DELAWARE RIVER BASIN WATER CODE

WITH AMENDMENTS THROUGH DECEMBER 7, 2022

18 CFR PART 410

DELAWARE RIVER BASIN COMMISSION
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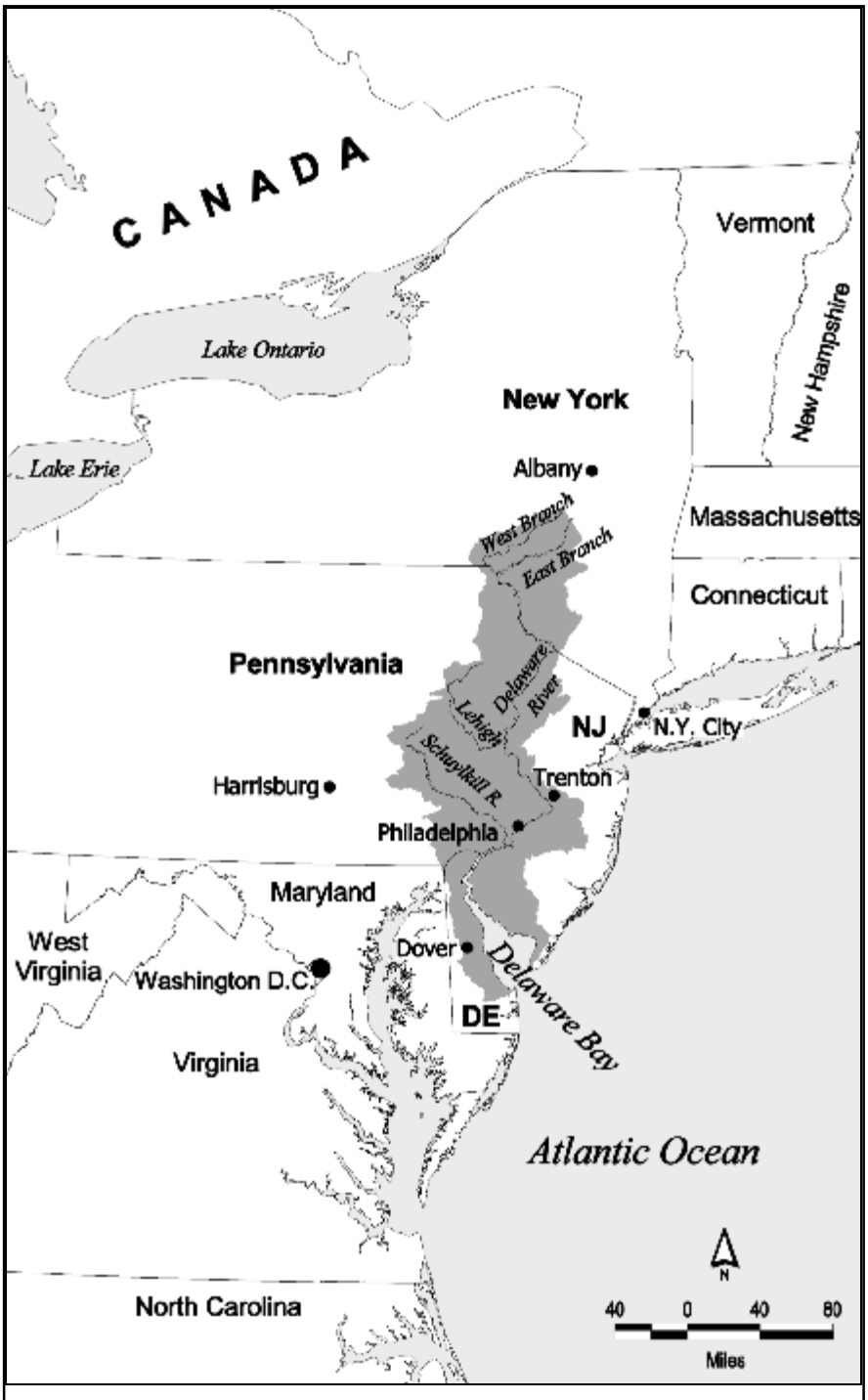
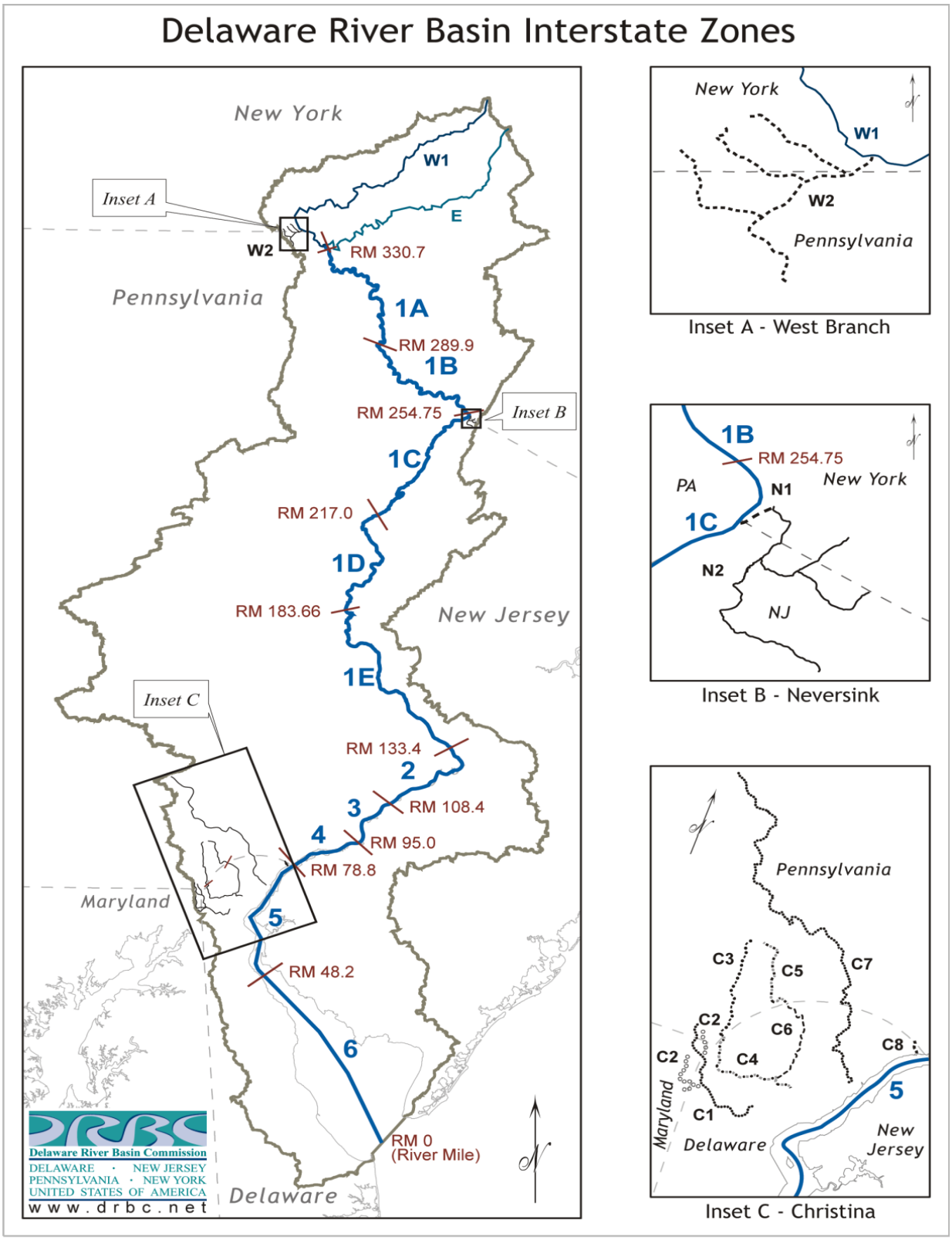


Figure 1. Location of the Delaware River Basin



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ARTICLE 1

GENERAL DELAWARE RIVER BASIN COMMISSION POLICIES

1.1 INTERGOVERNMENTAL RELATIONS

1.1.1 **Federal, State and Local Projects** *(Compact,[1] Article 11)*. "The planning of all projects related to powers delegated to the [Delaware River Basin] commission...shall be undertaken in consultation with the commission..."

1.5 POWERS AND DUTIES

1.5.1 **Policy** *(Compact, Section 3.1)*. "The commission shall develop and effectuate plans, policies and projects relating to the water resources of the basin."

1.5.2 **Comprehensive Plan** *(Compact, Section 13.1)*. "The commission shall develop and adopt, and may from time to time review and revise, a comprehensive plan for the immediate and long range development and use of the water resources of the basin. The plan shall include all public and private projects and facilities which are required, in the judgment of the commission, for the optimum planning, development, conservation, utilization, management and control of the water resources of the basin to meet present and future needs; ..."

1.5.3 **Federal, State and Local Agencies and Projects** *(Compact, Article 11)*. "No expenditure or commitment shall be made for or on account of the construction, acquisition or operation of any project or facility..." "...unless it shall have first been included by the commission in the comprehensive plan."

1.10 CRITERIA FOR SCREENING PROJECTS

1.10.1 **Referral and Review** *(Compact, Section 3.8)*. "No project having a substantial effect on the water resources of the basin shall hereafter be undertaken by any person, corporation or governmental authority unless it shall have been first submitted to and approved by the commission...The commission shall approve a project whenever it finds and determines that such project would not substantially impair or conflict with the comprehensive plan and may modify and approve as modified, or may disapprove any such project whenever it finds and determines that the project would substantially impair or conflict with such plan."

1.10.2 **Environmental Impact of Projects** *(Commission Resolution No. 71-6)*. Resolution No. 80-11 suspended environmental assessments and impact studies.

[1] Delaware River Basin Compact, PL 87-328, 75 Stat. 688

ARTICLE 2

CONSERVATION, DEVELOPMENT AND UTILIZATION OF DELAWARE RIVER BASIN WATER RESOURCES

2.1 CONSERVATION

2.1.1 **Reduce Water Use** *(Resolution No. 76-17)*. The Commission will undertake a long-range continuing program to reduce water use throughout the basin for the purposes of:

A. Reducing the likelihood of severe low stream flows that can adversely affect fish and wildlife resources and recreational enjoyment.

B. Assisting in the maintenance of good water quality by provision of minimum dilution flows and repulsion of salinity.

C. Deferring the need for construction of new storage reservoirs and other water supply structures.

2.1.2 **New and Existing Users** *(Resolution Nos. 76-17 and 92-2)*. It shall be the policy of the Commission to:

A. Require maximum feasible efficiency in the use of water by new industrial, municipal and agricultural users throughout the basin.

B. Require eventual application of those water-conserving practices or technologies that can feasibly be employed by existing water users.

C. Owners of water supply systems serving the public (purveyors) seeking approval under Section 3.8 of the Compact for a new or an expanded water withdrawal shall include as part of the application, a water conservation plan. The plan shall describe the various programs adopted by the purveyor to achieve maximum feasible efficiency in the use of water.

1. The water conservation plan shall, at a minimum, describe the implementation of the following programs as required by the Commission:

   a. Source metering *(Resolution No. 86-12)*;

   b. Service metering *(Resolution No. 87-7 Revised)*;

   c. Leak Detection and Repair *(Resolution No. 87-6 Revised)*; and

   d. Water Conservation Performance Standards for Plumbing Fixtures and Fittings *(Resolution No. 88-2 Revision No. 2)*.

   e. An ongoing water auditing program in accordance with section 2.1.8.

2. All applications submitted after June 30, 1992 for a new or expanded water withdrawal that results in a total withdrawal equaling or exceeding an average of

one million gallons of water per day shall include the following in the water conservation plan:

a. An evaluation of the feasibility of implementing a water conservation pricing structure and billing program as required in Section 2.1.7; and

b. Provision of information on the availability of water-conserving devices and procedures *(Resolution No. 81-9)*.

3. The water conservation plan shall be subject to review and approval by the designated agency in the state where the system is located. The designated state agencies are: Delaware Department of Natural Resources and Environmental Control; New Jersey Department of Environmental Protection; New York Department of Environmental Conservation; and Pennsylvania Department of Environmental Protection.

4. The Executive Director shall enter into administrative agreements with each of the designated agencies to administer and enforce the provisions of this regulation. In the absence of an administrative agreement, the Commission shall administer and enforce the regulation.

2.1.3 **Planning** *(Resolution No. 76-17)*. The Commission will undertake research and planning programs needed to give effect to this policy; adopt regulations affecting water use, including the application of economic incentives; and provide for the integration of measures to reduce water demand with planning for provision of new water supplies.

2.1.4 **Depletive Use Reduction During Drought** *(Resolution No. 83-14)*. It shall be the policy of the Commission that conservation measures in the Basin designed for implementation during drought periods shall be based upon the objective of reducing overall depletive use of fresh water by 15 percent.

2.1.5 **Water Conservation Performance Standards for Plumbing Fixtures and Fittings** *(Resolution No. 88-2 Revision No. 2)*.

A. All water conservation performance standards for plumbing fixtures and fittings adopted by any signatory state or political subdivision within the Delaware River Basin shall comply with the following minimum standards:

1. For sink and lavatory faucets, maximum flow shall not exceed three gallons of water per minute when tested in accordance with American National Standards Institute (ANSI) A112.18.1M; and

2. For shower heads, maximum flow shall not exceed three gallons of water per minute when tested in accordance with ANSI A112.18.1M; and

3. For water closets and associated flushing mechanism, maximum volume shall not exceed an average of one and six-tenths gallons per flushing cycle when tested in accordance with the hydraulic performance requirements of ANSI A112.19.2M or ANSI A112.19.6M; and

4. For urinals and associated flushing mechanism, maximum flow shall not exceed one and one-half gallons of water per flush when tested in accordance with the hydraulic performance requirements of ANSI A112.19.2M and ANSI A112.19.6M.

Any water conservation performance standards adopted prior to the effective date of this regulation that are not in compliance with the provisions of (A.) shall be amended or revised to comply with the provisions of (A.) by July 1, 1991. The Commonwealth of Pennsylvania is encouraged to adopt water conservation performance standards for plumbing fixtures and fittings that comply with the provisions of (A.) by July 1, 1991. The Commission shall notify all municipalities within the Pennsylvania portion of the Basin of the requirement to adopt and enforce local regulations that comply with the provisions of (A.) if Pennsylvania has not adopted such standards. Upon notification by the Commission, municipalities shall have one year to adopt such local regulations.

B. The performance standards of subsection (A.) shall apply to plumbing fixtures and fittings installed in new construction and, where provided in state or local regulations, in existing structures undergoing renovations involving replacement of such fixtures and fittings.

The performance standards of subsection (A.) shall not apply to fixtures and fittings such as emergency showers, aspirator faucets, and blowout fixtures that, in order to perform a specialized function, cannot meet the standards specified in subsection (A.).

C. To be acceptable for use in the Basin, plumbing fixtures and fittings shall be certified and labeled by the manufacturer as meeting the water conservation performance standards specified in subsection (A). Certification shall be based on independent test results. Plumbing fixtures and fittings shall be labeled in accordance with ANSI A112.18.1M and ANSI A112.19.2M.

D. The Executive Director shall periodically review the performance standards and testing requirements set forth in subsection (A.) to determine their adequacy in light of advances in technology for water conservation fixtures and fittings. The results of such reviews, including any recommendations for more stringent water conservation performance standards, shall be presented to the Commission.

E. Municipalities of the Commonwealth of Pennsylvania seeking permit approval or renewal under Section 3.8 of the Compact for water supply or wastewater discharge projects shall document that regulations consistent with subsection (A.) have been adopted within their area of jurisdiction. Such documentation shall be a condition for permit approval or renewal.

2.1.6 **Leak detection and repair** *(Resolution No. 87-6 Revised; as amended by Resolution No. 2009-1)*.

