** Tributaries to Conewango Creek	Basins (all sections in PA), Source to PA-NY State Border **at 41° 59' 58.6" N; 79° 8' 43.0" W**	Warren	CWF	None
[4—Stillwater Creek	**Basin (all sections in PA)**	**Warren**	**CWF**	**None**
4—Kiantone Creek	**Basin (all sections in PA)**	**Warren**	**CWF**	**None]**
3—Conewango Creek	Main Stem, PA-NY State Border to Mouth	Warren	WWF	None

4—**[Unnamed]** Tributaries to Conewango Creek	Basins (all sections in PA), PA-NY State Border to **[Mouth] North Branch Akeley Run**	Warren	CWF	None
[4—Wiltsie Run	**Basin**	**Warren**	**CWF**	**None**
4—Storehouse Run	**Basin (all sections in PA)**	**Warren**	**CWF**	**None**
4—Johnny Run	**Basin**	**Warren**	**CWF**	**None]**
4—North Branch Akeley Run	[Main Stem] **Basin, Source to Vanarsdale Run**	Warren	CWF	None
[5—Unnamed Tributaries to North Branch Akeley Run	**Basins**	**Warren**	**CWF**	**None]**
5—Vanarsdale Run	Basin	Warren	HQ-CWF	None
4—North Branch Akeley Run	**Basin, Vanarsdale Run to Mouth**	**Warren**	**CWF**	**None**
4—Tributaries to Conewango Creek	**Basins, North Branch Akeley Run to Akeley Run**	**Warren**	**CWF**	**None**
4—Akeley Run	**[Main Stem] Basin, Source to Mill Run**	Warren	CWF	None
[5—Unnamed Tributaries to Akeley Run	**Basins**	**Warren**	**CWF**	**None**
5—Reynolds Run	**Basin**	**Warren**	**CWF**	**None]**
5—Mill Run	Basin	Warren	HQ-CWF	None
[5—Widdlefield Run	**Basin**	**Warren**	**CWF**	**None**
5—Wolcott Run	**Basin**	**Warren**	**CWF**	**None]**
4—Akeley Run	**Basin, Mill Run to Mouth**	**Warren**	**CWF**	**None**
[4—Rhine Run	**Basin**	**Warren**	**CWF**	**None**
4—Dougherty Run	**Basin**	**Warren**	**CWF**	**None**
4—Hatch Run	**Basin**	**Warren**	**CWF**	**None**
4—Jackson Run	**Basin**	**Warren**	**CWF**	**None]**
4—Tributaries to Conewango Creek	**Basins, Akeley Run to Mouth**	**Warren**	**CWF**	**None**
[3—Sill Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Conewango Creek to Morse Run**	**Warren**	**CWF**	**None**
3—Morse Run	Basin	Warren	HQ-CWF	None
[3—Grunder Run	**Basin**	**Warren**	**CWF**	**None**
3—Scott Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Morse Run to Brokenstraw Creek**	**Warren**	**CWF**	**None**

3—Brokenstraw Creek (NY)				
4—**[Unnamed]** Tributaries to Brokenstraw Creek	Basins (all sections in PA), Source to PA-NY State Border **at 41° 59' 55.7" N; 79° 37' 19.0" W**	Erie-Warren	CWF	None
3—Brokenstraw Creek	**[Main Stem] Basin**, PA-NY State Border to **[Mouth] Hare Creek**	Warren	CWF	None
[4—Unnamed Tributaries to Brokenstraw Creek	**Basins (all sections in PA), PA-NY State Border to Mouth**	**Erie-Warren**	**CWF**	**None**
4—Coffee Creek	**Basin (all sections in PA)**	**Warren**	**CWF**	**None**
4—Whites Run	**Basin**	**Warren**	**CWF**	**None]**
4—Hare Creek	Basin, Source to Scotia Street Bridge **[(Corry Borough)]at 41° 56' 30.1" N; 79° 38' 37.3" W**	Warren	CWF	None
4—Hare Creek	Main Stem, Scotia Street Bridge to Mouth	Warren	WWF	None
5—**[Unnamed]** Tributaries to Hare Creek	Basins, Scotia Street Bridge to Mouth	Warren-Erie	CWF	None
[4—Damon Run	**Basin**	**Warren**	**CWF**	**None]**
3—Brokenstraw Creek	**Basin, Hare Creek to Spring Creek**	**Warren**	**CWF**	**None**
4—Spring Creek	Basin	Warren	HQ-CWF	None
[4—Gar Run	**Basin**	**Warren**	**CWF**	**None]**
3—Brokenstraw Creek	**Basin, Spring Creek to Blue Eye Run**	**Warren**	**CWF**	**None**
4—Blue Eye Run	Basin, Source to SR 0027 Bridge **at 41° 49' 7.9" N; 79° 25' 44.1" W**	Warren	EV	None
4—Blue Eye Run	Basin, SR 0027 Bridge to mouth	Warren	CWF	None
[4—Little Brokenstraw Creek	**Basin (all sections in PA)**	**Warren**	**CWF**	**None**
4—Andrews Run	**Basin**	**Warren**	**CWF**	**None**
4—Mead Run	**Basin**	**Warren**	**CWF**	**None**
4—Mathews Run	**Basin**	**Warren**	**CWF**	**None**
4—Indian Camp Run	**Basin**	**Warren**	**CWF**	**None**
4—McKinney Run	**Basin**	**Warren**	**CWF**	**None**
4—Irvine Run	**Basin**	**Warren**	**CWF**	**None]**
3—Brokenstraw Creek	**Basin (all sections in PA), Blue Eye Run to Mouth**	**Warren**	**CWF**	**None**
[3—Lenhart Run	**Basin**	**Warren**	**CWF**	**None**
3—Sulphur Run	**Basin**	**Warren**	**CWF**	**None**

3—Dunn Run	**Basin**	**Warren**	**CWF**	**None**
3—Charley Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Brokenstraw Creek to Hedgehog Run**	**Warren**	**CWF**	**None**
3—Hedgehog Run	Basin	Warren	HQ-CWF	None
[3—Clark Run	**Basin**	**Warren**	**CWF**	**None**
3—Dry Run	**Basin**	**Warren**	**CWF**	**None**
3—Thompson Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Hedgehog Run to Slater Run**	**Warren**	**CWF**	**None**
3—Slater Run	Basin	Warren	HQ-CWF	None
[3—Little Run	**Basin**	**Warren**	**CWF**	**None**
3—Conklin Run	**Basin**	**Warren**	**CWF**	**None**
3—Station Run	**Basin**	**Warren**	**CWF**	**None**
3—Connelly Run	**Basin**	**Warren**	**CWF**	**None**
3—Alex Magee Run	**Basin**	**Warren**	**CWF**	**None**
3—Perry Magee Run	**Basin**	**Warren**	**CWF**	**None**
3—Waid Run	**Basin**	**Warren**	**CWF**	**None**
3—Snow Run	**Basin**	**Warren**	**CWF**	**None**
3—Bimber Run	**Basin**	**Warren**	**CWF**	**None**
3—Potter Run	**Basin**	**Warren**	**CWF**	**None**
3—McGuire Run	**Basin**	**Warren**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Slater Run to Tidioute Creek**	**Warren**	**CWF**	**None**
3—Tidioute Creek	Basin, Source to Ben George Reservoir Dam	Warren	HQ-CWF	None
3—Tidioute Creek	Basin, Ben George Reservoir Dam to Mouth	Warren	CWF	None
[3—Gordon Run	**Basin**	**Warren**	**CWF**	**None**
3—Myers Run	**Basin**	**Warren**	**CWF**	**None**
3—Grove Run	**Basin**	**Warren**	**CWF**	**None**
3—Dale Run	**Basin**	**Warren**	**CWF**	**None**
3—Dunn Run	**Basin**	**Warren**	**CWF**	**None**
3—Schwab Run	**Basin**	**Forest**	**CWF**	**None**
3—Jones Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Tidioute Creek to East Hickory Creek**	**Warren-Forest**	**CWF**	**None**
3—East Hickory Creek	Basin, Source to Forest Highway 119 **at 41° 38' 30.9" N; 79° 20' 16.4" W**	Warren	EV	None
3—East Hickory Creek	Basin, Forest Highway 119 to Mouth	Forest	HQ-CWF	None
[3—Siggens Run	**Basin**	**Forest**	**CWF**	**None]**

3—Tributaries to Allegheny River	**Basins, East Hickory Creek to Little Hickory Run**	**Forest**	**CWF**	**None**
3—Little Hickory Run	Basin	Forest	HQ-CWF	None
3—Tributaries to Allegheny River	**Basins, Little Hickory Run to West Hickory Creek**	**Forest**	**CWF**	**None**
3—West Hickory Creek	Basin, Source to Martin Run	Forest	HQ-CWF	None
4—Martin Run	Basin	Forest	CWF	None
3—West Hickory Creek	Basin, Martin Run to Mouth	Forest	CWF	None
[3—Dawson Run	**Basin**	**Forest**	**CWF**	**None**
3—Sibbald Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, West Hickory Creek to Tubbs Run**	**Forest**	**CWF**	**None**
3—Tubbs Run	Basin	Forest	HQ-CWF	None
[3—Jamison Run	**Basin**	**Forest**	**CWF**	**None**
3—Hunter Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Tubbs Run to Tionesta Creek**	**Forest**	**CWF**	**None**
3—Tionesta Creek				
3—West Branch Tionesta Creek	**[Main Stem] Basin,** Source to **[Farnsworth Branch] Wildcat Run**	Warren	HQ-CWF	None
[4—Unnamed Tributaries to West Branch Tionesta Creek	**Basins, Source to Farnsworth Branch**	**Warren**	**HQ-CWF**	**None**
4—Tom Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Jones Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Shaw Run	**Basin**	**Warren**	**HQ-CWF**	**None]**
4—Wildcat Run	Basin	Warren	EV	None
[4—Adams Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Elkhorn Run	**Basin**	**Warren**	**HQ-CWF**	**None**
4—Mead Run	**Basin**	**Warren**	**HQ-CWF**	**None]**
3—West Branch Tionesta Creek	**Basin, Wildcat Run to Farnsworth Branch**	**Warren**	**HQ-CWF**	**None**
4—Farnsworth Branch	Basin	Warren	HQ-CWF	None
4—West Branch Tionesta Creek	**[Main Stem] Basin,** Farnsworth Branch to **[Confluence with South Branch] Arnot Run**	**[Forest] Warren**	CWF	None
[5—Unnamed Tributaries to West Branch Tionesta Creek	**Basins, Farnsworth Branch to Confluence with South Branch**	**Warren**	**CWF**	**None**
5—Pacard Run	**Basin**	**Warren**	**CWF**	**None]**

5—Arnot Run	Basin	Warren	EV	None
4—West Branch Tionesta Creek	**Basin, Arnot Run to Sixmile Run**	**Warren**	**CWF**	**None**
5—Sixmile Run	Basin	Warren	HQ-CWF	None
4—West Branch Tionesta Creek	**Basin, Sixmile Run to Fourmile Run**	**Warren**	**CWF**	**None**
5—Fourmile Run	Basin	Warren	HQ-CWF	None
[5—Dunham Run	**Basin**	**Warren**	**CWF**	**None]**
4—West Branch Tionesta Creek	**Basin, Fourmile Run to Twomile Run**	**Warren**	**CWF**	**None**
5—Twomile Run	Basin	Warren	HQ-CWF	None
[5—Dodge Run	**Basin**	**Warren**	**CWF**	**None]**
4—West Branch Tionesta Creek	**Basin, Twomile Run to South Branch Tionesta Creek**	**Warren**	**CWF**	**None**
4—South Branch Tionesta Creek	**[Main Stem]** Basin, Source to **[Confluence with West Branch]** Crane Run	Warren	HQ-CWF	None
[5—UNTs to South Branch Tionesta Creek	**Basins**	**Elk-Forest-Warren**	**HQ-CWF**	**None**
5—Martin Run	**Basin**	**Elk**	**HQ-CWF**	**None**
5—Wolf Run	**Basin**	**Elk**	**HQ-CWF**	**None**
5—Coon Run	**Basin**	**Elk**	**HQ-CWF**	**None**
5—Chaffee Run	**Basin**	**Elk**	**HQ-CWF**	**None]**
5—Crane Run	Basin	Elk	EV	None
[5—Iron Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Fork Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Bogus Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Rock Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Tuttle Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Cherry Run	**Basin**	**Warren**	**HQ-CWF**	**None**
5—Martin Run	**Basin**	**Warren**	**HQ-CWF**	**None**
5—East Branch Tionesta Creek	**Basin**	**Warren**	**HQ-CWF**	**None]**
4—South Branch Tionesta Creek	**Basin, Crane Run to Mouth**	**Warren**	**HQ-CWF**	**None**
3—Tionesta Creek	**[Main Stem]** Basin, Confluence of West and South Branches to **[Mouth]** Messenger Run	**[Forest]** Warren	CWF	None
[4—Unnamed Tributaries to Tionesta Creek	**Basins, Confluence of West and South Branches to Mouth**	**Warren-Forest**	**CWF**	**None**

4—Rock Run	**Basin**	**Warren**	**CWF**	**None**
4—Duck Eddy Run	**Basin**	**Warren**	**CWF**	**None**
4—Pell Run	**Basin**	**Warren**	**CWF**	**None]**
4—Messenger Run	Basin	Warren	EV	None
[4—Mead Run	**Basin**	**Warren**	**CWF**	**None**
4—Thad Shanty Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Messenger Run to Bluejay Creek**	**Warren-Forest**	**CWF**	**None**
4—Bluejay Creek	Basin	Forest	HQ-CWF	None
[4—Rocky Run	**Basin**	**Forest**	**CWF**	**None**
4—Bush Creek	**Basin**	**Forest**	**CWF**	**None**
4—Martin Run	**Basin**	**Forest**	**CWF**	**None**
4—Hastings Run	**Basin**	**Forest**	**CWF**	**None**
4—Reagan Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Bluejay Creek to Upper Sheriff Run**	**Forest**	**CWF**	**None**
4—Upper Sheriff Run	Basin	Forest	HQ-CWF	None
3—Tionesta Creek	**Basin, Upper Sheriff Run to Lower Sheriff Run**	**Forest**	**CWF**	**None**
4—Lower Sheriff Run	Basin	Forest	HQ-CWF	None
3—Tionesta Creek	**Basin, Lower Sheriff Run to Fools Creek**	**Forest**	**CWF**	**None**
4—Fools Creek	Basin	Forest	HQ-CWF	None
[4—Wildcat Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Fools Creek to Minister Creek**	**Forest**	**CWF**	**None**
4—Minister **[Run]** **Creek**	Basin	Forest	HQ-CWF	None
[4—Porcupine Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Minister Creek to Blood Run**	**Forest**	**CWF**	**None**
4—Blood Run	Basin	Forest	HQ-CWF	None
3—Tionesta Creek	**Basin, Blood Run to Logan Run**	**Forest**	**CWF**	**None**
4—Logan Run	Basin	Forest	CWF	None
[4—Phelps Run	**Basin**	**Forest**	**CWF**	**None**
4—Kingsley Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Logan Run to Bobbs Creek**	**Forest**	**CWF**	**None**
4—Bobbs Creek	Basin	Forest	HQ-CWF	None
[4—Little Minister Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Bobbs Creek to Fork Run**	**Forest**	**CWF**	**None**
4—Fork Run	Basin	Forest	HQ-CWF	None