A. Owners of water supply systems serving the public (purveyors) in the Delaware River Basin that distribute water supplies in excess of an average of 100,000 gallons per day (gpd) during any 30-day period shall develop and undertake a systematic program to monitor and control leakage within their water supply system. Such a program shall at a minimum include: periodic surveys to monitor leakage, enumerate non-revenue water (or in instances where AWWA methodology as set forth in Section 2.1.8 below has not yet been adopted, enumerate unaccounted-for water), and determine the current status of

system infrastructure; recommendations to monitor and control leakage; and a schedule for the implementation of such recommendations. Each purveyor's program shall be subject to review and approval by the designated agency in the state where the system is located.

"Non-revenue water" is defined by AWWA as the sum of unbilled authorized consumption, apparent losses and real losses. "Non-revenue water percent" is defined as non-revenue water divided by the amount of water entering the distribution system times 100 percent.

"Unaccounted-for water" is defined as the amount of water entering the distribution system minus the amount of water delivered through service meters. "Unaccounted-for water percent" is defined as unaccounted-for water divided by the amount of water entering the distribution system times 100 percent.

The designated state agencies are: Delaware Department of Natural Resources and Environmental Control; New Jersey Department of Environmental Protection; New York Department of Health, and Pennsylvania Department of Environmental Protection.

B. Each purveyor shall strive to minimize system leakage to levels as guided by IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding AWWA guidance.

After a purveyor has submitted to the appropriate designated agency its initial program to monitor and control leakage, the purveyor shall prepare and submit a revised and updated program every three years thereafter or at such greater frequency as shall be required by the designated state agency. The designated state agency may require more frequent program submission from purveyors with unaccounted-for or non-revenue water that is in excess of 15 percent.

C. Any project approvals hereafter granted pursuant to Section 3.8 of the DRBC Compact or any renewal of a project approval shall be subject to the provisions of this regulation.

2.1.7 **Retail Water Pricing to Encourage Conservation** *(Resolution No. 92-2).*

A. Policy. It shall be the policy of the Delaware River Basin Commission to promote and support retail water pricing that encourages conservation.

B. Definitions.

1. A water conserving pricing structure is an important demand management tool that provides incentives to consumers to reduce average or peak water use, or both. Conservation pricing reflects the fact that water is a precious resource that should be used in an economically efficient manner. Such pricing includes:

a. Rates designed to recover the full cost of providing service, including a reasonable rate of return on investment; and

b. Timely billing based on metered usage.

Such pricing is also characterized by one or more of the following components:

c. Rates in which the unit price of water per class of customer (residential, industrial, etc.) is constant within each class regardless of the quantity of water used (uniform rates) or increases as the quantity of water used increases (increasing block rates);

d. Seasonal rates or excess-use surcharges to reduce peak water demands during summer months; or

e. Rates based on the long-run marginal cost or the cost of adding the next unit of water supply to the system.

2. A nonconserving pricing structure is one that provides no incentives or disincentives to consumers to reduce water use. Such pricing may be characterized by one or more of the following components:

a. Rates in which the unit price of water within any one class of customer decreases as the quantity of water used increases (decreasing block rates);

b. Rates that involve charging customers a set fee per unit of time regardless of the quantity of water used (flat rates);

c. Pricing that does not reflect the full cost of providing services; or

d. Pricing in which the typical bill is determined mainly by a minimum charge and metered usage has little impact on the total bill.

C. Criteria

1. All purveyors are encouraged to evaluate alternative pricing structures with the objective of adopting a water conserving pricing structure.

2. A purveyor seeking approval under Section 3.8 of the Compact for a new or expanded water withdrawal and whose proposed total withdrawal equals or exceeds an average of one million gallons of water per day shall include in its water conservation plan submitted as part of the application, an evaluation of the feasibility of implementing a water conserving pricing structure and billing program. A purveyor may limit the evaluation to less than its entire system upon application and a determination that a review of its entire system is not necessary. The evaluation shall, at a minimum, consider:

a. The potential change in the quantity of water demanded for customer classes and their end uses of water during both peak and non-peak periods stemming from alternative water conservation pricing structures;

b. The potential revenue effects of the alternative pricing structures;

c. Any legal or institutional changes necessary or desirable to implement a water conservation pricing structure; and

d. How conservation pricing could be coordinated with other conservation programs and measures to reduce both average and peak water use.

3. The requirement set forth in 2. shall be waived if the purveyor either documents it has adopted a water conserving pricing structure or is in the process of implementing such a pricing structure in accordance with a Commission schedule or a schedule established by the appropriate state public utility commission.

4. The Executive Director, on or before June 30, 1993 and annually thereafter, shall review the effectiveness of the retail water pricing activities hereunder to determine their adequacy in promoting and supporting water pricing that encourages water conservation. The results of such review and recommendations, if any, shall be submitted to the Commission for its consideration.

2.1.8 **Water Auditing** *(Resolution No. 2009-1).*

A. Policy Statement. It shall be the policy of the Commission to establish a standardized water audit methodology for owners of water supply systems serving the public to ensure accountability in the management of water resources.

B. Voluntary Water Audit. Through December 31, 2011, owners of water supply systems serving the public with sources or service areas located in the Delaware River Basin are encouraged to implement an annual calendar year water audit program conforming to the IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding AWWA guidance.

C. Mandatory Water Audit. Effective January 1, 2012, the owners of each water supply system serving the public with sources or service areas located in the Delaware River Basin shall implement an annual calendar year water audit program conforming to IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding AWWA guidance.

D. Mandatory Reporting. Effective January 1, 2013, "Non-revenue water" reported under section 2.50.3. (Reporting Requirements), subsection B.1.b.ii. of this *Water Code* shall be computed in accordance with IWA/AWWA Water Audit Methodology (AWWA Water Loss Control Committee (WLCC) Water Audit Software) and corresponding AWWA guidance.

2.5 ALLOCATION OF WATER RESOURCES

2.5.1 **Allocation of Water Resources** *(Compact, Section 3.3)*. "The commission shall...in accordance with the doctrine of equitable apportionment... allocate the waters of the basin to and among the states..."

2.5.2 **Priorities of Water Use During Drought Emergencies** *(Resolution No. 76-18)*. During drought emergencies, the Commission, in allocating the available water supply in the basin and its service area, will give first priority to those uses which sustain human life, health and safety, and second priority to water needed to sustain livestock. Thereafter, based on the doctrine of equitable apportionment, the remaining water will be allocated among producers of goods and services,

food and fibers, and environmental quality in a manner designed to sustain the general welfare of the basin and its employment at the highest practical level.

2.5.3 Schedule of Phased Reductions in Diversions, Releases and Flow Objectives During Drought

A. **Criteria Defining Conditions** *(Resolution No. 83-13)*. For purposes of water management pursuant to Section 3.3 and Article 10 of the Compact, diversions of water from the Delaware River Basin by the City of New York and State of New Jersey, compensating reservoir releases from the New York City Delaware Basin Reservoirs, reservoir releases from Beltzville Reservoir, Blue Marsh Reservoir, and other reservoirs under the jurisdiction or control of the Commission, and streamflow objectives at the USGS gaging stations located at Montague, New Jersey and Trenton, New Jersey, shall be governed by a schedule based upon a differentiation among "normal", "drought warning", and "drought" conditions defined by the combined storage in the Cannonsville, Pepacton and Neversink Reservoirs as set forth in Figure 1 entitled "Operation Curves for Cannonsville, Pepacton and Neversink Reservoirs". The division of the drought-warning zone into upper and lower halves shall be defined as a physically equal division, or 20 billions of gallons in each zone.

B. **Schedule of Reductions** *(Resolution No. 83-13)*. The schedules of phased reductions set forth in Tables 1 and 2 shall govern (1) the maximum allowable rates of diversion of waters from the Delaware River Basin by the City of New York and State of New Jersey; (2) the minimum compensating releases to be made by the City of New York from its reservoirs in the upper Delaware Basin; and the streamflow objectives at the USGS gaging stations located at Montague, New Jersey and Trenton, New Jersey.

Figure 1. OPERATION CURVES FOR CANNONSVILLE, PEPACTON AND NEVERSINK RESERVOIRS

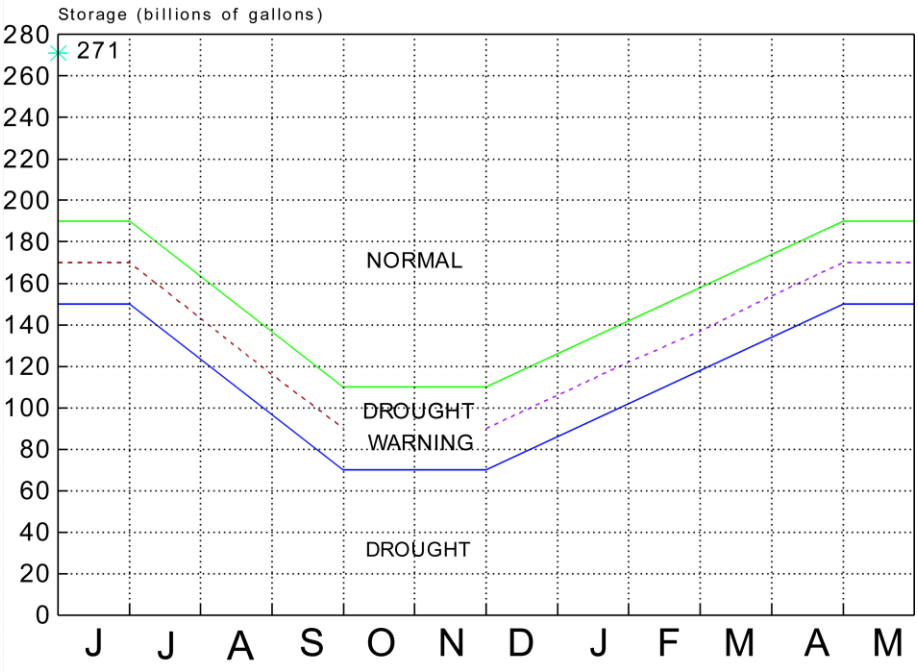


TABLE 1: INTERSTATE OPERATION FORMULA FOR REDUCTIONS IN DIVERSIONS, RELEASES AND FLOW OBJECTIVES DURING PERIODS OF DROUGHT

NYC storage condition	NYC Div. Mgd	NJ Div. mgd	Montague flow objective cfs	Trenton flow objective cfs
Normal	800	100	1,750	3,000
Upper Half-Drought Warning	680	85	1,655	2,700
Lower Half-Drought Warning	560	70	1,550	2,700
Drought	520	65	1,100-1,650*	2,500-2,900*
Severe Drought (to be negotiated based on conditions)				
* Varies with time of year and location of salt front as shown in Table 2.				

TABLE 2: FLOW OBJECTIVES FOR SALINITY CONTROL DURING DROUGHT PERIODS

	Flow objective, cubic feet per second at:					
	Montague, NJ			Trenton, NJ		
7-day average location of "Salt Front," River-mile*	Dec-Apr.	May-Aug.	Sept-Nov.	Dec-Apr.	May-Aug.	Sept-Nov.
Upstream of R.M. 92.5	1,600	1,650	1,650	2,700	2,900	2,900
Between R.M. 87.0 and R.M. 92.5	1,350	1,600	1,500	2,700	2,700	2,700
Between R.M. 82.9 and R.M. 87.0	1,350	1,600	1,500	2,500	2,500	2,500
Downstream of R.M. 82.9	1,100	1,100	1,100	2,500	2,500	2,500
* Measured in statute miles along the navigation channel from the mouth of Delaware Bay.						

During "drought" conditions as defined by Figure 1, the streamflow objectives at the Montague and Trenton gaging stations shall be established as set forth in Table 2, in accordance with the seven-day average location of the 250 mg/l isochlor (the "salt front") in the Delaware Estuary.

C. **Diversion Allowances and Release Requirements** *(Resolution No. 83-13)*.

1. The City of New York may divert waters from the Delaware Basin at maximum rates equivalent to the quantities set forth in Table 1.

2. The State of New Jersey may divert waters from the Delaware River Basin, from the Delaware River or its tributaries in New Jersey, at maximum rates equivalent to the quantities set forth in Table 1.

3. The City of New York shall release water from one or more of its storage reservoirs in the upper Delaware Basin in quantities designed to maintain the minimum basic rates of flow at the USGS gaging station located at Montague, New Jersey, as set forth in Tables 1 and 2.

D. **Computation of Diversions** *(Resolution No. 83-13)*.

1. Diversions by the City of New York during "normal" conditions, as defined by Figure 1, shall be computed as provided in Section III.A.4. of the amended Decree of the U.S. Supreme Court in *New Jersey v. New York, 347 U.S. 995 (1954)*. At no time during a twelve-month period of the Water Year, commencing June 1, shall the aggregate total quantity diverted by the City of New York, divided by the number of days elapsed since the preceding May 31, exceed the maximum permitted rate of diversion.

2. Diversions by the State of New Jersey during "normal" periods, as defined by Figure 1, shall be computed as provided in Section V.B. of the amended Decree of the U.S. Supreme Court in *New Jersey v. New York, 347 U.S. 995 (1954)*. The total diversion by the State of New Jersey shall not exceed an average of 100 mgd as a monthly average, with the diversion on any day not to exceed 120 million gallons, and its total diversion without compensating releases shall not exceed 100 mgd during any calendar year.

3. Diversions by the City of New York and State of New Jersey set forth in Table 1 during "drought warning" and "drought" conditions as defined by Figure 1, shall be computed as a daily running average, commencing on the day such drought warning or drought operations become effective, as provided in Subsection E of this Section. If the allowable diversion for any condition period following entry into drought warning operations is not fully used, the unused portion may not be credited or used during subsequent periods.

4. Upon return to normal condition operations, following a period of drought warning or drought operations, diversions by the City of New York and State of New Jersey shall be computed as averages commencing upon the date of return to normal operations.

E. **Effective Period for Drought Operating Schedule** *(Resolution No. 83-13)*.

1. The schedule of diversions, releases and streamflow objectives for "drought warning" operations as provided in Subsection B shall go into effect automatically whenever the combined storage in the New York City Delaware Basin Reservoirs declines below the drought warning line, defined in Figure 1 and remains below that line for five consecutive days.

2. The schedule of diversions, releases and streamflow objectives for "drought" operations as provided in Subsection B shall go into effect immediately whenever the combined storage in the New York City Delaware Basin Reservoirs declines below the drought line defined in Figure 1 and remains below that line for five consecutive days.

3. When the combined storage in the New York City Delaware Basin reservoirs (including the projected water runoff equivalent of actual snow and ice within the watersheds tributary to the reservoirs) reaches a level 15 billion gallons above the drought warning line, as defined in Figure 1, and remains above that level for five consecutive days, the drought warning and drought operations schedules set forth in Subsection B shall automatically terminate, and normal operations shall be resumed as provided in the amended Decree of the U.S. Supreme Court in *New Jersey v. New York, 347 U.S. 995 (1954)*.

4. Pursuant to Section 3.3(a) of the Compact, the Parties to the U.S. Supreme Court Decree in *New Jersey v. New York, 347 U.S. 995 (1954)*, have given their unanimous consent to adoption and implementation by the Commission of the drought operation schedules provided in this section. The Parties have agreed that the drought operation formula will go into effect automatically and be binding on parties for not less than 180 days following the triggering of drought warning operations, unless terminated automatically by improved storage conditions as provided in Subsection E.3. During the 180-day period following triggering of drought warning operations, authorized representatives of the City of New York, States of Delaware, New Jersey, and New York, and Commonwealth of Pennsylvania, as parties to the U.S. Supreme Court Decree, shall convene no less frequently than once each month to review current conditions, and they may extend, modify, or extend as modified the schedules provided in this section. If no unanimous agreement as to a continuing drought operation formula is reached within the 180-day period, all Parties shall be released from the terms of the formula and schedules and may pursue their rights and obligations under the Delaware River Basin Compact and the U.S. Supreme Court Decree.