3—Tionesta Creek	**Basin, Fork Run to Salmon Creek**	**Forest**	**CWF**	**None**
4—Salmon Creek	**[Main Stem] Basin, Source to Fourmile Run**	Forest	HQ-CWF	None
[5—Unnamed Tributaries to Salmon Creek	**Basins**	**Forest**	**HQ-CWF**	**None**
5—Little Salmon Creek	**Basin**	**Forest**	**HQ-CWF**	**None**
5—Guiton Run	**Basin**	**Forest**	**HQ-CWF**	**None]**
5—Fourmile Run	Basin	Forest	EV	None
[5—Twomile Run	**Basin**	**Forest**	**HQ-CWF**	**None**
5—The Branch	**Basin**	**Forest**	**HQ-CWF**	**None]**
4—Salmon Creek	**Basin, Fourmile Run to Mouth**	**Forest**	**HQ-CWF**	**None**
[4—Church Run	**Basin**	**Forest**	**CWF**	**None**
4—Carpenter Run	**Basin**	**Forest**	**CWF**	**None**
4—Lamentation Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Salmon Creek to Bear Creek**	**Forest**	**CWF**	**None**
4—Bear Creek	Basin	Forest	HQ-CWF	None
3—Tionesta Creek	**Basin, Bear Creek to Ross Run**	**Forest**	**CWF**	**None**
4—Ross Run	Basin	Forest	HQ-CWF	None
[4—Jakes Run	**Basin**	**Forest**	**CWF**	**None**
4—Jug Handle Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Ross Run to Little Coon Creek**	**Forest**	**CWF**	**None**
4—Little Coon Creek	Basin	Forest	HQ-CWF	None
[4—Coon Creek	**Basin**	**Forest**	**CWF**	**None**
4—Piney Run	**Basin**	**Forest**	**CWF**	**None**
4—Sugar Run	**Basin**	**Forest**	**CWF**	**None**
4—Little Piney Run	**Basin**	**Forest**	**CWF**	**None**
4—Glasner Run	**Basin**	**Forest**	**CWF**	**None**
4—Johns Run	**Basin**	**Forest**	**CWF**	**None**
4—Peters Run	**Basin**	**Forest**	**CWF**	**None]**
3—Tionesta Creek	**Basin, Little Coon Creek to Mouth**	**Forest**	**CWF**	**None**
[3—Little Tionesta Creek	**Basin**	**Forest**	**CWF**	**None**
3—Bates Run	**Basin**	**Forest**	**CWF**	**None**
3—Indian Camp Creek	**Basin**	**Forest**	**CWF**	**None**
3—Holeman Run	**Basin**	**Venango**	**CWF**	**None**
3—Stewart Run	**Basin**	**Venango**	**CWF**	**None**

3—Fox Run	**Basin**	**Venango**	**CWF**	**None**
3—Johnston Run	**Basin**	**Venango**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Tionesta Creek to Hemlock Creek**	**Forest-Venango**	**CWF**	**None**
3—Hemlock Creek	Basin	Venango	EV	None
[3—McCrea Run	**Basin**	**Venango**	**CWF**	**None**
3—Culver Run	**Basin**	**Venango**	**CWF**	**None**
3—Muskrat Run	**Basin**	**Venango**	**CWF**	**None**
3—Pithole Creek	**Basin**	**Venango**	**CWF**	**None**
3—Panther Run	**Basin**	**Venango**	**CWF**	**None**
3—Lamb Run	**Basin**	**Venango**	**CWF**	**None**
3—Horse Creek	**Basin**	**Venango**	**CWF**	**None**
3—Carney Run	**Basin**	**Venango**	**CWF**	**None**
3—Sage Run	**Basin**	**Venango**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Hemlock Creek to Oil Creek**	**Venango**	**CWF**	**None**
3—Oil Creek	**[Main Stem, Source to Cherrytree Run] Basin, Source to Thompson Creek**	Venango	CWF	None
[4—Unnamed Tributaries to Oil Creek	**Basins, Source to Cherrytree Run**	**Crawford-Venango**	**CWF**	**None**
4—West Shreve Run	**Basin**	**Crawford**	**CWF**	**None**
4—East Shreve Run	**Basin**	**Crawford**	**CWF**	**None**
4—Mosey Run	**Basin**	**Crawford**	**CWF**	**None**
4—Bloomfield Run	**Basin**	**Crawford**	**CWF**	**None**
4—East Branch Oil Creek	**Basin**	**Crawford**	**CWF**	**None**
4—Marsh Run	**Basin**	**Crawford**	**CWF**	**None]**
4—Thompson Creek	Basin, Source to Shirley Run	Crawford	CWF	None
5—Shirley Run	Basin	Crawford	HQ-CWF	None
4—Thompson Creek	**Basin, Shirley Run to Mouth**	**Crawford**	**CWF**	**None**
[4—Church Run	**Basin**	**Crawford**	**CWF**	**None]**
3—Oil Creek	**Basin, Thompson Creek to Pine Creek**	**Crawford**	**CWF**	**None**
4—Pine Creek	Basin, Source to Caldwell Creek	Crawford	HQ-CWF	None
5—Caldwell Creek	Basin, Source to West Branch Caldwell Creek	Warren	HQ-CWF	None
6—West Branch Caldwell Creek	Basin	Warren	EV	None
5—Caldwell Creek	Basin, West Branch Caldwell Creek to Mouth	Crawford	EV	None

4—Pine Creek	Basin, Caldwell Creek to Mouth	Crawford	CWF	None
[4—Benninghof Run	**Basin**	**Venango**	**CWF**	**None]**
3—Oil Creek	**Basin, Pine Creek to Cherrytree Run**	**Crawford**	**CWF**	**None**
4—Cherrytree Run	Basin	Venango	CWF	None
3—Oil Creek	Main Stem, Cherrytree Run to Mouth	Venango	WWF	None
4—**[Unnamed]** Tributaries to Oil Creek	Basins, Cherrytree Run to **[Mouth]Cherry Run**	Venango	CWF	None
4—Cherry Run	Basin, Source to Rouseville Corporate Boundary **at 41° 28' 37.5" N; 79° 40' 47.9" W**	Venango	HQ-CWF	None
4—Cherry Run	Basin, Rouseville Corporate Boundary to Mouth	Venango	CWF	None
[4—Cornplanter Run	**Basin**	**Venango**	**CWF**	**None]**
4—Tributaries to Oil Creek	**Basins, Cherry Run to Mouth**	**Venango**	**CWF**	**None**
[3—Holiday Run	**Basin**	**Venango**	**CWF**	**None**
3—Charley Run	**Basin**	**Venango**	**CWF**	**None**
3—Brannon Run	**Basin**	**Venango**	**CWF**	**None**
3—Seneca Run	**Basin**	**Venango**	**CWF**	**None**
3—Twomile Run	**Basin**	**Venango**	**CWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Oil Creek to French Creek**	**Venango**	**CWF**	**None**
3—French Creek (NY)				
4—Unnamed Tributaries to French Creek	Basins (all sections in PA), Source to PA-NY State Border **at 42° 1' 12.1" N; 79° 45' 42.7" W**	Erie	WWF	None
4—Cutting Brook	Basin (all sections in PA)	Erie	WWF	None
4—Herrick Creek	Basin (all sections in PA)	Erie	WWF	None
3—French Creek	**[Main Stem] Basin (all sections in PA)**, PA-NY State Border to **[Mouth] Hubble Run**	**[Venango] Erie**	WWF	None
[4—Unnamed Tributaries to French Creek	**Basins (all sections in PA), PA-NY State Border to Mouth**	**Erie-Crawford-Venango**	**WWF**	**None]**
4—Hubble Run	Basin (including the Wattsburg Fen), Source to the 1350 ft Contour Line **[(Union City 7 1/2 Quadrangle)]at 41° 58' 10.2" N; 79° 45' 58.7" W**	Erie	HQ-WWF	None