2.5.4 Drought Emergency Actions

A. **Criteria Defining Conditions** *(Resolution No. 83-13)*. For purposes of water management pursuant to Section 3.3 and Article 10 of the Compact, the determination of drought warning and drought conditions shall be based upon the combined storage in the Cannonsville, Pepacton and Neversink Reservoirs, in accordance with Figure 1, entitled "Operation Curves for Cannonsville, Pepacton and Neversink Reservoirs". The division of the drought-warning zone into upper and lower halves shall be defined as a physically equal division, or 20 billions of gallons in each zone.

B. **Drought Emergency Declaration** *(Resolution No. 83-13)*. It is the policy of the Commission that a drought emergency will be declared for purposes of imposing mandatory in-basin conservation measures and other appropriate actions whenever combined storage in the New York City Delaware Basin Reservoirs falls into the drought zone as defined in Figure 1 for five consecutive days. Termination of a drought emergency will be considered by the Commission whenever combined storage in the New York City Delaware Basin Reservoirs reaches a level 40 billion gallons above the drought warning line as defined in Figure 1 and remains above that line for 30 consecutive days. The drought emergency will be terminated by the Commission whenever the combined storage in the New York City Delaware Basin Reservoirs reaches 40 billion gallons above the drought warning line defined in Figure 1 and remains above that line for 60 consecutive days, unless the Commission unanimously agrees to extend the emergency.

2.5.5 **Coordinated Operation of Lower Basin and Hydroelectric Reservoirs During a Basinwide Drought** *(Resolution No. 84-7, as amended by Resolution No. 2002-33)*. Not all components of Resolution No. 2002-33 were incorporated in the *Water Code*. *For additional provisions concerning operation of Lake Wallenpaupack during drought, please refer to Resolution No. 2002-33.*

During "drought" conditions as defined by Figure 1 in Section 2.5.3A, the Francis E. Walter, Prompton, Beltzville, Blue Marsh, Nockamixon, Lake Wallenpaupack and Mongaup hydroelectric reservoirs, will be utilized to complement the drought management operations of the New York City reservoirs. The priority of lower basin reservoir use to meet Trenton flow objectives is set forth in Table 1. Lake Wallenpaupack also may be utilized to complement the drought management operations of the New York City reservoirs during “drought warning” operations as defined by Figure 1 in Section 2.5.3A.

TABLE 1. PRIORITY OF USE FOR EXISTING LOWER BASIN RESERVOIRS DURING DROUGHT

Priority	Operation to Meet Trenton Objective	Remaining Storage (%) bg	cfs-days Used
1	Prompton*/**		
2	F.E. Walter**		
3	Beltzville to Elev. 615	73.7/9.89	5,475
3	Blue Marsh to Elev. 283***	68.9/5.13	3,595
4	Nockamixon to Elev. 385	68.7/9.00	6,364
5	Beltzville to Elev. 590	38.0/5.10	7,411
6	Blue Marsh to Elev. 273	36.8/2.74	3,700
7	Beltzville to Elev. 537	3.4/0.45	7,198
7	Blue Marsh to Elev. 261****	13.0/0.97	2,735
8	Nockamixon to Elev. 325.5	1.0/0.13	13,745

* Subject to reconstruction of temporary control gate (depending on final negotiations with the Corps of Engineers).

** Would first require filling of temporary storage, so would not likely be available during the first year of a drought (use subject to final negotiations with the Corps of Engineers).

*** Blue Marsh Reservoir augments flow of the Schuylkill River and the Delaware River downstream of the Trenton gage at Philadelphia; however, for estuarine salinity control, flow augmentation in the Schuylkill River has roughly the same effect as an equal augmentation in the Delaware River at Trenton.

**** Sufficient storage would be retained to supply the needs of the Western Berks Water Authority.

Lake Wallenpaupack and the Mongaup reservoirs would be called upon to provide releases to assist in meeting the Montague flow objective in the summer and fall periods whenever reservoir releases would have to be directed by the River Master. These releases would be independent of lower basin release requirements needed to maintain flows at Trenton. During "drought" and "drought warning" operations, as defined in Figure 1 of Section 2.5.3.A of the *Water Code*, releases from Lake Wallenpaupack shall be made only in accordance with Commission direction. The Lake Wallenpaupack elevation schedules during normal, drought warning, and drought conditions are set forth in Table 2. The lake elevations in Table 2 have been established to preserve the recreation values and other operational benefits of the lake while also providing water storage to be utilized at the direction of the Commission during the Commission's drought operations as set forth in this section and in Section 2.5.6. The utilization of Lake Wallenpaupack at the direction of the Commission during the Commission's drought operations shall be conditioned upon the following:

1. Utilization of Lake Wallenpaupack during drought warning operation shall be consistent with PPL's FERC license and power generation requirements as well as with lake and downstream needs.

2. During drought warning and drought operations, Lake Wallenpaupack will be utilized with consideration given to established flow and temperature targets in the upper Delaware River and in the West Branch Delaware, East Branch Delaware, and Neversink Rivers.

3. During drought operations, PPL may, at the Commission's direction, operate for power production when the lake elevation is above the following first-of-month "normal elevation" as defined in Table 2.

4. During a declared power emergency, PPL may operate for power production regardless of lake elevation.

5. Subject to the concurrence of the Commission, in response to changing electrical demand patterns, PPL may revise the lake elevations for "normal conditions" shown in Table 2.

TABLE 2. LAKE WALLENPAUPACK ELEVATION SCHEDULES

Day	Normal Conditions	Drought Warning (and Watch)	Drought
June 1	1187.0	1187.0	1187.0
July 1	1185.0	1185.0	1185.0
August 1	1183.0*	1183.0*	1183.0*
September 1	1181.0	1180.0	1179.0
October 1	1179.0	1176.0	1175.0
November 1	1181.0	1172.0	1171.0
December 1	1182.0	1167.5	1167.5
January 1	1183.0	1170.1	1170.1
February 1	1181.5	1173.3	1173.3
March 1	1180.0	1175.6	1175.6
April 1	1182.3	1182.3	1182.3
May 1	1185.6	1185.6	1185.6

* The existing FERC license for the Lake Wallenpaupack Hydroelectric Project requires that, except when flood waters are being stored, the maximum elevation of the lake shall be limited to elevation 1182.0 between August 1 and November 15 of each year (Article 41). In its application to the FERC for a new license, PPL seeks to include the drought condition lake elevation schedules in Table 2 on a permanent basis, including a lake elevation of 1183.0 on August 1. In the interim, until the FERC issues a new license, PPL will request annual approval from the FERC to operate the lake in accordance with Table 2 during the August 1-November 15 period. PPL will notify the Commission of the FERC's response to each annual request. If in any year FERC does not approve a change to the lake elevation to 1183.0 or does not include it as a term of the new license, then this elevation shall be deemed to be 1182.0 in that year.

After issuance of a Conservation Order by the Commission, power generation releases from the Mongaup reservoir system shall be made only in accordance with Commission direction. For the Mongaup reservoirs, a drought operation rule curve will be followed. The rule curve will be based on maximum available storage of 15.38 billion gallons for the total system and will provide for refilling the system during the worst hydrologic year of record and for maintaining a minimum release. Daily average discharge for the period June-November inclusive generally will be on the order of 100-150 cfs/24-hours and for the period December-May inclusive generally will be on the order of 20-30 cfs/24-hours.

Temporary storage in Prompton reservoir would be used to help meet the Trenton objective; however, depending on upper and lower Basin conditions, Prompton releases could also be used for a Montague objective if there was a critical need to conserve storage in the New York City Delaware Basin reservoirs and the combined storage in the Beltzville and Blue Marsh reservoirs was above 70% of capacity.

Francis E. Walter reservoir will be called upon to meet the Trenton flow objective only after any storage in Prompton is depleted. It is understood, however, that until this dam is modified to retain water supply storage, its function is flood control. It will not likely be available for flow maintenance during the first year of a drought if such drought is declared subsequent to June 1, or the end of the heavy spring runoff period. Water could be stored temporarily in flood control storage upon issuance of requests for storage and releases after issuance of a Conservation Order

by the Commission. In the event of a threatening major storm, temporarily stored water may have to be released in order to restore the necessary flood protection capacity of the dam. Water may also have to be released in order to draw down to the winter drought pool level at elevation 1,370. (See Table 3). If releases to meet winter drought pool requirements or to prepare for a storm occur when releases are not required for the Trenton flow objective, then the Montague requirement would be adjusted in order to save equivalent water in the New York City Delaware Basin reservoirs. In so doing, the storage saved in the New York City reservoirs would be available for use later should the drought persist, or be available, if conditions improve, to return to a normal condition at an earlier date, at which time restrictions could be lifted.

TABLE 3. TEMPORARY EMERGENCY WATER SUPPLY STORAGE AT F.E. WALTER RESERVOIR (PURSUANT TO DROUGHT DECLARATION)

F.E. Walter Reservoir- (DA 288 sq. mi.) — Usable storage 11.30 bg between elevations 1300 to 1392. Inactive storage below elevation 1300–0.58 bg (1793 ac-ft)

	Elevation (ft./s.l.d)	Surface Area (acres)	Storage (acre-ft.)	Storage (bg)	Storage (inches runoff)
Drought/ Summer Pool*	1392	824	36,458	11.88	2.37
Drought/ Winter Pool**	1370	587	20,831	6.79	1.36
Normal Pool	1300	80	1,793	0.58	0.12
	1245	0	0	0	0

* Drought summer pool = 11.30 billion gallons of temporary water supply storage (32% of flood control storage).

** Drought winter pool = 6.21 billion gallons of temporary water supply storage (18% of flood control storage).

While it is clearly understood that the water supply storage at Beltzville and Blue Marsh reservoirs is to be used for water supply and to control salinity intrusion into the Delaware estuary during low flow periods, it is also recognized that extensive recreational development is established on these lakes, which should be protected to the extent possible. Accordingly, the operation plans for both of these reservoirs, as well as Nockamixon, in drought emergencies have recognized these multiple uses, with water supply having precedence.

After Francis E. Walter, then Beltzville, Blue Marsh, and Nockamixon reservoirs are used in that order down to the elevations indicated in Table 1 for priorities 3 and 4, at which elevations recreation will become affected. Recreation will then be eliminated at Beltzville and Blue Marsh while retaining fish life, as those two reservoirs are drawn down to the elevations indicated as priorities 5 and 6. Finally, all remaining usable storage would be utilized as indicated by priorities 7 and 8.

When only conservation releases are being made from the lower Basin reservoirs, they will be modified according to Table 4, beginning with "drought warning" conditions, as defined by Figure 1 in Section 2.5.3A. Drought conservation releases will terminate and return to normal at the same time as augmented conservation releases are restored at the New York City Delaware reservoirs.

TABLE 4. CONSERVATION RELEASES

Reservoir	Normal Conservation Release (cfs)	Drought Warning and Drought Conservation Releases (cfs)
F.E. Walter	50	43
Prompton	inflow - outflow	6
Beltzville	35	15
Blue Marsh	41 (50*)	21 (30*)
Nockamixon	11	7
* With Western Berks Water Authority release included. As the future needs of the Authority increase, the release will correspondingly increase.		

Operation of the lower Basin reservoirs for drought management will continue until termination of the drought emergency declaration by the Commission.

2.5.6 **Coordinated Operation of Reservoirs During a Lower Basin Drought Warning and Drought** *(Resolution No. 88-22 Revised, as Amended by Resolution No. 2002-33)*.

A. **Banking and Use of Excess Release Quantity: New York City Reservoirs** *(Resolution No. 88-22 Revised)*. Prior to June 15 of each year and at any time the hydrologic conditions so warrant, the parties to the 1954 Supreme Court Decree, the Delaware River Basin Commission and the Delaware River Master will review existing conditions in the basin and shall determine whether or not to bank the "excess release quantity" provided pursuant to Section III, B.1.C of the Decree, as calculated for the seasonal period beginning June 15 and ending the following March 15, for possible use to help prevent lower basin "drought" or to provide lower basin "drought" assistance. Relevant factors to be considered include precipitation in the basin, climatic predictions, streamflows, ground water levels, soil moisture and other hydrologic data in making the determination with respect to the banking and use of the "excess release quantity." The "excess release quantity" shall be reserved and placed in an "excess release bank" if the parties to the 1954 Decree, Delaware River Basin Commission and the River Master determine that "drought" conditions in the lower basin are expected or threatening. If the "excess release quantity" is reserved and banked, the excess release provisions set forth in Section III.B.1.d of the Supreme Court Decree shall be deemed suspended for the balance of that water year beginning June 1 and ending May 31. The "excess release bank" shall be used, during that water year, to provide lower basin "drought" assistance releases to the Delaware River designed to assist in meeting the Trenton flow objective for lower basin "normal" conditions, or 3,000 cfs. Such lower basin "drought" assistance releases shall be made in quantities and at such times as determined by the Delaware River Basin Commission and directed by the Delaware River Master. The lower basin "drought" assistance releases shall be made provided that the total combined storage available in the New York City Delaware River Basin reservoirs exceed the "drought warning" criteria set forth in Figure 1 of Section 2.5.3. The total lower basin releases made from the New York City Delaware Basin reservoirs during any water operations year under the provision of this section shall not exceed the total quantity available in the "excess release bank" available during that same period. If, while banking excess releases, augmented conservation releases from the New York City Delaware River

Basin reservoirs are made that would have been credited towards the "excess release quantity" in the absence of banking, then that amount of augmented conservation release shall be deducted from the "excess release bank".

B. **Operations During Lower Basin "Normal" Conditions** *(Resolution No. 88-22 Revised)*. When basinwide conditions are "normal" and lower basin conditions are "normal" (as defined by Beltzville Reservoir storage above Elevation 615 m.s.l. and Blue Marsh Reservoir storage above Elevation 283 m.s.l.), the following provisions shall govern lower basin operations:

1. **New Jersey Diversion.** Diversions by the State of New Jersey during "normal" periods, shall be computed as provided in Section V.B. of the amended Decree of the U.S. Supreme Court in *New Jersey v. New York, 347 U.S. 995 (1954)* and its total diversion without compensating releases shall not exceed 100 million gallons per day (mgd) as a monthly average, with the diversion on any day not to exceed 120 million gallons, and its total diversion without compensating releases shall not exceed an average of 100 mgd during any calendar year.

2. **Trenton Flow Objective.** The minimum streamflow objective at the U.S.G.S gaging station located at Trenton, NJ, shall be 3,000 cfs.

3. **Priority of Releases.** Releases shall be made from storage to maintain the minimum Trenton streamflow objective of 3,000 cfs in such quantities and at such times as determined by the Delaware River Basin Commission, and, in the case of the New York City reservoirs, as directed by the Delaware River Master, in the following order of priority:

    a. Releases from the "excess release bank" in the New York City Delaware Basin reservoirs, if available as provided under Section A of this plan.

    b. Releases from Beltzville Reservoir from storage between elevations 628 and 615 m.s.l. (73.7% of storage remaining), and/or releases from Blue Marsh Reservoir from storage between elevations 290 and 283 m.s.l. (68.9% of storage remaining). Releases may be made from either or both reservoirs considering water quality needs in the Lehigh and Schuylkill Rivers.

C. **Operations During Lower Basin "Drought Warning" Conditions** *(Resolution No. 88-22 Revised)*. When the storage in Beltzville Reservoir falls below elevation 615 m.s.l. (73.7% of storage capacity) and the storage in Blue Marsh Reservoir falls below elevation 283 m.s.l. (68.9% of storage capacity) the Delaware River Basin Commission shall declare a "drought warning" condition in the lower basin, and the following operating provisions and actions shall automatically be placed in effect:

1. **New Jersey Diversion.** The total diversion by the State of New Jersey during lower basin "drought warning" conditions in the lower basin shall be computed as a daily running average, commencing on the day such "drought warning" becomes effective. The total diversion by New Jersey shall not exceed a running average of 70 million gallons per day (mgd) with the diversion on any day not to exceed 120 mgd. If the allowable diversion for any condition period following entry into "drought warning"

operations is not fully used, the unused portion may not be credited or used during subsequent periods.

2. **Trenton Flow Objective.** During lower basin "drought warning" periods, the minimum streamflow objective at the U.S.G.S. gaging station located at Trenton, NJ, shall be established as set forth in Table 2 of Section 2.5.3, in accordance with the seven-day average location of the 250-mg/l isochlor (the "salt front") in the Delaware Estuary.

3. **Priority of Releases.** Releases shall be made from storage to maintain the minimum streamflow objectives set forth in Table 2 of Section 2.5.3, in such quantities and at such times as determined by the Delaware River Basin Commission, and in the case of the New York City Reservoirs, as directed by the Delaware River Master, in the following order of priority:

   a. Releases from the "excess release bank" in the New York City Delaware River Basin Reservoirs, if available, as provided under Section A. Because the "excess release bank" will have been used under lower basin "normal" conditions, it would only be available in the second or a subsequent year of a lower basin "drought" or lower basin "drought warning."

   b. Releases from Beltzville Reservoir from storage between elevations 615 to 590 m.s.l. (38% of storage remaining), and/or releases from Blue Marsh Reservoir from storage between elevations 283 and 273 m.s.l. (36.8% of storage remaining). Releases may be made from either or both reservoirs, considering water quality needs in the Lehigh and Schuylkill Rivers.

   c. The Commission may direct releases from Lake Wallenpaupack subject to the same conditions as applied to operation during lower basin drought in D.3.e, except that utilization of Lake Wallenpaupack during lower basin drought warning shall be consistent with PPL's FERC license and power generation requirements as well as with lake and downstream needs.

4. **Reduction of Conservation Releases.** In order to conserve storage, conservation releases from the listed lower basin reservoirs shall be modified as set forth in Table 4 of Section 2.5.5 commencing with the declaration of a lower basin "drought warning" condition.

5. **Conservation Measures.** The Delaware River Basin Commission and the lower basin states will implement and encourage concerted voluntary water conservation measures and programs during the lower basin "drought warning" condition.

6. **Consultation by Decree Parties, the Delaware River Basin Commission, and Delaware River Master.** Within 30 days following triggering of lower basin "drought warning" conditions, the Delaware River Basin Commission shall convene the authorized representatives of the States of Delaware, New Jersey and New York, Commonwealth of Pennsylvania, City of New York and the Delaware River Master to review current conditions and to consider and determine actions to be implemented in the event of lower basin "drought" emergency conditions declared pursuant to Article 10.4 of the Compact.

7. **Ending Lower Basin "Drought Warning."** When the storage levels in Beltzville and Blue Marsh Reservoirs simultaneously exceed their respective lower basin "drought warning" storage levels for 30 consecutive days, or when either of those reservoirs spill, the lower basin "drought warning" operation shall automatically terminate, and "normal" operations shall be resumed, unless the Commission unanimously agrees otherwise.

D. **Operations During Lower Basin "Drought" Conditions** *(Resolution No. 88-22 Revised)*. When storage in Beltzville Reservoir falls below elevation 590 m.s.l. (38.0% of storage capacity) and storage in Blue Marsh Reservoir falls below elevation 273 m.s.l. (36.8% of capacity) and remains below such levels for three consecutive days, the Delaware River Basin Commission shall, pursuant to Article 10.4 of the Compact, declare a lower basin "drought" emergency condition in the lower basin and the following provisions shall automatically be placed in effect:

1. **New Jersey Diversion.** The total diversion by New Jersey during lower basin drought conditions shall not exceed a running average of 65 mgd, for the continuous period commencing on the first day following declaration of the lower basin "drought," with the diversion on any day not to exceed 120 mgd.

2. **Trenton Flow Objective.** During lower basin "drought" conditions, the minimum streamflow objective at the U.S.G.S. gaging station located at Trenton, NJ shall be established as set forth in Table 2 of Section 2.5.3 in accordance with the seven-day average location of the 250 mgl isochlor (the "salt front") in the Delaware Estuary.

3. **Reservoir Operations.**

   a. If not previously agreed to, within three days following the triggering of lower basin "drought" conditions, the parties to the 1954 Decree in consultation with the Delaware River Basin Commission, shall consider and unanimously select, and the Delaware River Basin Commission shall implement, one of the six lower basin "drought" reservoir operations plans set forth in Section E. or any other plan designed to meet then existing conditions. The parties may by unanimous agreement modify and adjust any such operations plan or plans as necessary and appropriate to reflect actual conditions and needs.

   b. The lower basin "drought" reservoir operations plans shall consider and include provision of staged releases, as appropriate, from the following storage:

      i. Beltzville Reservoir storage between elevations 590 and 537 m.s.l. (4.65 billion gallons).

      ii. Blue Marsh Reservoir storage between elevations 273 and 261 m.s.l. (1.77 billion gallons).

      iii. Lake Nockamixon storage between elevations 395 and 325.5 m.s.l. (12.97 billion gallons).

iv. Storage in Lake Wallenpaupack and Mongaup facilities (33.9 and 15.38 billion gallons respectively), subject to the conditions set forth in subsection D.3.e.

v. Any water from storage in the New York City Delaware Basin Reservoirs in excess of 80 billion gallons above "drought warning" criteria as set forth in Figure 1 of Section 2.5.3, without compensation.

vi. Any water from storage in the New York City Delaware Basin Reservoirs between 65 billion gallons and 80 billion gallons above "drought warning" criteria as set forth in Figure 1 of Section 2.5.3, with compensation for the use of storage between 65 billion gallons and 80 billion gallons at the rate of 50% of actual releases made for lower basin "drought" assistance only if storage drops below the level of 65 billion gallons above "drought warning." Credits will be added to the lower basin Drought Assistance Releases Credit Bank as defined in Subsection D.3.d.ii. and compensated for as provided in Subsection D.3.d.iii.

vii. Up to 30 billion gallons from storage in the New York City Delaware Basin Reservoirs between 30 billion gallons and 65 billion gallons above "drought warning" criteria as set forth in Figure 1 of Section 2.5.3, subject to the conditions set forth in subsection D.3.d.

viii. Available storage in Lake Hopatcong (1.9 to 4.3 billion gallons) subject to the considerations set forth in Subsection D.3.f.

c. The Delaware River Basin Commission, in consultation with the parties to the 1954 Decree, shall consider requesting the temporary storage of water in Francis E. Walter and Prompton Reservoirs for future use.

d. New York City Delaware Basin Reservoirs Operations. During a lower basin "drought" condition, an amount not to exceed 30 billion gallons of storage between 30 billion gallons and 65 billion gallons above the "drought warning" line in the New York City Delaware Basin Reservoirs may be considered for inclusion in the lower basin "drought" reservoir operations plan to provide lower basin "drought" assistance releases to the Delaware River (in addition to such releases as may be needed to meet the Montague flow objective), in order to assist in meeting the Trenton flow objectives, subject to the following conditions and limitations:

i. Lower basin "drought" assistance releases may be made under this provision provided that the total combined storage available in the New York City Delaware Basin Reservoirs exceeds by 30 billion gallons the "drought warning" criteria set forth in Figure 1 of Section 2.5.3.

ii. The total quantity of supplemental releases made from the New York City Delaware River Basin reservoirs from storage between 30 billion gallons and 65 billion gallons above "drought warning" criteria in any water year shall be credited to the City in a lower basin "Drought Assistance Releases Credit Bank" at the rate of 100% of actual releases made.

iii. Except as provided in (3) and (4), credits accumulated in the lower basin "Drought Assistance Releases Credit Bank" shall be carried forward to the following water years, and compensated for as follows:

(1) Credits shall first be used to reduce the "excess release quantity" for the water year beginning the following June as provided under Section III.B.1.c of the 1954 Decree.

(2) Any remaining credits shall be compensated by a proportionate reduction in the basic Montague flow objective provided under the 1954 Supreme Court Decree and Section 2.5.3. The amount and timing of such reductions shall be determined by the Delaware River Master, in consultation with the Commission and parties to the 1954 Decree. To the maximum extent possible and considering the hydrological condition of the New York City Delaware River Basin reservoirs and upper basin streamflows, such credits will be worked off on days when releases are required to meet Montague flow objectives, and Trenton flows exceed the applicable flow objective without augmentation from lower basin storage as ordered by the Delaware River Basin Commission.

(3) Should any credits still remain at the end of the following water year, the procedure as outlined in D.3.d.iii.(1) and D.3.d.iii.(2) shall be repeated for subsequent years as necessary to totally deplete the lower basin "Drought Assistance Releases Credit Bank", except as provided in (4).

(4) In the event that any New York City Delaware Basin Reservoir refills and spills, all credits accumulated in the lower basin "Drought Assistance Releases Credit Bank" shall be cancelled.

e. Power Reservoir Releases - During lower basin "drought" condition, the Delaware River Basin Commission may direct releases from storage in Lake Wallenpaupack and the Mongaup facilities according to D.3 a. through d. The Commission may delegate to the River Master responsibility for directing operation of the Lake Wallenpaupack and Mongaup facilities under the release schedules and drought management policies of the Commission. In order to conserve the waters of the basin, releases from Wallenpaupack and Mongaup shall be made only when water is needed to meet Trenton flow objectives.

i. Releases from Lake Wallenpaupack may be directed as needed to meet Trenton flow objectives, provided that elevations do not drop below the elevations listed for the following month according to Table 2 of Section 2.5.5 of the Water Code. During drought, PPL may, at the Commission's direction, operate for power production when the lake elevation is above the following first-of-month "normal elevation" as defined in Table 2 and during a power emergency declared by the regional electric system operator (currently P.J.M. Interconnection, L.L.C.) regardless of lake elevation.

ii. Releases from the Mongaup reservoir system may be directed, as needed to meet Trenton flow objectives, following an operations rule curve based upon maximum available storage of 15.38 billion gallons for the total system and providing for refilling the system during the worst hydrologic year of record, maintaining a minimum release and maintaining minimum operating levels. In the absence of an operations rule curve for the Mongaup system, releases shall be made from Mongaup facilities at a ratio of approximately 1 to 2 to the quantity of releases directed from Lake Wallenpaupack.

iii. If the Montague flow objective exceeds the sum of the New York City Delaware River Basin reservoir conservation releases plus uncontrolled flow at Montague by 350 cfs or more, then 350 cfs from the total Wallenpaupack and Mongaup directed releases shall be credited toward the Montague flow objective, and any additional releases required to meet the Montague flow objective shall be made from the New York City Delaware River Basin reservoirs.

iv. If the Montague flow objective exceeds the sum of New York City Delaware Basin reservoir conservation releases plus uncontrolled flow at Montague by less than 350 cfs, then an amount from the total Wallenpaupack and Mongaup directed releases, which is equal to the difference between the Montague flow objective and the sum of New York City conservation releases plus uncontrolled flow at Montague, shall be credited toward the Montague flow objective, and no additional releases shall be required from the New York City Delaware Basin reservoirs to meet the Montague flow objective.

f. In selecting the reservoir operations plan and release schedules to be implemented, the parties will consider the following factors:

i. Lake Hopatcong is a privately-owned non-utility lake.

ii. The water in any reservoir or lake may not be available if under the provisions of a declaration of a drought emergency either within or outside of the basin by the Governor of New York, New Jersey, or Pennsylvania, such facility has been identified to provide supplies for essential health and safety purposes.

iii. There are flow constraints imposed by the outlet works.

iv. There are release limitations due to potential flooding conditions downstream.

v. The season and seasonal hydrologic conditions.

vi. The status of storage and probability of refill or drawdown for each reservoir.

vii. The status of demands upon each reservoir.

viii. The impact of drought operations upon the authorized uses of each reservoir.

ix. The condition of other water supplies, storage or sources available to the owners and operators of each reservoir.

x. The variable impact of observed and expected drought conditions in the drainage areas for each reservoir.

xi. Salinity intrusion in the Delaware Estuary.

xii. Releases shall be made from storage to maintain the minimum Trenton streamflow objectives set forth in Table 2, of Section 2.5.3, in such quantities and at such times as determined by the Delaware River Basin Commission, and, in the case of the New York City reservoirs, as directed by the Delaware River Master, in accordance with the schedules and priorities set forth in the operating plan selected or modified by the parties under this section.

E. **Operations Alternatives for Lower Basin "Drought" When Basinwide Conditions are "Normal"** *(Resolution 88-22 Revised)*. When storage in Beltzville Reservoir falls below elevation 590 m.s.l. (38.0% of storage capacity) and storage in Blue Marsh Reservoir falls below elevation 273 m.s.l. (36.8% of capacity) and remains below such levels for three consecutive days, the Delaware River Basin Commission shall, pursuant to Article 10.4 of the Compact, declare a lower basin "drought" emergency condition in the lower basin and the following provisions shall automatically be placed in effect:

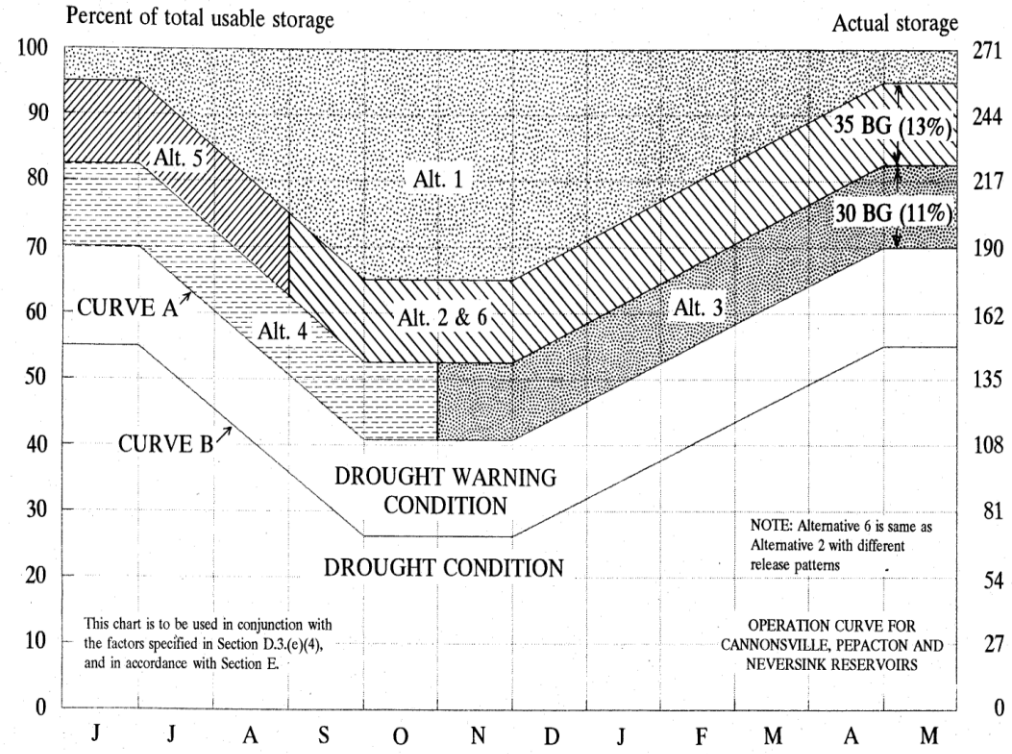
1. **New Jersey Diversion.** The total diversion by New Jersey during lower basin "drought" conditions shall not exceed a running average of 65 mgd, for the continuous period commencing on the first day following declaration of the lower basin "drought", with the diversion on any day not to exceed 120 mgd.

2. **Trenton Flow Objective.** During lower basin "drought" conditions, the minimum streamflow objective at the U.S.G.S. gaging station located at Trenton, N.J. shall be established as set forth in Table 2 of Section 2.5.3 in accordance with the seven-day average location of the 250 mgl isochlor (the "salt front") in the Delaware Estuary.