4—Hubble Run	Basin, 1350 ft. Contour Line to Mouth	Erie	WWF	None
3—French Creek	**Basin, Hubble Run to West Branch French Creek**	**Erie**	**WWF**	**None**
4—West Branch French Creek (NY)				
5—**[Unnamed]** Tributaries to West Branch French Creek	Basins (all sections in PA), Source to PA-NY State Border **at 42° 7' 57.8" N; 79° 45' 43.1" W**	Erie	WWF	None
4—West Branch French Creek	**[Main Stem] Basin (all sections in PA)**, PA-NY State Border to Mouth	Erie	WWF	None
[5—Unnamed Tributaries to West Branch French Creek	**Basins (all sections in PA), PA-NY State Border to Mouth**	**Erie**	**WWF**	**None**
5—Darrow Brook	**Basin (all sections in PA)**	**Erie**	**WWF**	**None**
5—Townley Run	**Basin**	**Erie**	**WWF**	**None**
5—Alder Brook	**Basin**	**Erie**	**WWF**	**None**
5—Bailey Brook	**Basin**	**Erie**	**WWF**	**None]**
3—French Creek	**Basin, West Branch French Creek to Lake Pleasant Outlet**	**Erie**	**WWF**	**None**
4—Lake Pleasant Outlet	Basin	Erie	HQ-CWF	None
3—French Creek	**Basin, Lake Pleasant Outlet to Alder Run**	**Erie**	**WWF**	**None**
4—Alder Run	Basin	Erie	CWF	None
3—French Creek	**Basin, Alder Run to South Branch French Creek**	**Erie**	**WWF**	**None**
4—South Branch French Creek	Basin, Source to Beaver Run	Erie	CWF	None
5—Beaver Run	Basin	Erie	EV	None
4—South Branch French Creek	Basin, Beaver Run to Mouth	Erie	CWF	None
[4—Wheeler Creek	**Basin**	**Erie**	**WWF**	**None]**
3—French Creek	**Basin, South Branch French Creek to Le Boeuf Creek**	**Erie**	**WWF**	**None**
4—Le Boeuf Creek	Basin, Source to Trout Run	Erie	TSF	None
5—Trout Run	Basin	Erie	HQ-CWF	None
4—LeBoeuf Creek	Basin, Trout Run to Mouth	Erie	TSF	None
3—French Creek	**Basin, Le Boeuf Creek to Campbell Run**	**Erie-Crawford**	**WWF**	**None**

4—Campbell Run	Basin	Crawford	TSF	None
3—French Creek	**Basin, Campbell Run to Kelly Run**	**Crawford**	**WWF**	**None**
4—Kelly Run	Basin	Crawford	HQ-CWF	None
3—French Creek	**Basin, Kelly Run to Muddy Creek**	**Crawford**	**WWF**	**None**
4—Muddy Creek	Basin, Source to East Branch Muddy Creek	Crawford	HQ-CWF	None
5—East Branch Muddy Creek	Basin	Crawford	HQ-CWF	None
4—Muddy Creek	Main Stem, East Branch Muddy Creek to Mackey Run	Crawford	HQ-TSF	None
5—**[Unnamed]** Tributaries to Muddy Creek	Basins, East Branch Muddy Creek to Mackey Run	Crawford	HQ-CWF	None
[5—Federal Run	**Basin**	**Crawford**	**HQ-CWF**	**None]**
5—Mackey Run	Basin	Crawford	HQ-CWF	None
4—Muddy Creek	Basin, Mackey Run to Mouth	Crawford	HQ-TSF	None
[4—Mohawk Run	**Basin**	**Crawford**	**WWF**	**None]**
3—French Creek	**Basin, Muddy Creek to Conneauttee Creek**	**Crawford**	**WWF**	**None**
4—Conneauttee Creek	Basins, Source to Outlet of Edinboro Lake	Erie	WWF	None
4—Conneauttee Creek	Main Stem, Outlet of Edinboro Lake to Erie-Crawford County Border **at 41° 50' 58.9" N; 80° 5' 50.2" W**	Erie-Crawford	TSF	None
5—**[Unnamed]** Tributaries to Conneauttee Creek	Basins, Outlet of Edinboro Lake to Erie-Crawford County Border	Erie	WWF	None
[5—Darrows Creek	**Basin**	**Crawford**	**WWF**	**None]**
4—Conneauttee Creek	**[Main Stem] Basin**, Erie-Crawford County Border to **[Mouth] Little Conneauttee Creek**	Crawford	WWF	None
[5—Unnamed Tributaries to Conneauttee Creek	**Basins, Erie-Crawford County Border to Mouth**	**Crawford**	**WWF**	**None**
5—Torry Run	**Basin**	**Crawford**	**WWF**	**None]**
5—Little Conneauttee Creek	Basin	Crawford	CWF	None
4—Conneauttee Creek	**Basin, Little Conneauttee Creek to Mouth**	**Crawford**	**WWF**	**None**
[4—Boles Run	**Basin**	**Crawford**	**WWF**	**None**

4—Gravel Run	**Basin**	**Crawford**	**WWF**	**None**
4—Wolf Run	**Basin**	**Crawford**	**WWF**	**None]**
3—French Creek	**Basin, Conneauttee Creek to Woodcock Creek**	**Crawford**	**WWF**	**None**
4—Woodcock Creek	Basin, Source to Woodcock Creek Reservoir Dam	Crawford	HQ-CWF	None
4—Woodcock Creek	Basin, Woodcock Reservoir Dam to Mouth	Crawford	CWF	None
[4—Cussewago Creek	**Basin**	**Crawford**	**WWF**	**None**
4—Van Horne Creek	**Basin**	**Crawford**	**WWF**	**None]**
3—French Creek	**Basin, Woodcock Creek to Conneaut Outlet**	**Crawford**	**WWF**	**None**
4—Conneaut Outlet	Basin, Source to Conneaut Lake Dam	Crawford	HQ-WWF	None
4—Conneaut Outlet	Basin, Conneaut Lake Dam to Mouth	Crawford	WWF	None
3—French Creek	**Basin, Conneaut Outlet to Little Sugar Creek**	**Crawford**	**WWF**	**None**
4—Little Sugar Creek	Basin	Crawford	CWF	None
[4—Foulk Run	**Basin**	**Mercer**	**WWF**	**None**
4—Powdermill Run	**Basin**	**Mercer**	**WWF**	**None**
4—North Deer Creek	**Basin**	**Mercer**	**WWF**	**None]**
3—French Creek	**Basin, Little Sugar Creek to McCune Run**	**Crawford-Mercer-Venango**	**WWF**	**None**
4—McCune Run	Basin	Venango	CWF	None
3—French Creek	**Basin, McCune Run to Mill Creek**	**Venango**	**WWF**	**None**
4—Mill Creek	Basin	Venango	CWF	None
3—French Creek	**Basin, Mill Creek to Sugar Creek**	**Venango**	**WWF**	**None**
4—Sugar Creek	Basin, Source to East Branch Sugar Creek **at 41° 36' 13.8" N; 79° 51' 7.7" W [(RM 17.0)]**	Crawford	CWF	None
5—East Branch Sugar Creek	Basin, Source to SR 0428 Bridge **at 41° 38' 28.9" N; 79° 49' 20.0" W**	Crawford	CWF	None
5—East Branch Sugar Creek	Basin, SR 0428 Bridge to Mouth	Crawford	HQ-CWF	None
4—Sugar Creek	Basin, East Branch Sugar Creek to Mouth	Venango	CWF	None
[4—Patchel Run	**Basin**	**Venango**	**WWF**	**None]**

3—French Creek	**Basin, Sugar Creek to Mouth**	**Venango**	**WWF**	**None**
3—**[Unnamed]** Tributaries to Allegheny River	Basins, French Creek to **[RM 106.70]** **Lower Twomile Run**	Venango	WWF	None
3—Lower Twomile Run	Basin	Venango	CWF	None
[3—Siefer Run	**Basin**	**Venango**	**WWF**	**None**
3—Ajax Run	**Basin**	**Venango**	**WWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Lower Twomile Run to East Sandy Creek**	**Venango**	**WWF**	**None**
3—East Sandy Creek	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, East Sandy Creek to Snyder Run**	**Venango**	**WWF**	**None**
3—Snyder Run	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Snyder Run to Sandy Creek**	**Venango**	**WWF**	**None**
3—Sandy Creek	Main Stem	Venango	WWF	None
	* * * * * *			
4—Ditzenberger Run	Basin	Venango	WWF	None
[3—Clark Run	**Basin**	**Venango**	**WWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Sandy Creek to Pine Hill Run**	**Venango**	**WWF**	**None**
3—Pine Hill Run	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Pine Hill Run to Dennison Run**	**Venango**	**WWF**	**None**
3—Dennison Run	Basin	Venango	EV	None
3—Tributaries to Allegheny River	**Basins, Dennison Run to Scrubgrass Creek**	**Venango**	**WWF**	**None**
3—Scrubgrass Creek	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Scrubgrass Creek to UNT 51240 at 41° 15' 41.8" N, 79° 49' 53.7" W**	**Venango**	**WWF**	**None**
3—**[Unnamed Tributary to Allegheny River at RM 106.70]** **UNT 51240**	Basin	Venango	CWF	None
[3—Unnamed Tributaries to Allegheny River	**Basins, RM 106.70 to Clarion River**	**Venango-Clarion**	**WWF**	**None]**
3—Tributaries to Allegheny River	**Basins, UNT 51240 to Roberts Run**	**Venango**	**WWF**	**None**
3—Roberts Run	Basin	Venango	CWF	None
[3—Falling Spring Run	**Basin**	**Venango**	**WWF**	**None]**