3. **Operations Alternatives.** The alternatives for lower basin "drought" operations presented herein vary considerably and were specifically designed to be able to address the wide range of conditions which may occur. For example, if a lower basin "drought" triggers and the upper basin reservoirs are nearly full, then upper basin reservoirs may play a more significant role in helping to solve the lower basin crisis. On the other hand, if the lower basin is in a "drought" condition and the basin as a whole is about to enter a "drought warning" condition, then it would be appropriate to look to other sources such as power dams or recreation reservoirs for assistance. In that case, early

mobilization of these additional sources would significantly reduce the severity of basinwide "drought" conditions should they occur. A schematic guide for selecting alternatives for lower basin "drought" operations is presented in Figure 1-a.

Figure 1a. A GUIDE FOR SELECTING ALTERNATIVES FOR LOWER BASIN DROUGHT PLAN OPTIONS



E.3. **Operations Alternatives** (continued)

a. Factors which would indicate the most favorable conditions for each alternative are presented below in the column entitled Indications. The corresponding operations alternatives each present the order of priority* of augmented reservoir releases to maintain Trenton flow objectives and are located in the column entitled Operations.

ALTERNATIVE 1	
Indications	**Operations**
Application of Alternative 1 is indicated if the general hydrologic condition of the upper basin is much better than the lower basin, based on various drought indicators, including precipitation, streamflow, ground water levels and reservoir storage. Under these conditions, storage in the New York City Delaware River Basin reservoirs would be high (i.e., 65 bg above the "drought warning" line), with a low projected demand on the reservoirs. Storage in the New York City non-Delaware reservoirs would also be high. Under these conditions, Alternative 1 calls for New York City Delaware storage to be used heavily because there would not be a significant risk of drawdown triggering a basinwide "drought" condition. This alternative would use water which would otherwise likely spill later during the water year.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Make additional releases from New York City Delaware Reservoir storage in excess of 80 bg above "drought warning" without compensation, and in excess of 65 bg above "drought warning" with 50% compensation if storage subsequently drops below 65 bg above "drought warning", to augment Delaware River flow. 3. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)**. 4. Make 10 bg of additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. 5. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 919 (1.9 bg) at a maximum release rate of 75 cfs. 6. Make 10 bg of additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. 7. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs. 8. Make 10 bg of additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. 9. Make releases from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from Mongaup storage****** subject to minimum operating levels. 10. Make releases from Beltzville, Blue Marsh**** and Nockamixon to elevation 537, 261 and 325.5 respectively at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 915.2 (2.4 bg) at a maximum release rate of 75 cfs.

ALTERNATIVE 2	
Indications	**Operations**
Use of Alternative 2 is indicated if the general condition in the upper basin is moderately favorable (i.e., storage at least 30 bg above "drought warning" and less than 65 bg above "drought warning"). This plan involves extra releases from the New York City reservoirs to assist lower basin conditions. In the event that the City reservoirs drop to less than 30 bg above "drought warning," then releases from the power dams would be used instead. Because such releases would tend to increase the risk of the basin entering "drought warning," this option should only be considered if it triggers after September 1, when the risk of drawing the basin into "drought warning" conditions is reduced. This would limit the amount of time water would be needed as well as increase the probability of refill before serious drawdown occurred.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)**. 3. Make 10 bg of additional releases from New York City Delaware reservoirs to augment Delaware River flow. To the extent New York City Delaware reservoirs are unavailable, make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule, and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 4. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon at maximum total release rate of 200 cfs, and releases from Lake Hopatcong***** to elevation 919 (1.9 bg) at a maximum release rate of 75 cfs. 5. Make 10 bg of additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. To the extent New York City Delaware reservoirs are unavailable, make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule, and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 6. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs. 7. Make 10 bg of additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. To the extent New York City Delaware reservoirs are unavailable, make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule, and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 8. Make releases from Beltzville, Blue Marsh**** and Nockamixon, to elevation 537, 261 and 325.5 respectively, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 915.2 (2.4 bg) at a maximum release rate of 75 cfs.

ALTERNATIVE 3	
Indications	**Operations**
This alternative uses only lower basin reservoirs (i.e., located below Montague) and does not involve the use of New York City or upper basin power reservoirs. This alternative provides the least amount of storage with which to work. Two conditions combined would indicate that application of Alternative 3 is appropriate – (1) the New York City Delaware River Basin reservoirs are very close to entering a "drought warning" condition (i.e., storage in New York City Delaware reservoirs is less than 30 bg above the "drought warning" line when lower basin "drought" triggers) and the non-Delaware River Basin New York City supplies are low; and (2) the lower basin "drought" occurs very late in the season (i.e., after November 1). Under these seasonal conditions, the likelihood of the lower basin reservoirs emptying before the natural refill period is low, and the required releases most likely can be made from the limited remaining contents of the lower basin reservoirs.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)** and release from Lake Hopatcong to elevation 919 (1.9 bg) at a maximum release rate of 75 cfs. 3. Make releases from Beltzville, Blue Marsh**** and Nockamixon, to elevation 537, 261, and 325.5 respectively, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 915.2 (2.4 bg) at a maximum release rate of 75 cfs.

ALTERNATIVE 4	
Indications	**Operations**
This alternative calls upon the upper basin power company reservoirs for assistance. This alternative would be indicated when the New York City Delaware River Basin reservoirs are less than 30 bg above the "drought warning" line and the lower basin triggers before November 1, thereby increasing the probable need for additional water. In this case, the basin would have a high probability of entering a "drought warning" condition, thus the City storage should be conserved.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)**. 3. Make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 4. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 919 (1.9 bg) at a maximum release rate of 75 cfs. 5. Make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 6. Make releases from Beltzville, Blue Marsh**** and Nockamixon, to elevation 537, 261 and 325.5 respectively, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 915.2 (2.4 bg) at a maximum release rate of 75 cfs.

ALTERNATIVE 5	
Indications	**Operations**
This option proposes the early use of upper basin power company reservoirs followed much later by the use of New York City storage. If a lower basin "drought" triggered early in the year (i.e., before September 1) and City storage were only 30 to 65 bg above "drought warning" then there would be a distinct risk of the basin entering "drought warning" later and a strong chance that the lower basin reservoirs could be exhausted. This option, using upper basin power company storage to conserve lower basin and New York City storage for later use, addresses these possibilities.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)**. 3. Make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 4. Make releases from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 919 (1.9 bg) at a maximum release rate of 75 cfs. 5. Make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 6. Make total of 5 bg release from Beltzville, Blue Marsh**** and Nockamixon, at maximum total release rate of 200 cfs. 7. Make additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow. 8. Make releases from Beltzville, Blue Marsh**** and Nockamixon to elevation 537, 261 and 325.5 respectively, at maximum total release rate of 200 cfs, and release from Lake Hopatcong***** to elevation 915.2 (2.4 bg) at a maximum release rate of 75 cfs.

ALTERNATIVE 6	
Indications	**Operations**
This option is similar to Alternative 2 except that New York City releases would be made concurrently with releases from lower basin storage on a 50-50 basis. The conditions under which it would be most appropriate would be similar to those for Alternative 2.	1. Impound and use temporary storage in F.E. Walter and Prompton, if available. 2. Nockamixon from elevation 395 to elevation 385 (68.7%/4.1 bg)**. Make additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow, equal to and simultaneous with releases from Nockamixon; to the extent New York City storage is unavailable, make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule, and make proportional releases from the Mongaup Power Reservoir System****** subject to minimum operating levels. 3. Make releases from Beltzville, Blue Marsh**** and Nockamixon to elevation 537, 261 and 325.5 respectively, at maximum total release rate of 200 cfs, and release from Lake Hopatcong to elevation 915.2 at a maximum release rate of 75 cfs. Make additional releases from New York City Delaware Reservoirs*** to augment Delaware River flow, equal to and simultaneous with releases from Beltzville, Blue Marsh, Nockamixon and Hopatcong; to the extent New York City storage is unavailable. Make releases for Trenton from Lake Wallenpaupack subject to the elevation schedule and make proportional releases from the Mongaup Power Reservoir system****** subject to minimum operating levels.

* To be followed after the "excess release bank" has been exhausted. Order of priority would be reserved for coming out of a drought condition.

** Loss of recreation below this level.

*** New York City would be credited this water against the following year's "excess release quantity" unless there is an intervening spill condition. In addition, these releases would only be made when New York City Delaware reservoir storage is more than 30 billion gallons above the "drought warning" curve. The maximum cumulative amount of these releases is 30 bg.

**** Sufficient storage would be retained to supply the needs of the Western Berks Water Authority, required conservation releases and water quality augmentation needs on the Schuylkill River.

***** Use of water from Lake Hopatcong is subject to the considerations set forth in Subsection D.3.f.

****** Releases will be made from Lake Wallenpaupack and the Mongaup Power Reservoir System simultaneously and approximately in a two to one ratio, respectively.

4. **Reduction of Conservation Releases.** In order to conserve storage, conservation releases from the listed lower basin reservoirs shall continue to be modified in accordance with Table 4 of Section 2.5.5 for the duration of a lower basin "drought" condition.

5. **Conservation Measures.** Upon the declaration of a lower basin "drought" emergency, the lower basin states shall adopt and implement within the basin drainage area below Montague comparable mandatory conservation measures, including restrictions on non-essential water uses, and shall implement other provisions of "drought" contingency plans designed to achieve a target of 15 percent reduction in depletive water use. The following water uses shall be deemed non-essential:

   a. Serving of water to any patron of a restaurant, club or other eating place unless specifically requested by such patron.

   b. The use of water for ornamental purposes.

   c. The use of water for washing paved surfaces such as streets, sidewalks, outdoor plazas, driveways, garages, parking areas and patios.

   d. The use of water for non-commercial washing or cleaning of vehicles except for the windshields and windows and except for emergency vehicles.

   e. The use of water for watering of established lawns (i.e., those not newly seeded, sodded or fertilized).

   f. The use of water for watering or sprinkling any part of a golf course except for tees, greens, and aprons.

   g. The use of water for watering non-commercial outdoor gardens, landscaped areas, trees, shrubs and other outdoor plants except: water may be applied with a bucket, can or hand-held hose equipped with automatic shut-off valve.

6. **Ending "Drought."** When the storage levels in Beltzville and Blue Marsh Reservoirs simultaneously exceed their respective lower basin "drought" storage levels for 30 consecutive days or either one of those reservoirs spills, the lower basin "drought" operation shall automatically terminate and either lower basin "drought warning" or normal operations shall be resumed in accordance with Section B. or C. unless the Decree parties unanimously agree otherwise.

F. **Operations During Basinwide Drought Warning or Drought Following Lower Basin Drought Warning or Drought** *(Resolution 88-22 Revised)*.

1. **Selection of Alternate Plans.** If, following the triggering of a lower basin "drought" or lower basin "drought warning" under this plan, the combined storage in the New York City Delaware Basin Reservoirs declines to basinwide "drought warning" or "drought" conditions as defined in Section 2.5.3, the parties to the 1954 Decree shall select and agree to, and the Delaware River Basin Commission shall implement, the provisions of either Section F.2. or F.3. of this Plan. In the absence of unanimous agreement, the operating rules set forth in Section 2.5.3 shall govern. The parties may by unanimous

agreement modify and adjust either plan as necessary and appropriate to respond to actual conditions. In selecting between the alternative plans, and any modification thereto, the parties will consider the following factors:

a. The extent and severity of drought conditions in various parts of the basin.

b. The season, and seasonal variation of hydrologic conditions.

c. The status of storage in all affected reservoirs, and the probability of refill or drawdown for each reservoir.

d. The status of demands upon each reservoir.

e. The lead time needed to effect conservation measures and to reduce demand.

f. The prior availability of time and notice to provide for adequate warning and preparation for drought response actions.

g. The need and ability to take expedited steps to conserve storage in the New York City and other basin reservoirs.

2. **Combined Drought Operations Plan 1.**

a. The schedules of phased reductions governing the maximum allowable rates of diversion of waters of the Delaware Basin by New York City, the minimum compensating releases to be made by the City of New York Delaware Basin Reservoirs, and the streamflow objectives at the U.S.G.S. gaging station located at Montague, NJ, shall be as prescribed in Section 2.5.3.

b. The operation of Lake Wallenpaupack and the Mongaup System Reservoirs shall be governed by the storage and release schedules prescribed in the operating plan for basinwide "drought" conditions. The Commission may delegate to the River Master responsibility for directing operation of the Lake Wallenpaupack and Mongaup facilities under the release schedules and drought management policies of the Commission.

c. So long as lower basin "drought warning" or lower basin "drought" conditions prevail simultaneously with basinwide "drought warning" and "drought" conditions, the maximum allowable rates of diversion of Delaware Basin waters by New Jersey, the streamflow objectives at the U.S.G.S. gaging station located at Trenton, NJ, and the operation of storage in Beltzville Reservoir, Blue Marsh Reservoir, Lake Nockamixon, Lake Hopatcong, and any storage made available in the F.E. Walter and Prompton Reservoirs shall be governed by the stricter of the provisions of Sections C. and D. of the Lower Delaware Basin Operating Plan, or the provisions of Section 2.5.3, which permit lesser New Jersey diversions and lower Trenton Flow Objectives.

3. **Combined Drought Operations Plan 2.**

a. If during the period May 1 to November 30, the combined storage in the New York City Delaware River Basin Reservoirs is in the upper half of the "drought warning" condition identified in Figure 1 of Section 2.5.3, the maximum allowable rates of diversion of waters of the Delaware by New York City, the minimum compensating releases to be made by the New York City Delaware River Basin Reservoirs, and the streamflow objectives at the U.S.G.S. gaging station located at Montague, NJ, shall be as prescribed for lower half "drought warning" in Tables 1 and 2 of Section 2.5.3. If the combined storage in the New York City Delaware River Basin reservoirs subsequently enters the lower half of the "drought warning" condition identified in Figure 1 of Section 2.5.3, the maximum allowable rate of diversions of the Delaware Basin by New York City, the minimum compensating releases to be made by the New York City Delaware River Basin reservoirs, and the streamflow objectives at the U.S.G.S. gaging station located at Montague, NJ, shall be as prescribed for "drought" in Tables 1 and 2 of Section 2.5.3.

b. If during the period December 1 to April 30, the combined storage in the New York City Delaware Basin Reservoirs falls within the "drought warning" levels identified in Figure 1 of Section 2.5.3, the maximum rates of New York City diversions, the minimum compensating releases made by the New York City Delaware River Basin Reservoirs, and the Montague streamflow objectives shall be as prescribed for the applicable "drought warning" upper and lower half conditions set forth in Tables 1 and 2 of Section 2.5.3. Any subsequent triggering of basinwide "drought" conditions shall be governed by Figure 1 of Section 2.5.3.

c. So long as lower basin "drought warning" or lower basin "drought" conditions prevail simultaneous with a basinwide "drought warning" condition, the maximum rate of diversion by New Jersey, the minimum streamflow objectives at Trenton, and the operation of available storage in Beltzville Reservoir, Blue Marsh Reservoir, Lake Nockamixon, Lake Hopatcong, and the F.E. Walter and Prompton Reservoirs shall be governed by the provisions of Sections C. and D. of the Lower Delaware Basin Drought Operating Plan.

d. In the event that following the triggering of a lower basin "drought warning" or lower basin "drought," the combined storage in the New York City Delaware River Basin Reservoirs is in the "drought" levels identified in F.3.a. and b., whichever is applicable, the maximum rate of diversions by New York City and New Jersey, the minimum rates of compensating releases, and the minimum streamflow objectives at Montague, NJ and Trenton, NJ shall be those set forth in Tables 1 and 2 of Section 2.5.3. The operation of all basin reservoirs shall be as prescribed in the plans for basinwide drought reservoir operation.

e. The operation of Lake Wallenpaupack and the Mongaup System Reservoirs shall be governed by the storage and release schedules prescribed in the operating plan for basinwide "drought" conditions. The Commission may delegate to the River Master responsibility for directing operation of the Lake Wallenpaupack and Mongaup facilities under the release schedules and drought management policies of the Commission.

2.5.7 **Drought Management Plan for the Christina River Basin, Chester County, Pennsylvania and New Castle County, Delaware** *(Resolution 88-26)*.

A. **Purpose.** It shall be the purpose of this plan to provide a drought management strategy for the Christina River Basin in Chester County, Pennsylvania and New Castle County, Delaware for implementation as conditions warrant. The plan establishes drought criteria and recommends actions to be undertaken on a coordinated basis in the event of drought. The plan is incorporated in the drought management plans of the Commonwealth of Pennsylvania and the State of Delaware. The Christina River Basin Drought Management Plan is designed for utilization as conditions dictate, notwithstanding the absence of drought declaration by the Commission for the entire region.

B. **Definition of Area.** The area to be governed by the Christina River Basin Drought Management Plan includes all of the Christina River drainage area, all of New Castle County, Delaware north of the Chesapeake and Delaware Canal and the adjoining public water supply service areas as described in the Christina River Basin Drought Management Plan map attached hereto and made a part of this plan.

C. **Administration.** There shall be created for the purposes of this plan the Christina River Basin Drought Management Committee. Membership shall include, but not be limited to, representatives of the Bureau of Water Resources Management, Pennsylvania Department of Environmental Protection, Pennsylvania Emergency Management Agency; Division of Water Resources, Delaware Department of Natural Resources and Environmental Control; Delaware Geological Survey; Water Resources Agency for New Castle County, Delaware; Chester County (PA) Water Resources Authority; major public and private water purveyors serving customers in the defined area and such other entities as may be necessary to effectuate this plan.

D. **Drought Indicators.** For the purposes of this plan, the status of water conditions in the Christina River Basin shall be evaluated on the basis of precipitation, ground water levels at selected monitoring sites, and streamflow measured at the Chadds Ford gage on the Brandywine Creek. Water conditions shall be evaluated in terms of drought watch (optional), drought warning and drought emergency according to criteria established by the Christina River Basin Drought Management Committee. The Optional Drought Watch may be implemented in Chester County by the Chester County Water Resources Authority when ground water levels approach the 75 percent exceedance level (drought warning) in the majority of the designated monitoring wells to permit early public announcement of declining water tables. This optional approach is in recognition of the magnitude of private individual wells serving the residential area in the Christina Basin.

E. **Drought Criteria.** For the purposes of this plan, it has been determined by the parties at interest that a two-stage drought mechanism be emplaced. Upon the request of at least two members or at the call of the chairman, the Christina River Basin Drought Management Committee will be called into session for the purposes of evaluating water conditions and preparing an analysis for the Governors of the respective states or such other business as may be required. The criteria to be used in evaluating water conditions in the Christina Basin include:

1. **Precipitation.**

   a. Warning is indicated when precipitation at the National Weather Service Office in New Castle, Delaware, and average Chester County precipitation indicate less than 18 inches of precipitation for a 6-month duration for two consecutive months (20% deficit).

   b. Emergency is indicated when precipitation at the National Weather Service Office in New Castle, Delaware and average Chester County precipitation indicate less than 16 inches of precipitation for a 6-month duration for two consecutive months (30% deficit).

2. **Streamflow.** Chadds Ford Streamgage (USGS No. 01481000 at Chadds Ford, Pennsylvania on Brandywine Creek).

   a. Warning is indicated when monthly average streamflow is below 75% exceedance for two consecutive months.

   b. Emergency is indicated when monthly average streamflow is below 90% exceedance for two consecutive months.

3. **Groundwater.** Use six Chester County wells (70% of Basin) CH-2, CH-10, CH-28, CH-38, CH-1229, CH-1247 and two Delaware wells (30% of Basin) Bc43-01, Db24-10.

   a. Warning is indicated when majority of wells are below 75% exceedance for two consecutive months.

   b. Emergency is indicated when majority of wells are below 90% exceedance for two consecutive months.

F. **Drought Actions.** When the Governors of the respective states, following receipt of an analysis of water conditions for the Christina River Basin Drought Management Committee, shall deem that declaration of drought warning or drought emergency is warranted, a ban on non-essential use of water shall be implemented within the Christina River Basin area, as defined. In the case of drought warning, the ban shall be of a voluntary nature and shall become mandatory in the event of drought emergency. When a cause for such action is apparent to the Drought Management Committee, the Governors of Pennsylvania and Delaware shall be urged to take simultaneous and identical actions in order to further the cause of water conservation in the Christina Basin. The following non-essential uses of water shall be banned in accordance with the provisions of this section:

   1. The use of any water for watering of lawns, except –

      a. water may be applied to grass areas as part of a sewage or storm water treatment system utilizing spray irrigation;

b. water may be applied at the minimum rate necessary to maintain grass tennis courts to the extent that sources of water other than fresh water adequate to supply needs are not available or feasible to use;

c. water may be used at the minimum rate necessary to establish and maintain newly seeded and sodded grass areas when applied between the hours of 5:00 p.m. and 9:00 a.m. by means of bucket, can, or hand-held hose equipped with an automatic shut-off nozzle;

d. water may be used at the minimum rate necessary to establish and maintain newly seeded or sodded non-residential grass areas exceeding 10,000 square feet when applied between the hours of 5:00 p.m. and 9:00 a.m., by any means designed and operated to assure effective conservation of the water.

2. The use of fresh water for irrigation and watering of outdoor gardens, landscaped areas, trees, shrubs, and other outdoor plants, by means other than a bucket, pail or hand-held hose equipped with an automatic shut-off nozzle, when applied between the hours of 5:00 p.m. and 9:00 a.m. except –

a. fresh water may be used for agricultural irrigation for the production of food and fiber, the maintenance of livestock and poultry, or the production of nursery stock;

b. fresh water may be applied by means of a hand-held container, or hand-held hose equipped with an automatic shut-off nozzle at the minimum rate necessary to establish and maintain newly planted gardens, trees, shrubs, or other outdoor plants. Sources of water other than fresh water, should be used where available;

c. fresh water may be used by commercial nurseries at the minimum rate necessary to maintain stock, only to the extent that sources of water other than fresh water adequate to supply needs are not available or feasible to use;

d. fresh water may be used by arboretums and public gardens of national, state or regional significance at the minimum rate necessary to preserve specimens, to the extent that sources of water other than fresh water adequate to supply needs are not available or feasible to use;

e. fresh water may be used at the minimum rate necessary to implement revegetation following earthmoving, where such revegetation is required pursuant to an approved erosion and sedimentation control plan adopted pursuant to state law or regulation, to the extent that sources of water, other than fresh water, adequate to supply needs are not available or feasible to use. Revegetation use shall comply with all applicable best conservation management practices for such revegetation as prescribed by the Pennsylvania Department of Environmental Protection, the Delaware Department of Natural Resources and Environmental Control, and appropriate County Conservation Districts.

3. The use of fresh water for watering any portion of golf courses, except for tees and greens, for which water may be applied during the hours of 5:00 p.m. to 9:00 a.m.

4. The use of any water for washing paved surfaces such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts and patios, except –

    a. water may be used for pre-washing in preparation of asphalt street or driveway recoating and sealing;

    b. water may be used at the minimum rate necessary for the maintenance of tennis courts composed of clay or similar materials by means of a hand-held hose equipped with an automatic shut-off nozzle;

    c. water may be used at the minimum rate necessary for sanitation of the premises of eating and drinking places.

5. The use of any water for ornamental purposes including fountains, artificial waterfalls and reflecting pools.

6. The use of any water for washing or cleaning of mobile equipment, including automobiles, trucks, trailers and boats, except –

    a. water may be used by commercial car washers equipped with facilities that recycle water or with timed water dispensing equipment which restricts flow to 3 gallons per minute;

    b. water may be used for cleaning of construction, public transportation, or government vehicles where necessary to preserve the proper functioning of the vehicle.

7. The serving of water in restaurants, clubs or eating places unless specifically requested by the individual.

8. The use of water to fill and top off swimming pools, except water may be used for the following:

    a. to fill and top off public swimming pools and residential pools serving 25 or more dwelling units, if the pools have filtration equipment allowing for continued use and recycling of water over the swimming season;

    b. to fill and top off swimming pools operated by health care facilities used in connection with patient care and rehabilitation;

    c. to fill and top off other pools in accordance with the following requirements:

        i. the pool may be filled or topped off only if approved by the public water supply system from which the water is withdrawn. If water is obtained from other sources, permission from the owner of the source is required, or

ii. pools shall have filtration equipment allowing for continued use and recycling of the water over the swimming season.

9. Exemption from the ban on non-essential uses may be granted as follows:

a. by the Pennsylvania Emergency Management Council in accordance with established procedures within the Commonwealth of Pennsylvania, or

b. by the Delaware Department of Natural Resources and Environmental Control in accordance with established procedures within the State of Delaware.

10. The above listed non-essential uses are further refined, and made more stringent, as part of local water rationing plans within Emergency Service Areas.

When the Governors of the respective states, following receipt of an analysis of improved water conditions from the Christina River Basin Drought Management Committee, shall deem that declaration of drought warning or drought emergency may be terminated, the ban on non-essential use of water implemented under such declaration may be rescinded.

G. **Penalty/Enforcement.** The provisions of this plan, incorporated as an appendix to the Pennsylvania and Delaware state drought contingency plans, shall have the same statutory penalty and enforcement provisions as those contained in the parent documents.

H. **Amendment.** The Christina River Basin Drought Management Plan may be amended by majority vote of the Drought Management Committee membership after consideration at two successive meetings. Such amendments will become effective only after formal inclusion in the drought contingency plans of Pennsylvania and Delaware.

2.10 SURFACE WATERS

2.10.1 **Storage and Release of Waters** *(Compact, Section 4.2)*. "The commission shall have power to acquire, operate and control projects and facilities for the storage and release of waters, for the regulation of flows and supplies of surface and ground waters of the basin, for the protection of public health, stream quality control, economic development, improvement of fisheries, recreation, dilution and abatement of pollution, the prevention of undue salinity and other purposes."

"No signatory party shall permit any augmentation of flow to be diminished by the diversion of any water of the basin during any period in which waters are being released from storage under the direction of the commission for the purpose of augmenting such flow, except in cases where such diversion is duly authorized by this compact, or by the commission pursuant thereto, or by the judgment, order or decree of a court of competent jurisdiction."

2.10.2 **Commission Role in Federal Water-Supply Projects** *(Resolution No. 64-16A)*. The Commission, acting for and on behalf of the signatory parties, will acquire the right to use and to control water supply facilities associated with Federal projects authorized in the Comprehensive Plan.

2.10.3 **Project Construction Scheduling** *(Resolution No. 71-4)*. The Commission will consider new projects economically justified for construction scheduling by the Commission when:

A. The unit cost of additional water supply at a new location is not more than the unit cost of additional development of water supply at established facilities in the same service area.

B. The annual benefits from all project purposes equal or exceed their total annual cost.

2.10.4 **Commission Repayment Obligations** *(Resolution No. 64-16A)*. Subject to appropriate authorization by the signatory parties, the Commission will assume the obligation to repay the non-federal share of the Federal investment cost of such water-supply facilities, and will meet future annual repayment obligations out of revenues provided from sale of water or other products and services, or from an apportionment of costs through the capital section of the Commission's annual budgets to the States in which benefits of the project occur. The Commission will make the appropriate reductions in the share of the cost of water to States as revenues are received from direct sale of water or other products and services, and from various fees.

2.10.5 **Cost Apportionment to States** *(Resolution No. 64-16A)*. The Commission will determine the States within which the general benefits of such water-supply facilities will accrue. It will apportion to such States their fair share of the non-federal cost of such facilities in proportion to the use thereof.

2.10.6 **Payment for Use of Surface Water**

A. **Contracts** *(Resolution No. 71-4)*. The Commission will require contracts, which may be negotiated at any time, for the use, withdrawal, or diversion of any surface waters of the Basin taken after the effective date of the rates and charges required by this article. Each of such contracts shall include:

1. An undertaking by the contracting party to pay for water used, withdrawn, or diverted, in accordance with the rates and charges established by the Commission pursuant to this article.

2. Provision for a minimum annual payment under the contract, in accordance with an estimated annual demand schedule, regardless of use, withdrawal, or diversion.

3. Such other and different terms and conditions with respect to the availability of the supply, its quantity and quality, its management and control, and the powers and duties and obligations of the parties, as may be negotiated.

B. **Rates and Charges** *(Resolution No. 71-4)*. Rates and charges for water supplied will include all costs associated with making the Basin water supply available and maintaining its continued availability in adequate quantity and quality over time. Rates will be determined as follows:

1. The Commission will use the weighted-average unit cost of all water stored by or on behalf of the Commission. The unit cost of water will be determined by dividing all of the Commission's annual project cost by the net yield of the water

supply in Federal reservoirs authorized in the Commission's Comprehensive Plan. Costs, rates, and charges will be recomputed whenever new or additional storage is provided and as often as necessary to reflect relevant changes in any cost components associated with sustaining specified base flows.

2. The Commission will collect sufficient annual revenue to meet all of its annual project costs, including debt service, operation, maintenance, replacement, reserves, and associated administrative costs. The minimum charge to specific users will be for the amount of water specified in an estimated demand schedule according to a contractual agreement. The maximum charge to these users will be for the amount of water they actually use, withdraw, or divert. Revenue not collected from specific users of water supply will be collected from the states in which general benefits of water supply occur.

3. The Commission will compute an annual adjusted rate in the form of a rebate to each contracting party of a pro rata distribution of the net annual revenues of the Commission in excess of the amounts required under paragraph 1, provided that no such rebate will be made with respect to revenues received by the Commission on account of consumptive uses and exportations out of the Basin, and provided further that no rebates will be made until there are no further annual costs allocated to the signatory states as general beneficiaries.

4. The Commission may make reasonable estimates of the components of combined withdrawals where separate water accounting is not feasible, such as for combinations of exportations and in-basin use and consumptive and non-consumptive uses, and for municipal systems.

5. The Commission may exempt or classify such non-consumptive uses of surface flows as it may determine to have no substantial effect on the water resources of the Basin. It may also provide for a reduced rate structure with respect to water used for cooling purposes which is returned to a stream otherwise unimpaired in quantity and quality. The Commission may also classify rates and charges for consumptive uses and out-of-basin exportations of surface waters to include a surcharge to reflect any costs or adverse effects of such uses which are greater in kind or degree than those associated with other water uses.

6. The rates and charges for increased in-stream evaporative losses resulting from heated discharges will be the same as those for a consumptive use.

C. **Special Projects** *(Resolution No. 71-4)*. Charges for water supply from projects constructed pursuant to contractual arrangements between the Commission and local public agencies in advance of the time when the project is scheduled by the Commission in accordance with Section 2.10.3 will be at rates sufficient to provide the total annual debt service and other obligations incurred by the Commission for such project, until such time as the project qualifies for Commission scheduling under the provisions of Section 2.10.3.

D. **Sanctions for Unauthorized Use of Water** *(Resolution No. 71-4)*. The Commission will provide by regulation for the imposition of sanctions for any unauthorized use,

withdrawal, or diversion of surface waters of the Basin and for the assessment and collection of the value thereof.

E. **Effective Date of Rates and Charges** *(Resolution No. 71-4)*. Rates and charges required by Section 2.10.6B shall apply to all surface waters of the Basin used, withdrawn, or diverted by any person, corporation or other entity, public or private, on and after the date of the first impoundment of water for water supply purposes at the Beltzville Reservoir, except that there shall be no charge to a person, corporation or other entity for water used, withdrawn, or diverted at a monthly volume which is not greater than the average monthly volume taken or legally entitled to be taken by such person, corporation, or other entity during the twelve completed calendar months next preceding the effective date of this article. (The effective date of charges was established by Resolution No. 74-6, adopted May 22, 1974.)