3—Tributaries to Allegheny River	**Basins, Roberts Run to Whitherup Run**	**Venango**	**WWF**	**None**
3—Whitherup Run	Basin	Venango	CWF	None
[3—Perry Run	**Basin**	**Venango**	**WWF**	**None**
3—Whann Run	**Basin**	**Venango**	**WWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Whitherup Run to Little Scrubgrass Creek**	**Venango**	**WWF**	**None**
3—Little Scrubgrass Creek	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Little Scrubgrass Creek to Shull Run**	**Venango**	**WWF**	**None**
3—Shull Run	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Shull Run to Mill Creek**	**Venango**	**WWF**	**None**
3—Mill Creek	Basin	Venango	CWF	None
3—Tributaries to Allegheny River	**Basins, Mill Creek to Richey Run**	**Venango**	**WWF**	**None**
3—Richey Run	Basin	Clarion-Venango	CWF	None
[3—Lowrey Run	**Basin**	**Butler**	**WWF**	**None**
3—Fowler Run	**Basin**	**Armstrong**	**WWF**	**None]**
3—Tributaries to Allegheny River	**Basins, Richey Run to Clarion River**	**Venango-Clarion**	**WWF**	**None**

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§ 93.9r. Drainage List
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Ohio River Basin in Pennsylvania
Clarion River

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
1—Ohio River				
2—Allegheny River				
3—Clarion River				
4—East Branch Clarion River	Basin, Source to Confluence with West Branch	Elk	HQ-CWF	None
4-West Branch Clarion River	**[Main Stem]** **Basin**, Source to **[Confluence with East Branch]** **Wolf Run**	Elk	CWF	None

[5—Unnamed Tributaries to West Branch Clarion River	**Basins, Source to Confluence with East Branch**	**McKean-Elk**	**CWF**	**None**
5—Windfall Run	**Basin**	**McKean**	**CWF**	**None**
5—Sicily Run	**Basin**	**McKean**	**CWF**	**None**
5—Buck Run	**Basin**	**McKean**	**CWF**	**None**
5—Rocky Run	**Basin**	**Elk**	**CWF**	**None**
5—Nearing Run	**Basin**	**Elk**	**CWF**	**None**
5—Wilson Run	**Basin**	**Elk**	**CWF**	**None**
5—Oil Creek	**Basin**	**Elk**	**CWF**	**None]**
5—Wolf Run	Basin	Elk	HQ-CWF	None
[5—Meffert Creek	**Basin**	**Elk**	**CWF**	**None]**
4-West Branch Clarion River	**Basin, Wolf Run to Silver Creek**	**Elk**	**CWF**	**None**
5—Silver Creek	Basin	Elk	HQ-CWF	None
4-West Branch Clarion River	**Basin, Silver Creek to Confluence with East Branch**	**Elk**	**CWF**	**None**
3—Clarion River	**[Main Stem]** Basin, Confluence of East and West Branches to **[Inlet of Piney Lake at RM 37.4]** Riley Run	**[Clarion]** Elk	CWF	None
[4—Unnamed Tributaries to Clarion River	**Basins, Confluence of East and West Branches to Inlet of Piney Lake at RM 37.4**	**Elk-Forest-Jefferson-Clarion**	**CWF**	**None**
4—Johnson Run	**Basin**	**Elk**	**CWF**	**None**
4—Powers Run	**Basin**	**Elk**	**CWF**	**None]**
4—Riley Run	Basin	Elk	WWF	None
3—Clarion River	**Basin, Riley Run to Little Mill Creek**	**Elk**	**CWF**	**None**
4—Little Mill Creek	Basin	Elk	HQ-CWF	None
[4—Mason Creek	**Basin**	**Elk**	**CWF**	**None**
4—Elk Creek	**Basin**	**Elk**	**CWF**	**None**
4—Island Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Little Mill Creek to Big Mill Creek**	**Elk**	**CWF**	**None**
4—Big Mill Creek	Basin	Elk	HQ-CWF	None
[4—Connerville Run	**Basin**	**Elk**	**CWF**	**None**
4—Dog Hollow Run	**Basin**	**Elk**	**CWF**	**None**
4—Gillis Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Big Mill Creek to Little Toby Creek**	**Elk**	**CWF**	**None**
4—Little Toby Creek	**[Main Stem]** Basin, Source to Sawmill Run	Elk	CWF	None

[5—Unnamed Tributaries to Little Toby Creek	**Basins**	**Elk-Jefferson**	**CWF**	**None**
5—Limestone Run	**Basin**	**Elk**	**CWF**	**None**
5—Kyler Run	**Basin**	**Elk**	**CWF**	**None**
5—McCauley Run	**Basin**	**Elk**	**CWF**	**None]**
5—Sawmill Run	Main Stem	Elk	CWF	None
6—Unnamed Tributaries to Sawmill Run	Basins	Elk	CWF	None
6—**UNT 50397 at 41° 17' 39.8" N; 78° 38' 6.3" W (locally known as** Lost Run)	Basin, Source to Fox Township Municipal Authority Dam	Elk	HQ-CWF	None
6—**UNT 50397 [Lost Run]**	Basin, Fox Township Municipal Authority Dam to Mouth	Elk	CWF	None
[5—Brandy Camp Creek	**Basin**	**Elk**	**CWF**	**None**
5—Johnson Run	**Basin**	**Elk**	**CWF**	**None**
5—Bear Run	**Basin**	**Elk**	**CWF**	**None**
5—Oyster Run	**Basin**	**Elk**	**CWF**	**None**
5—Mead Run	**Basin**	**Elk**	**CWF**	**None]**
4—Little Toby Creek	**Basin, Sawmill Run to Boggy Run**	**Elk**	**CWF**	**None**
5—Boggy Run	Basin	Elk	HQ-CWF	None
4—Little Toby Creek	**Basin, Boggy Run to Whetstone Branch**	**Elk**	**CWF**	**None**
5—Whetstone Branch	Basin, Source to Brockway Municipal Authority No. 1 Dam	Elk	HQ-CWF	None
5—Whetstone Branch	Basin, Brockway Municipal Authority No. 1 Dam to Mouth	Elk	CWF	None
[5—Walburn Run	**Basin**	**Jefferson**	**CWF**	**None]**
4—Little Toby Creek	**Basin, Whetstone Branch to Rattlesnake Creek**	**Jefferson**	**CWF**	**None**
5—Rattlesnake Creek	Basin, Source to Brockway Municipal Authority Dam	Jefferson	HQ-CWF	None
5—Rattlesnake Creek	Basin, Brockway Municipal Authority Dam to Mouth	Jefferson	CWF	None
[5—Baghdad Run	**Basin**	**Jefferson**	**CWF**	**None**
5—Jenkins Run	**Basin**	**Jefferson**	**CWF**	**None**
5—Little Vineyard Run	**Basin**	**Jefferson**	**CWF**	**None]**