F. **Legal Entitlement** *(Resolution No. 71-4)*. "Legally entitled to be taken" refers to water taken under the following conditions:

1. A valid and subsisting permit issued under the authority of one of the signatory parties.

2. Physical facilities in being and operable as required for such taking.

3. A beneficial use throughout the year for the waters taken.

4. That such takings are within the limits of the total allocable flow without augmentation.

2.20 UNDERGROUND WATERS

2.20.1 **Equitable Apportionment** *(Resolution No. 64-11)*. Underground waters of the Basin shall be subject to the doctrine of equitable apportionment as provided by Section 3.3 of the Compact.

2.20.2 **Preservation** *(Resolution No. 64-11)*. The underground water-bearing formations of the Basin, their waters, storage capacity, recharge areas, and ability to convey water shall be preserved and protected.

2.20.3 **Safeguard Public Interest** *(Resolution No. 64-11)*. Projects that withdraw underground waters shall be planned and operated in such manner as will reasonably safeguard the present and future public interest in the affected water resources.

2.20.4 **Withdrawal Limits** *(Resolution No. 80-23)*. Except as may be otherwise determined by the Commission to be in the public interest, withdrawals from the underground waters of the Basin shall be limited to the maximum draft of all withdrawals from a ground water basin, aquifer, or aquifer system that can be sustained without rendering supplies unreliable, causing long-term progressive lowering of ground water levels, water quality degradation, permanent loss of storage capacity, or substantial impact on low flows of perennial streams. In confined coastal plain aquifers, the Commission shall consider and apply aquifer management levels, if any, established by a signatory state in determining compliance with criteria relating to "long-term progressive lowering of ground water levels."

2.20.5 **Protection of Recharge Areas** *(Resolution No. 64-11)*. The principal natural recharge areas through which the underground waters of the Basin are replenished shall be protected from unreasonable interference with their recharge function. No underground waters, or surface waters which are or may be the sources of replenishment thereof, shall be polluted in violation of water quality standards duly promulgated by the Commission or any of the signatory parties.

2.20.6 **Activities Subject to Review** *(Resolution No. 64-11)*. The underground water resources of the Basin shall be used, conserved, developed, managed, and controlled in view of the needs of present and future generations, and in view of the resources available to them. To that end, interference, impairment, penetration, or artificial recharge shall be subject to review and evaluation under the Compact.

2.20.7 **Basinwide Well Registration Standards and Criteria** *(Resolution No. 85-19)*.

A. **Policy.**

1. All owners of individual wells or groups of wells operated as a system that withdraw an average of 10,000 gallons per day (gpd) or more during any 30-day period from the underground waters of the Basin shall register their wells with the designated agency of the state where the well is located.

2. Registrations may be filed by agents of owners, including well drillers.

3. Owners of existing wells that withdraw 10,000 gpd or more in any 30-day period that have not been previously registered with the respective designated state agencies pursuant to state law or the Southeastern Pennsylvania Ground Water Protected Area Regulations shall register their wells with the designated state agency by March 1, 1986. In lieu of this provision, alternative arrangements for registration of previously unregistered existing wells may be approved by the Executive Director pursuant to subsection C. Administrative Agreements.

4. Any well that is replaced or redrilled or modified in a manner such as to increase the withdrawal capacity of the well, shall be reregistered with the designated state agency.

5. The following are the designated registration agencies for the respective states: Delaware Department of Natural Resources and Environmental Control; New Jersey Department of Environmental Protection; New York State Department of Environmental Conservation; and Pennsylvania Department of Environmental Protection.

B. **Forms, Procedures, and Information Requirements.**

1. Registrations shall be filed on forms and in accordance with procedures established by the Commission. In lieu of such forms and procedures, the Executive Director may approve forms and procedures established by the respective state agencies which are essentially equivalent.

2. The following data shall constitute minimum information requirements for well registration[2]:

   a. Well identification number (owner ID)

   b. Well owner's name, address, and telephone number

   c. Well location
      i. State
      ii. County
      iii. Political subdivision
      iv. U.S.G.S. Quadrangle with location

   d. Well construction information
      i. Date of well completion
      ii. Driller's name, state license number
      iii. Diameter(s) of hole (inches)
      iv. Depth drilled (ft. below land surface)
      v. Depth of completed well (ft. below land surface)
      vi. Drilling method
      vii. Casing(s)
         – depth(s) (ft. below land surface)
         – diameter(s)
         – material
      viii. Screen(s)
         – depth(s) of top (ft. below land surface)
         – depth(s) of bottom (ft. below land surface)
         – diameter(s) (inches)
         – material
         – type
      ix. Gravel pack
         – depth of top (ft. below land surface)
         – depth of bottom (ft. below land surface)
      x. Grout information
         – grout material
         – grout top (ft. below land surface)
         – grout bottom (ft. below land surface)
      xi. Driller's Log

   e. Water-yielding zones (consolidated-rock aquifers)
      i. Depth of top (ft. below land surface)
      ii. Depth of bottom (ft. below land surface)

   f. Pump test/well yield information
      i. Date
      ii. Static water level (ft. above or below land surface)

[2] Owners or their agents are responsible for items a-i; states and/or the United States Geological Survey (U.S.G.S) are responsible for items j-m.

iii. Pumping water level (ft. below land surface)
iv. Pumping time (hours and minutes)
v. Pumping rate (gpm)
vi. Pumping measurement method
vii. Maximum sustainable well yield

g. Use information
   i. Use type
      – agriculture (non-irrigation)
      – commercial
      – domestic
      – industrial
      – irrigation
      – mining
      – dewatering
      – air conditioning, geothermal heat pump
      – power
         - fossil-fueled power
         - nuclear power
      – sewage treatment
      – public water supply
   ii. Anticipated or estimated usage (gpd, gpm, or gpy)
   iii. Meter type
   iv. Pump installation date
   v. Pump capacity (gpm)
   vi. Motor capacity (hp)
   vii. Pump manufacturer and type
   viii. Power source(s)
   ix. Intake setting (ft. below land surface)
   x. Current pumping level (if available)

h. Manner and location of water or wastewater disposal

i. Verification: Name, address, signature, date, and telephone number of person supplying data for items a.-h.

j. Identification and location
   i. Latitude and longitude (method used) or New Jersey Grid No.
   ii. Major watershed (U.S.G.S. Hydrologic Unit)
   iii. Minor watershed
   iv. Identification numbers (Registration ID)
   v. Altitude (ft. above or below mean sea level) (method used)

k. Aquifer information
   i. Aquifer and geologic formation
   ii. Lithology of aquifer
   iii. Depth to bedrock
   iv. Bedrock material
   v. Confined or unconfined aquifer
   vi. Specific capacity

l. Water-withdrawal permit data (if available)
   i. Name of permitting agency
   ii. Permit number
   iii. Permit quantity
   iv. Expiration date

m. Verification: Name, agency, address, date, and telephone number of person supplying data for items j-l.

3. The designated state agency may waive specific information requirements set forth in (2) for existing wells if the information is unavailable.

C. **Administrative Agreements.** Recognizing the existence of ongoing well registration programs in the signatory states and recognizing the major differences among the four signatory states regarding the legal authority and enforcement capability for the conduct of well registration, the Executive Director shall effectuate independent administrative agreements with each state for the conduct of well registration. The administrative agreements shall at a minimum provide for:

1. the adoption by each state of the minimum information requirements presented in subsection B. 2. for registration of new wells producing an average of 10,000 gpd or more during any 30-day period and automation of well records;

2. the identification and automation of well records for all registered, existing wells producing an average of 10,000 gpd or more during any 30-day period; and

3. the adoption of procedures for registration of unregistered, existing wells producing an average of 10,000 gpd or more during any 30-day period and automation of well records.

2.30 IMPORTATIONS AND EXPORTATIONS OF WATER, INCLUDNG WASTWATER

2.30.1 **Definitions** *(Resolutions Nos. 91-9 and 2022-04)*. For purposes of this section 2.30:

A. "Adjacent public water system" means a public water system (as defined herein) located outside the Delaware River Basin that has a service area directly bordering the service area of a public water system located in whole or in part within the Basin.

B. "Adjacent public wastewater collection system" means a public wastewater collection system (as defined herein) located outside the Delaware River Basin that has a service area directly bordering the service area of a public wastewater collection system located in whole or in part within the Basin.

C. "Basin water" (also, "waters of the Basin") means water in, on, under or above the ground within the Delaware River Basin. "Basin water" includes wastewater.

D. "Delaware River Basin" (or "Basin") has the meaning assigned to it by Section 1.2(a) of the *Delaware River Basin Compact* – the area of drainage into the Delaware River and its tributaries, including Delaware Bay.

E. "Exportation" means the conveyance, transfer, or diversion of Basin water from a source within the Delaware River Basin to a location outside the Basin without return of such water to the Basin. Exportations from the Basin of consumer goods or foods that have been manufactured, bottled, packaged, or processed using Basin water are not considered "exportations" for purposes of this rule.

F. "Importation" means the conveyance, transfer, or diversion of water, including wastewater, into the Delaware River Basin from a source outside the Basin, resulting in a discharge of the imported water to land or water within the Basin, with or without prior treatment.

G. "Public water system" means a system primarily for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. A "public water system" may be publicly or privately owned.

H. "Public wastewater collection system" means a system with all required state and federal approvals that serves more than 250 people or conveys more than 25,000 gallons of wastewater per day and is primarily for the collection and conveyance of domestic sewage from private, commercial, institutional, or industrial sources, to a treatment system with all necessary state and federal approvals. A "public wastewater collection system" may be publicly or privately owned.

I. "Straddled public water system" means a public water system that serves an area partially within and partially outside of the Delaware River Basin.

J. "Straddled public wastewater collection system" means a public wastewater collection system that serves an area partially within and partially outside of the Delaware River Basin.

K. "Wastewater" means water that is stored, transported or discharged after use, including, but not limited to, any water for which a National Pollutant Discharge Elimination System

(NPDES) permit under the federal Clean Water Act or any state or DRBC approval is required before the water can lawfully be discharged to waters or land within the Basin.

2.30.2 Protection and Preservation

A. The waters of the Delaware River Basin are limited in quantity, and the Basin is frequently subject to drought warnings, drought declarations, and drought operations due to limited water supply storage and streamflow during dry periods. In addition, portions of the Basin have been delineated by the Commission as groundwater protected areas due to water shortages. Therefore, it is the policy of the Commission to promote the conservation and preservation of water and related natural resources, including aquatic ecosystems, and effectuate the Comprehensive Plan and the uses of the water resources of the Basin identified therein, by discouraging, limiting, or placing conditions on the exportation of Basin water as may be required to protect the health and safety of Basin residents, aquatic ecosystems and the uses of water identified in the Compact and Comprehensive Plan.

B. The Commission shall review a proposed new exportation of Basin water, including any proposed increase in the rate or volume of an existing exportation, and may impose conditions, obligations and release requirements related thereto, pursuant to Sections 3.3, 3.8, 5.2, 10.3, 10.4 and Article 11 of the Compact and the regulations and docket approvals implementing these provisions.

C. A proposed new exportation of Basin water that is subject to review under the Compact and implementing regulations, including any proposed increase in the rate or volume of an existing exportation, may be approved by the Commission after consideration of the factors set forth at Section 2.30.3 below, if:

1. the sponsor demonstrates that the exportation of Basin water is required to serve a straddled or adjacent public water system;

2. the sponsor demonstrates that the exportation of Basin water is required to meet public health and safety needs on a temporary, short-term, or emergency basis; or

3. the sponsor is proposing an exportation of wastewater and demonstrates either (i) that the wastewater is being conveyed to a straddled or adjacent public wastewater collection system; or (ii) that the wastewater may not lawfully be discharged to a public wastewater collection system and is being exported for treatment, disposal or both at a waste management facility that has all required state and federal approvals to lawfully receive it.

D. Basin waters have limited capacity to assimilate pollutants without significant impacts to the health and safety of Basin residents, the health and functioning of aquatic ecosystems in the Basin, and the effectuation of the Comprehensive Plan. Accordingly, it is the policy of the Commission to discourage, limit, or condition the importation of wastewater into the Delaware River Basin as necessary to avoid impairment of Basin waters. A proposed new importation of water, including any proposed increase in the rate or volume of an existing importation, shall be reviewed by the Commission consistent with the factors set forth at Section 2.30.3 below.

E. This Section 2.30 shall not apply to importations and exportations of water, including wastewater, that existed prior to enactment of the Compact or that were approved by the DRBC prior to December 7, 2022.

2.30.3 **Commission Considerations** *(Resolutions Nos. 91-9 and 2022-04)*. In evaluating importations and exportations, the Commission's review will include consideration of the following factors:

A. For exportations of Basin water (including wastewater):

1. the effect of the exportation on the health and safety of the Basin community;

2. the effect of the exportation on existing or future water availability or shortages, including, but not limited to, sources within areas designated by the Commission as protected areas pursuant to Section 10.2 of the Compact, sources within Delaware River reaches with flows that are frequently augmented by reservoir releases due to low flows, and sources in areas subject to DRBC drought operations or state drought declarations within the past five years;

3. the effect of the exportation on aquatic ecosystems;

4. the effect of the exportation on water quality and waste assimilation;

5. the effect of the exportation on salinity concentrations;

6. the effect of the exportation on the water uses protected by the Comprehensive Plan, DRBC regulations or DRBC docket approvals, or on the ability of DRBC to effectuate the Comprehensive Plan;

7. the effect of the exportation, including its volume, rate, timing and duration, on passby or instream flow requirements contained in DRBC regulations or project approvals;

8. the sponsor's planned use for the water and any resulting public benefits;

9. the availability to the sponsor of alternatives to the exportation of Basin water and whether these alternatives have been diligently pursued, including without limitation a review of the sponsor's uses of water outside the sponsor's service area, if any; conservation measures undertaken by the sponsor or a public water system in the service area where the sponsor is located to forestall the need for a transfer of Basin water; and the results of a water audit (or audits) performed by the sponsor in accordance with Section 2.1.8 of the Delaware River Basin Water Code; and

10. whether the exportation would contravene sections 3.3 and 3.5(a) of the Compact by impeding or interfering with the rights, powers, privileges, conditions or obligations contained in the Supreme Court Decree in *New Jersey v. New York,* 347 U.S. 995 (1954), as modified by the Commission with the unanimous consent of the parties to the Decree.

B. For importations of water (including wastewater):

1. the effect of the importation on the health and safety of the Basin community with due consideration of the available alternatives to the importation;

2. the characterization and treatability of the water, if it consists of wastewater;

3. the potential impacts on water resources of the Delaware River Basin of the proposed importation and of each available alternative, including alternatives that avoid an importation of water, including wastewater. The potential impacts considered will

include the effects of the quality, volume, flow rate, timing and duration of the proposed importation in relation to:

a. flow objectives or passing or instream flow requirements contained in DRBC regulations or project approvals;

b. the record of hydrologic conditions in the proposed receiving region and the larger Delaware River Basin;

c. water uses as established by the Comprehensive Plan, including the DRBC Water Code;

d. the effect of the importation on aquatic ecosystems;

e. water quality and waste assimilation capacity in the affected receiving streams; and

f. prior regulations or orders of the Commission which may be identified during the course of the Commission's review.

2.30.4 **Analyses by Applicant for Section 3.8 Approval.** When an importation or exportation of water or wastewater is subject to review by the Commission, the applicant shall furnish the Commission with such analyses of the factors set forth in Sections 2.30.2 and 2.30.3 above and as the Commission may direct.

2.30.5 **Water Charges** *(Resolutions Nos. 91-9 and 2022-04)*. Exportation of Basin water constitutes consumptive water use and will be subject to the water charges in effect at the time of transfer in accordance with the Commission's Water Supply Charges regulations (18 CFR Part 420), as amended.