4—Little Toby Creek	**Basin, Rattlesnake Creek to Vineyard Run**	**Jefferson**	**CWF**	**None**
5—Vineyard Run	Basin	Elk	HQ-CWF	None
[5—Coward Run	**Basin**	**Elk**	**CWF**	**None**
5—Laurel Run	**Basin**	**Elk**	**CWF**	**None**
5—Bearmouth Run	**Basin**	**Elk**	**CWF**	**None]**
4—Little Toby Creek	**Basin, Vineyard Run to Mouth**	**Jefferson**	**CWF**	**None**
3—Clarion River	**Basin, Little Toby Creek to Bear Creek**	**Elk**	**CWF**	**None**
4—Bear Creek	Basin	Elk	HQ-CWF	None
[4—Mahood Run	**Basin**	**Elk**	**CWF**	**None**
4—Beech Bottom Run	**Basin**	**Elk**	**CWF**	**None**
4—Lake City Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Bear Creek to Crow Run**	**Elk**	**CWF**	**None**
[4—Cole Run	**Main Stem**	**Elk**	**CWF**	**None**
5—Unnamed Tributaries to Cole Run	**Basins**	**Elk**	**CWF**	**None]**
[5] 4—Crow Run	Basin, **Source to Cole Run**	Elk	HQ-CWF	None
5—Cole Run	**Basin**	**Elk**	**CWF**	**None**
4—Crow Run	**Basin, Cole Run to Mouth**	**Elk**	**HQ-CWF**	**None**
[4—Irwin Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Crow Run to Spring Creek**	**Elk**	**CWF**	**None**
4—Spring Creek	Basin	Elk	HQ-CWF	None
3—Clarion River	**Basin, Spring Creek to Maxwell Run**	**Elk**	**CWF**	**None**
4—Maxwell Run	Basin	Elk	HQ-CWF	None
[4—Elliott Run	**Basin**	**Elk**	**CWF**	**None**
4—Daugherty Run	**Basin**	**Jefferson**	**CWF**	**None**
4—Raught Run	**Basin**	**Elk**	**CWF**	**None**
4—Painter Run	**Basin**	**Elk**	**CWF**	**None**
4—Church Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Maxwell Run to Callen Run**	**Elk-Jefferson**	**CWF**	**None**
4—Callen Run	Basin	Jefferson	HQ-CWF	None
[4—Cline Run	**Basin**	**Elk**	**CWF**	**None]**
3—Clarion River	**Basin, Callen Run to Wyncoop Run**	**Elk-Jefferson**	**CWF**	**None**
4—Wyncoop Run	Basin	Elk	HQ-CWF	None
[4—Leeper Run	**Basin**	**Elk**	**CWF**	**None**
4—Pine Run	**Basin**	**Elk**	**CWF**	**None]**

3—Clarion River	**Basin, Wyncoop Run to Mill Stone Creek**	**Elk-Jefferson**	**CWF**	**None**
4—Mill Stone Creek	Basin	Elk	HQ-CWF	None
[4—Shippen Run	**Basin**	**Forest**	**CWF**	**None]**
3—Clarion River	**Basin, Mill Stone Creek to Clear Creek**	**Elk-Jefferson-Forest**	**CWF**	**None**
4—Clear Creek	Basin	Jefferson	HQ-CWF	None
[4—Tadler Run	**Basin**	**Jefferson**	**CWF**	**None]**
3—Clarion River	**Basin, Clear Creek to Cherry Run**	**Jefferson-Forest**	**CWF**	**None**
4—Cherry Run	Basin	Forest	HQ-CWF	None
3—Clarion River	**Basin, Cherry Run to Maple Creek**	**Jefferson-Forest**	**CWF**	**None**
4—Maple Creek	Basin	Forest	HQ-CWF	None
3—Clarion River	**Basin, Maple Creek to Coleman Run**	**Jefferson-Forest**	**CWF**	**None**
4—Coleman Run	Basin	Forest	HQ-CWF	None
3—Clarion River	**Basin, Coleman Run to Troutman Run**	**Jefferson-Forest**	**CWF**	**None**
4—Troutman Run	Basin	Forest	HQ-CWF	None
[4—Henry Run	**Basin**	**Forest**	**CWF**	**None]**
3—Clarion River	**Basin, Troutman Run to Toms Run**	**Jefferson-Forest**	**CWF**	**None**
4—Toms Run	Basin, Source to Little Hefren Run	Clarion	EV	None
5—Little Hefren Run	Basin	Clarion	CWF	None
4—Toms Run	Basin, Little Hefren Run to Mouth	Forest	EV	None
3—Clarion River	**Basin, Toms Run to Cathers Run**	**Jefferson-Clarion**	**CWF**	**None**
4—**[Cather]Cathers** Run	Basin	Clarion	HQ-CWF	None
3—Clarion River	**Basin, Cathers Run to Maxwell Run**	**Clarion**	**CWF**	**None**
4—Maxwell Run	Basin	Clarion	HQ-CWF	None
3—Clarion River	**Basin, Maxwell Run to Blyson Run**	**Clarion**	**CWF**	**None**
4—Blyson Run	Basin	Clarion	EV	None
3—Clarion River	**Basin, Blyson Run to Inlet of Piney Lake at 41° 14' 11.6" N, 79° 19' 21.3" W**	**Clarion**	**CWF**	**None**
3—Clarion River	Main Stem, Inlet of Piney Lake at **[RM 37.4] at 41°**	Clarion	WWF	None

	14' 11.6" N, 79° 19' 21.3" W to Mouth			
4—**[Unnamed]** Tributaries to Clarion River	Basins, Inlet of Piney Lake at [RM 37.4] **at 41° 14' 11.6" N, 79° 19' 21.3" W** to **[Mouth] Mill Creek**	Clarion	CWF	None
4—Mill Creek	**[Main Stem] Basin**, Source to **[Little Mill Creek] McCanna Run**	Clarion	HQ-CWF	None
[5—Unnamed Tributaries to Mill Creek	**Basins, Source to Little Mill Creek**	**Clarion-Jefferson**	**HQ-CWF**	**None**
4—Mill Creek				
5—Parks Run	**Basin**	**Jefferson**	**HQ-CWF**	**None**
5—Martin Run	**Basin**	**Jefferson**	**HQ-CWF**	**None**
5—Rankin Run	**Basin**	**Jefferson**	**HQ-CWF**	**None**
5—Updike Run	**Basin**	**Jefferson**	**HQ-CWF**	**None]**
5—McCanna Run (Pendleton Run)	Basin	Clarion	EV	None
4—Mill Creek	**Basin, McCanna Run to Little Mill Creek**	**Clarion**	**HQ-CWF**	**None**
5—Little Mill Creek	Basin	Clarion	CWF	None
4—Mill Creek	Main Stem, Little Mill Creek to Mouth	Clarion	CWF	None
5—Unnamed Tributaries to Mill Creek	Basins, Little Mill Creek to Mouth	Clarion	HQ-CWF	None
5—Douglass Run	Basin	Clarion	CWF	None
5—Woods Run	Basin	Clarion	HQ-CWF	None
5—Stroup Run	Basin	Clarion	HQ-CWF	None
5—Trap Run	Basin	Clarion	HQ-CWF	None
5—Whites Run	Basin	Clarion	CWF	None
[4—Reeds Run	**Basin**	**Clarion**	**CWF**	**None**
4—Toby Creek	**Basin**	**Clarion**	**CWF**	**None**
4—Trout Run	**Basin**	**Clarion**	**CWF**	**None**
4—Courtleys Run	**Basin**	**Clarion**	**CWF**	**None**
4—Piney Creek	**Basin**	**Clarion**	**CWF**	**None**
4—Deer Creek	**Basin**	**Clarion**	**CWF**	**None]**
4—Tributaries to Clarion River	**Basins, Mill Creek to Canoe Creek**	**Clarion**	**CWF**	**None**
4—Canoe Creek	Basin	Clarion	HQ-CWF	None
4—Tributaries to Clarion River	**Basins, Canoe Creek to Beaver Creek**	**Clarion**	**CWF**	**None**
4—Beaver Creek	Basin	Clarion	HQ-CWF	None

[4—Licking Creek	**Basin**	**Clarion**	**CWF**	**None]**
4—Tributaries to Clarion River	**Basins, Beaver Creek to Turkey Creek**	**Clarion**	**CWF**	**None**
4—Turkey Creek	Basin	Clarion	HQ-CWF	None
4—Tributaries to Clarion River	**Basins, Turkey Creek to Mouth**	**Clarion**	**CWF**	**None**

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§ 93.9s. Drainage List S.

Ohio River Basin in Pennsylvania

Allegheny River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
3—Mahoning Creek	Main Stem, Confluence of East Branch Mahoning Creek and Stump Creek to Mouth	Jefferson	WWF	None
4—Unnamed Tributaries to Mahoning Creek	Basins, Confluence to East Branch Mahoning Creek and Stump Creek to Mouth	Jefferson-Indiana-Armstrong	CWF	None
4—Big Run	Basin	Jefferson	CWF	None
4—Rock Run	Basin	Jefferson	CWF	None
4—Graffius Run	**Basin**	**Jefferson**	**CWF**	**None**
4—Jackson Run	**Basin**	**Jefferson**	**CWF**	**None**
4—Canoe Creek	Basin	Jefferson	CWF	None
	* * * * * *			
4—Cathcart Run	Basin	Armstrong	CWF	None
4—Hamilton Run	**Basin**	**Armstrong**	**CWF**	**None**
4—Cave Run	**Basin**	**Armstrong**	**CWF**	**None**
4—Scrubgrass Creek	Basin	Armstrong	CWF	None
3—Wiskey Creek	**Basin**	**Armstrong**	**WWF**	**None**
3—Pine Creek	Basin	Armstrong	HQ-CWF	None
	* * * * * *			
3—Cowanshannock Creek	Main Stem, Huskins Run to Mouth	Armstrong	TSF	None
4—**[Unnamed]** Tributaries to Cowanshannock Creek	Basins, Huskins Run to Mouth	Armstrong	WWF	None
3—Garretts Run	Basin	Armstrong	WWF	None

* * * * * *

§ 93.9t. Drainage List T.

Ohio River Basin in Pennsylvania
Kiskiminetas River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
6—Quemahoning Creek	Main Stem	Somerset	CWF	None
7—Unnamed Tributaries to Quemahoning Creek	Basins	Somerset	CWF	None
7—Hoffman Run	**Basin**	**Somerset**	**CWF**	**None**
7—North Branch Quemahoning Creek	Main Stem	Somerset	CWF	None
	* * * * * *			
7—Spruce Run	Basin	Somerset	CWF	None
6—Kaufman Run	**Basin**	**Somerset**	**CWF**	**None**
6—Paint Creek	Main Stem, Source to Little Paint Creek	Cambria-Somerset	CWF	None
	* * * * * *			
6—Spring Run	Basin	Cambria	CWF	None
[6—Trout Run	**Basin**	**Cambria**	**CWF**	**None]**
6—Kane Run	**Basin**	**Cambria**	**CWF**	**None**
6—North Branch Little Conemaugh River	Basin	Cambria	CWF	None
	* * * * * *			
6—Unnamed Tributaries to McGee Run	Basins, Farthest Upstream Crossing of Derry Borough Border to Mouth	Westmoreland	CWF	None
6—Hillside Run	**Basin**	**Westmoreland**	**CWF**	**None**
6—Trout Run	Basin, Source to inlet of Blairsville Reservoir	Westmoreland	EV	None
	* * * * * *			

§ 93.9v. Drainage List V.

Ohio River Basin in Pennsylvania
Monongahela River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
5—Tub Mill Run	Basin	Somerset	CWF	None
5—Piney Creek	**[Main Stem] Basin** (all Sections in PA)	Somerset	CWF	None
[6—Unnamed Tributaries to Piney Creek	**Basins (all Sections in PA)**	**Somerset**	**CWF**	**None**
6—Little Piney Creek	**Basin**	**Somerset**	**CWF**	**None]**
5—Miller Run	**Basin**	**Somerset**	**CWF**	**None**
5—Flaugherty Creek	Basin	Somerset	CWF	None
	* * * * * *			
7—Unnamed Tributaries to East Branch Coxes Creek	Basins, PA 281 **at 40° 0' 43.8" N; 79° 4' 27.5" W** to Confluence with West Branch	Somerset	TSF	None
7—Parsons Run	**Basin**	**Somerset**	**TSF**	**None**
7—Kimberly Run	Basin	Somerset	CWF	None
	* * * * * *			
6—Laurel Run	Basin	Somerset	WWF	None
6—Rice Run	**Basin**	**Somerset**	**WWF**	**None**
6—Wilson Creek	Basin	Somerset	WWF	None
	* * * * * *			
6—Isers Run	Basin	Somerset	EV	None
5—Lost Run	**Basin**	**Somerset**	**WWF**	**None**
5—McClintock Run	Basin	Somerset	CWF	None
	* * * * * *			

§ 93.9w. Drainage List W.

Ohio River Basin in Pennsylvania

Ohio River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
	* * * * * *			
3—Shenango River	Main Stem, Shenango Reservoir Dam to Point 1.0 River Mile Downstream	Mercer	TSF	None

4—Unnamed Tributaries to Shenango River	Basins, Shenango Reservoir Dam to Point 1.0 River Mile Downstream	Mercer	CWF	None
3—Shenango River	Main Stem (all sections in PA), 1.0 River Mile Downstream of Shenango Reservoir Dam to Confluence with Mahoning River	Lawrence	WWF	None
4—Unnamed Tributaries to **[Shanango]** **Shenango** River	Basins (all sections in PA), 1.0 River Mile Downstream of Shenango Reservoir Dam to Confluence with Mahoning River	Mercer-Lawrence	WWF	None
4—McCullough Run	Basin (all sections in PA)	Mercer	WWF	None
4—Thornton Run	Basin	Mercer	WWF	None

* * * * * *

§ 93.9x. Drainage List X.

Lake Erie

Stream	**Zone**	**County**	**Water Uses Protected**	**Exceptions To Specific Criteria**
1—Lake Erie	All sections of lake in PA except Outer Erie Harbor and Presque Isle Bay	Erie	CWF	***Delete*** Fe**[**,**]**<u>**and**</u> DO_1 **[and** Bac_1**]** See GLWQA **[Add E. coli per 40 CFR 131.41 (Except (f)) and See 28 Pa. Code § 18.28(b)(2) and (3)]**

1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)	Portion of lake bordered by Presque Isle on west, longitude 80° 01' 50" on east, and latitude 42° 10' 18" on north, except harbor area and central channel dredged and maintained by United States Army Corps of Engineers	Erie	WWF	***Delete*** pH Add pH between 7 and 9 **[Add E. coli per 40 CFR 131.41 (Except (f)) and See 28 Pa. Code § 18.28(b)(2) and (3)]**

The following criterion is specific to Lake Erie (Outer Erie Harbor and Presque Isle Bay) waters in the Harbor area and central channel dredged and maintained by United States Army Corps of Engineers, based on special studies.

Parameter	Symbol	Criteria		Critical Use*
Bacteria	Bac_2	(Coliforms/100 ml)—Maximum of 5,000/100 ml as a monthly average value, no more than this number in more than 20% of the samples collected during a month, nor more than 20,000/100 ml in more than 5% of the samples.		PWS
1—Lake Erie (Outer Erie Harbor and Presque Isle Bay)		Harbor area and central channel dredged and maintained by United States Army Corps of Engineers	Erie	WWF, *Delete* WC	***Delete*** pH and Bac_1 ***Add*** pH between 7 and 9, Bac_2
2—Unnamed Tributaries to Lake Erie		Basins (all sections in PA), PA-OH State Border to Presque Isle	Erie	CWF, MF	None

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§ 93.9z. Drainage List Z.

Potomac River Basin in Pennsylvania

Potomac River

Stream	Zone	County	Water Uses Protected	Exceptions To Specific Criteria
		* * * * * *		
3—Little Wills Creek	Basin	Somerset	HQ-CWF, MF	None
3—Thompson Run	**Basin**	**Somerset**	**HQ-CWF, MF**	**None**
3—Gladdens Run	Basin	Somerset	HQ-CWF, MF	None

* * * * * *

pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

October 6, 2017

David Sumner
Executive Director
Independent Regulatory Review Commission
333 Market Street, 14th Floor
Harrisburg, PA 17120

Re: Proposed Rulemaking: Triennial Review of Water Quality Standards (#7-534)

Dear Mr. Sumner:

Pursuant to Section 5(a) of the Regulatory Review Act, please find enclosed a copy of a proposed regulation for review and comment by the Independent Regulatory Review Commission (Commission). This proposal is scheduled for publication in the *Pennsylvania Bulletin* on October 21, 2017, with a 69-day public comment period. The Environmental Quality Board (EQB) adopted this proposal, as modified, on April 18, 2017.

The enclosed proposed rulemaking is required for Pennsylvania to comply with Section 303(c)(1) of The Clean Water Act. The Clean Water Act requires that states periodically, but at least once every three years, review and revise as necessary, their water quality standards. Pennsylvania's water quality standards are codified in Pa. Code Chapters 93, 16, and 105 and the Delaware River Basin Commission, Administrative Manual – Part II. These standards are designed to implement the requirements of Sections 5 and 402 of The Clean Streams Law and Section 303 of the Federal Clean Water Act. The water quality standards consist of the designated uses of the surface waters of this Commonwealth, along with the specific numerical and narrative criteria necessary to achieve and maintain those uses, and an antidegradation policy. Essentially, water quality standards are in-stream water quality goals that are implemented by imposing specific regulatory requirements such as treatment requirements and effluent limitations on individual sources of pollution.

The rule proposed to update the aquatic life criterion for ammonia in Table 3, at Section 93.7. Also, bacteria criteria are proposed to be updated by replacing the current fecal coliform-based criteria for water contact sports (WC) during the swimming season (May 1 to September 30), with United States Environmental Protection Agency's (EPA) 2012 Recreational Water Quality Criteria in Pennsylvania's surface waters.

The proposal will update the toxic substances at Section 93.8c, Table 5, (relating to water quality criteria for toxic substances) using the latest scientific information and policies developed by EPA under the Clean Water Act, Section 304(a).

The rule proposes to clarify that, for any pollutant not listed in Table 6, criteria in Table 5 may be used to protect existing and designated uses in the Great Lakes System, or that criteria will be

developed by the Department of Environmental Protection (DEP), as needed, in accordance with this chapter, and the methods described in Chapter 16.

Clarifying language is proposed to note that DEP has developed a new online resource to maintain a publicly available list of site-specific criteria that have been developed and are being used by DEP in permitting and other pollution control measures. This list will be routinely updated as new criteria are developed or other applications and implementation of existing site-specific criteria are added.

Corrections are proposed to the water quality standards chapters for typographical and translation errors and missed references associated with prior rulemaking and/or publication activities. This includes corrections to use designations and stream entries found in Drainage Lists at Sections 93.9a-93.9z that are not currently being addressed by separate stream redesignation rulemakings, including consolidating and reformatting several drainage lists to address the continual changes and updates occurring to the National Hydrography Dataset (NHD) flowline. The NHD flowline forms the basis of DEP's Designated and Existing Use Geographic Information System (GIS) layers. Reformatting large basins to consolidate portions of the code that have the same designated use enables readers to view that entire basin within a page or two. A condensed drainage list reduces the likelihood that errors will occur in transcription of the code during rulemaking procedures. All river mile indexes (RMIs) in the drainage lists (Sections 93.9a to 93.9z) that are included in this triennial review will be converted to (x,y) coordinates for latitude and longitude. These conversions of RMIs in all of the drainage lists will not be included in this rulemaking package. Going forward, whenever changes are proposed to the Pennsylvania Code, associated RMIs will be converted to latitude and longitude. Eventually, all reference to RMIs in Sections 93.9a to 93.9z will be converted to latitude and longitude. The proposed corrections do not change the current stream use designations and only serve as clarifications and corrections.

Fishable/Swimmable Use on select Pennsylvania waters: DEP routinely re-evaluates as part of its triennial review of water quality standards the two water bodies where the fishable or swimmable uses specified in Section 101(a)(2) of the federal Clean Water Act required uses are not being met: (1) the Harbor Basin and entrance channel to Outer Erie Harbor/ Presque Isle Bay (93.9x), and (2) several zones within a portion of the Delaware Estuary (§§93.9e & g). Because the same conditions and hazards for swimming exist today as during the original use attainability assessments, no change to the designated use, deleting Water Contact Sports (WC), is anticipated for these waters. In addition, limited uses for Zones 3, 4, and upper Zone 5 of the Delaware Estuary basin are incorporated into Drainage Lists E and G, because they do not meet the Section 101(a)(2) fishable uses. The current designated uses within these Zones only include warm water fishes (maintenance only) and migratory fishes (passage only) and do not include propagation and thus refer to the Delaware River Basin Commission's (DRBC) standards which were developed to protect fish maintenance and passage only. Recent data and observations, however, suggest recovery is occurring in propagation for some species in portions of these Zones. DRBC initiated an evaluation of available data for resident and anadromous fishes collected since 2000, in an attempt to quantify spawning and early life stages, and the extent of successful reproduction for estuarine species. DEP continues to work in cooperation with the DRBC, the EPA, and other DRBC signatory states with regard to the recovery taking place in the lower river and estuary.

Entities affected by this proposed rulemaking may include facilities with point source discharges of treated wastewater to waters of the Commonwealth because all discharges are assigned effluent limits consistent with achieving water quality standards, including all applicable water quality criteria and designated uses. These effluent limits are implemented through DEP's permit and approval actions.

Overall, the Commonwealth, its citizens, and natural resources will benefit from these recommended changes because they provide the appropriate level of protection to preserve the integrity of existing and designated uses of surface waters in this Commonwealth. Protecting water quality provides economic value to present and future generations in the form of providing a clean water supply and protecting public health, wildlife, irrigation and industrial use; recreational opportunities such as fishing (also for consumption), water contact sports and boating; and aquatic life protection.

DEP's Water Resources Advisory Committee (WRAC) was briefed on this proposed rulemaking at its February 18, 2015, and November 18, 2015, meetings. On March 24, 2016, DEP's WRAC voted to concur with DEP's recommendation to move the rulemaking forward for EQB consideration. In addition, DEP provided the Agricultural Advisory Board (AAB) on February 25, 2016, and the Citizens Advisory Council (CAC) on June 21, 2016, with a regulatory update on the triennial review of water quality standards. Later in 2016, the draft proposed regulatory language was amended to remove the chloride criterion. The status of the draft regulatory language was discussed again with WRAC at its March 29, 2017 meeting, informing WRAC members that the proposal would be moving forward to the EQB, as modified without containing a chloride criterion recommendation.

This proposed rule initially also proposed the modification of qualifying factors for Exceptional Value (EV) waters – specifically, clarification was proposed to be added to the definition of *Outstanding National, State, regional or local resource water* to indicate this also includes waters that are protected by one or more conservation easements that are held in perpetuity by certain governmental entities. The EQB directed the removal of this language from the regulation and agreed to allow for discussion and a request for comment in the Preamble to the rulemaking. DEP modified the regulatory language as requested and added a section to the Preamble for the rulemaking requesting prospective commentators to provide feedback on the language that may be included in a future rulemaking.

The Department will provide the Commission with the assistance required to facilitate a thorough review of this proposal. Section 5(g) of the Regulatory Review Act provides that the Commission may, within 30 days of the close of the comment period, convey to the agency its comments, recommendations and objections to the proposed regulation. The Department will consider any comments, recommendations or suggestions made by the Commission, as well as the Committees and public commentators, prior to final adoption of this rulemaking.

Please contact me by e-mail at ledinger@pa.gov or by telephone at 717.783.8727 if you have any questions or need additional information.

Sincerely,

Laura F. Edinger

Laura Edinger
Regulatory Coordinator

Enclosures

0120-FM-PO0011 6/2015

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY OFFICE

TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE REGULATORY REVIEW ACT

I.D. NUMBER: 7- 534

SUBJECT: Triennial Review of Water Quality Standards

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

TYPE OF REGULATION

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

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FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
10/4/17	John Ongrch	Majority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative John Maher
10/6/17	Sandy Mantzavinos	Minority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative Mike Carroll
10/6/17	Morgan Bowers	Majority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator Gene Yaw
10/6/17	Carey Hampton	Minority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator John Yudichak
10/6/17	Stephen Hoffman	INDEPENDENT REGULATORY REVIEW COMMISSION David Sumner
		ATTORNEY GENERAL (for Final Omitted only)
10-6-17	Heather Brown	LEGISLATIVE REFERENCE BUREAU (for Proposed only)

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