2.30.6 **Wastewater Treatment Requirements** *(Resolution No. 91-9)*. It is the policy of the Commission to give no credit toward meeting wastewater treatment requirements for importations of wastewater. An effluent loading or concentration authorized in accordance with a water-quality-based effluent limit such as a wasteload allocation may not include loadings attributable to an importation of wastewater.

2.30.7 **Existing Allocations** *(Resolution No. 91-9)*. It is the policy of the Commission to charge all exportations of Basin water against any special regional allocation or any depletive use allocation as may exist at the time of receipt of a completed application for exportation.

2.30.8 **1954 Supreme Court Decree.** This Section 2.30 is intended to preserve the diversions, compensating releases, rights, conditions, and obligations of the parties to the U.S. Supreme Court Decree of 1954 in *New Jersey v. New York,* 347 U.S. 995 (1954), as modified by the Commission with the unanimous consent of the parties to the Decree.

2.40 REGIONALIZATION

2.40.1 **Water Collection and Distribution Systems** *(Resolution No. 77-5)*. It shall be the policy of the Commission to support and promote regional solutions to water collection and distribution problems and the construction of regional systems for the provision for new water service. To that end:

A. **Existing Systems.** Use of established regional water collection and distribution systems by new water users throughout the Delaware River Basin will be encouraged whenever appropriate.

B. **Interconnections.** Construction of interconnections between established systems, both public and private, is in the public interest and will be encouraged.

C. **Small Water Supply Systems.** Proliferation of small water supply systems of insufficient size to maintain an efficient, safe and adequate level of service, will be discouraged.

D. **Franchise Areas.** Proliferation of small franchise areas so situated or designed as to preclude the establishment or extension of regional water collection and distribution systems will be discouraged.

E. **New Water Service Facilities.** Wherever practicable new water service facilities shall be planned with a view to future provision of water supply on a regional basis or to eventual interconnection to or incorporation within an established regional distribution system.

2.40.2 **Management Policy** *(Resolution No. 77-5)*. The Commission will cooperate with state and local government agencies, industries and private water companies seeking a regional solution to water collection and distribution problems. It will provide for administration of this policy through the requirements of its comprehensive planning programs and review of proposed projects under Section 3.8 of the Compact. Requirements giving effect to this policy may be imposed by the Commission as conditions to approval of new water supply or distribution projects. Implementation shall be in accordance with the terms and conditions of administrative agreements relating to review of projects in effect between the Commission and the signatory parties.

2.50 WATER METERING

2.50.1 **Service Metering** *(Resolution No. 87-7 Revised, amended by Resolution No. 2001-8)*.

A. Owners of water supply systems serving the public (purveyors) in the Basin that distribute water supplies in excess of an average of 100,000 gallons per day during any 30-day period shall install, or require to be installed, water meters incident to the provision or maintenance of service at the retail level.

B. (1) Meters shall be installed so as to record water use at all service connections; (2) water furnished for fire suppression purposes shall be exempt from metering provided that fire suppression (sprinkler) systems are equipped with detector check or flow detection devices; and (3) water removed from fire hydrants shall be exempt from metering unless otherwise required by a purveyor, or state or local government.

C. Water use shall be recorded or measured by means of a metering device that conforms to the performance specifications of the American Water Works Association. Purveyors shall adopt and implement a program for periodic maintenance, calibration, and replacement of meters to ensure meter accuracy.

D. Water charges collected by purveyors shall be based in part on metered usage.

E. It is recommended that, at least once a year, each purveyor: (1) provide each metered residential customer with information on savings available through water conservation; and (2) explain different methods of residential water conservation and their cost-effectiveness, and the availability of water conservation devices.

F. Installation of meters at existing unmetered connections shall be completed within ten years of the effective date of this regulation.

G. To avoid duplication of effort and to insure proper enforcement of this regulation, the Executive Director is hereby authorized to enter into administrative agreements with the Delaware Department of Natural Resources and Environmental Control, New Jersey Department of Environmental Protection, New York Department of Health, Pennsylvania Department of Environmental Protection, and other state agencies where appropriate, authorizing such agencies to administer and enforce the provisions of this regulation to the extent practicable and to adopt such rules and regulations of procedure as may be necessary to insure the proper administration and enforcement of this regulation. In the absence of an administrative agreement, the Commission shall serve as the administration and enforcement agency for this regulation.

2.50.2 **Source metering, recording and reporting** *(Resolution No. 86-12, amended by Resolution No. 2001-8)*.

A. Each person, firm, corporation, or other entity whose cumulative daily average withdrawal(s) from the surface and/or ground waters of the Basin from any surface water intake, spring, or well, or any combination of surface water intakes, springs, or wells operated as a system, exceeds 100,000 gallons per day during any 30-day period shall meter or measure and record their withdrawals and report such withdrawals to the designated agency. Withdrawals shall be measured by means of an automatic continuous recording device, flow meter, or other method, and shall be measured to within five percent of actual flow. Exception to the five percent performance standard, but no greater than ten percent, may be granted for surface water withdrawals by the designated agency if maintenance of the five percent performance standard is not technically feasible or economically practicable. Meters or other methods of measurement shall be subject to approval and inspection by the designated agency as to type, method, installation, maintenance, calibration, reading, and accuracy. Withdrawals shall at a minimum be recorded on a daily basis for public water supply use and on a biweekly basis for all other water uses and reported as monthly totals annually. More frequent recording or reporting may be required by the designated agency or the Commission.

B. The following water uses and operations are exempt from the metering or measurement requirements of subsection (A): agricultural irrigation; snowmaking; dewatering incidental to mining and quarrying; and dewatering incidental to construction. Persons engaged in such withdrawals in excess of 100,000 gallons per day during any 30-day period shall record the pumping rates and the dates and elapsed hours of operation of any well or pump used to withdraw water and report such information as required in subsection (A).

C. The following are the designated agencies for the purposes of this regulation: Delaware Department of Natural Resources and Environmental Control; New Jersey Department of Environmental Protection; and Pennsylvania Department of Environmental Protection. The Delaware River Basin Commission shall serve as the designated agency for administering and enforcing this regulation in the New York portion of the Basin.

D. Pursuant to Section 11.5 of the Compact, the designated agencies shall administer and enforce programs for metering, recording and reporting of water withdrawals, in accordance with this regulation and any applicable state regulations.

E. This regulation shall be effective January 1, 1987.

2.50.3 **Reporting Requirements** *(Resolutions Nos. 2001-8 and 2009-1).*

A. Annual Reporting Requirements.

1. Water Supply Systems Serving the Public. The owner(s) of each water supply system serving the public and subject to requirements under subsection 2.50.1, subsection 2.50.2, and the Ground Water Protected Area Regulations for Southeastern Pennsylvania shall report the following data on an annual basis to the designated agency.

a. Source Data

i. Withdrawal Data. The following data shall be reported for each withdrawal source separately (i.e., each well or surface water intake):
- Year
- Facility Identification Code (State Code)
- State Permit Number
- Facility Name
- Monthly Withdrawal Amount (MG)

ii. Bulk Purchases from Other Suppliers. The following data shall be reported for each bulk purchase separately:
- Bulk Supplier Name
- Bulk Supplier's Source Name(s)
- Monthly Bulk Purchase Amount (MG)

b. Service Area Data. The following data shall be reported separately for each county served:

i. Service Area Name(s)

ii. Total Annual Water Use by Category (MG). All usage shall be reported according to the following categories:
- Residential metered (including apartment complexes)
- Commercial metered
- Institutional metered
- Industrial metered
- Bulk Sales

- Other metered (Specify)
- Non-revenue water, including unbilled authorized consumption, apparent losses, and real losses computed in accordance with Section 2.1.8 D. of this *Water Code*
- Unaccounted for water (defined as the amount of water entering the distribution system minus the amount of water delivered through service meters) [3]
- Total

2. Other Withdrawals. Each person, firm, corporation, or other entity, except water supply systems serving the public subject to requirements under subsection 2.50.2 and the Ground Water Protected Area Regulations for Southeastern Pennsylvania shall report the following data on an annual basis to the designated agency. The data shall be reported for each withdrawal source separately (i.e., each well or surface water intake). Changes to any other information required under Section A above, shall also be reported. All information required under Section A above shall be completed for new withdrawals for the first year of operation.

   a. Year
   b. Facility Identification Code (State Code)
   c. State Permit Number
   d. Facility Name
   e. Monthly Withdrawal Amount (MG)
   f. Evaporative Loss Amount (MG) (if known)
   g. Product Use Amount (MG) (if known)
   h. Estimated Monthly Wastewater Discharge Amount (MG)

B. To avoid duplication of effort and to insure proper enforcement of this regulation, the Executive Director is hereby authorized to enter into administrative agreements with the following designated agencies: Delaware Department of Natural Resources and Environmental Control, New Jersey Department of Environmental Protection, New York Department of Health, Pennsylvania Department of Environmental Protection, and other state agencies where appropriate, authorizing such agencies to administer and enforce the provisions of this regulation and to adopt such rules and regulations of procedure as may be necessary to insure proper administration and enforcement of this regulation. In the absence of an administrative agreement, the Commission shall serve as the designated agency. Designated agencies are encouraged to implement and maintain automated data collection and reporting systems to facilitate the efficient transfer of data to the Delaware River Basin Commission. The administrative agreements shall specify the format for data submission.

[3] Further breakdown of unaccounted for water can be provided. For example, estimated fire hydrant use, other unmetered public uses, and leakage losses.

2.100 FLOOD - DAMAGE REDUCTION

2.100.1 **Non-Structural Measures** *(Resolution No. 76-15)*. Flood damage reduction shall be achieved in part through non-structural measures. To that end, no project shall be approved under Section 3.8 of the Compact unless it complies with such regulations and standards relating to the nature and extent of the uses of land in flood plains as the Commission may adopt and from time to time amend pursuant to Section 6.2 of the Compact.

2.150 WATERSHED MANAGEMENT

2.150.1 **Sound Practices** *(Compact, Section 7.1)*. "The commission shall promote sound practices of watershed management in the basin..."

2.150.2 **Soil Erosion** *(Resolution No. 71-13)*. Any project within the jurisdiction of the Commission which involves a significant disturbance of ground cover shall include sound practices of excavation, sediment retention, backfill, and reseeding to minimize soil erosion and deposition of sediment in streams.

2.150.3 **Brandywine Watershed** *(Resolution No. 62-21)*. The Commission interprets the "Brandywine Project" as described in the Comprehensive Plan, Phase I, Project 11 and Plate 11, to require, at a minimum, the following criteria as to such project.

A. All projects calling for exportation of water from the major basin in which it originates shall require a public hearing prior to action by the Commission.

B. The design of flood control, recreation, and other water control projects shall be such as not to adversely affect the low flow characteristics of Brandywine Creek.

C. The design of multi-purpose reservoirs which include water supply as a purpose shall provide maximum feasible storage for low flow augmentation.

D. Appropriate control measures shall be employed to maintain water quality in Brandywine Creek at the Delaware-Pennsylvania state line.

E. The project shall be operated according to a plan which shall recognize water needs and rights of the States of Delaware and Pennsylvania in accordance with the doctrine of equitable apportionment as prescribed by Section 3.3 of the Compact.

2.200 FISH AND WILDLIFE

2.200.1 **Fish and Wildlife** *(Resolution No. 67-7)*. The quality of Basin waters shall be maintained in a safe and satisfactory condition for...wildlife, fish and other aquatic life.

2.250 RECREATION

2.250.1 **Water-Related Recreation** *(Compact, Article 8)*. "The commission shall provide for the development of water-related public sports and recreational facilities."

2.300 HYDROELECTRIC POWER

2.300.1 **Hydroelectric Power** *(Compact, Section 9.1)*. "The waters of the Delaware River and its tributaries may be impounded and used by or under authority of the commission for the generation of hydroelectric power and hydroelectric energy."

2.300.2 **Small-Scale Hydroelectric Power** *(Resolution No. 79-24)*. It shall be the policy of the Commission to encourage development of small-scale hydroelectric power and energy at existing and proposed impoundments in the Delaware Basin. The development of such power and energy shall be coordinated with other water uses and consistent with policies in the Comprehensive Plan.

2.350 WETLANDS PROTECTION

2.350.1 **Definition** *(Resolution No. 78-10)*. Wetlands shall mean those areas which are inundated by surface or ground water with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated soil conditions for growth and reproduction or are delineated as wetlands by a signatory state.

2.350.2 **Policy of Protection and Preservation** *(Resolution No. 78-10)*. It shall be the policy of the Commission to support the preservation and protection of wetlands by:

A. Minimizing adverse alterations in the quantity and quality of the underlying soils and natural flow of waters that nourish wetlands.

B. Safeguarding against adverse draining, dredging or filling practices, liquid or solid waste management practices, and siltation.

C. Preventing the excessive addition of pesticides, salts or toxic materials arising from non-point source wastes.

D. Preventing destructive construction activities generally.

2.350.3 **Safeguard Public Interest** *(Resolution No. 78-10)*. Review and consideration of any project affecting wetlands conducted pursuant to this policy shall include balanced assessment of the environmental and economic impact of the project. Encroachment on wetlands shall not be permitted unless such assessment shall establish that no feasible alternative exists and that overriding public interest has been demonstrated. Project encroachments having no alternatives and demonstrating an overriding public interest shall be planned, constructed and operated in a manner to safeguard the present and future public interest in the environmental values derived from such areas.

2.350.4 **Commission Jurisdiction** *(Resolution No. 78-10)*. The Commission shall exercise its jurisdiction over wetlands in a manner which will assist, supplement and overview actions of agencies signatory to the Delaware River Basin Compact and in a manner that will avoid unnecessary regulatory activity.

To avoid duplication or conflicting regulatory activity, the Commission will undertake review and action on projects affecting 25 or more acres of wetlands as provided for in Section 2-3.5

of the Rules of Practice and Procedure. Projects affecting less than 25 acres of wetlands will be subject to Commission review and action only under the following circumstances:

A. Where neither a state nor federal level review and permit system is in effect, and the Executive Director determines that a project is of major regional or interstate significance requiring action by the Commission; or,

B. When a Commissioner or the Executive Director determines that the final action of a state or Federal permitting agency may not adequately reflect the Commission's policy as to wetlands of the basin.

In the case of a project affecting less than 25 acres for which there has been issued a state or Federal permit, a determination to undertake review and action by the Commission shall be made no later than 30-days following notification of the Commission of such permit action. The Executive Director, with the approval of the chairman, may at any time within the 30-day period inform any permit holder, signatory party or other interested party that the Commission will decline to undertake review and action concerning any such project.

2.400 DESIGN STREAMFLOW CRITERIA *(Resolution No. 83-12)*.

2.400.1 **Water Supply.** The drought of record, which occurred in the period 1961-1967, shall be the basis for determination and planning of dependable Basin water supply.

2.400.2 **Salinity Control.** The drought of record, which occurred in the period 1961-1967, shall be the basis for planning and development of facilities and programs for control of salinity in the Delaware Estuary.

2.400.3 **Waste-Assimilative Capacity.** (See Section 4.30.7.7 of Basin Regulations--Water Quality--Administrative Manual--Part III.)

ARTICLE 3

WATER QUALITY STANDARDS FOR THE DELAWARE RIVER BASIN

3.1 GENERAL

3.1.1 **Policy and Standards** *(Compact, Section 5.2)*. "The commission may assume jurisdiction to control future pollution and abate existing pollution in the waters of the basin, whenever it determines after investigation and public hearing upon due notice that the effectuation of the comprehensive plan so requires. The standard of such control shall be that pollution by sewage or industrial or other waste originating within a signatory state shall not injuriously affect waters of the basin as contemplated by the comprehensive plan. The commission, after such public hearing may classify the waters of the basin and establish standards of treatment of sewage, industrial or other waste, according to such classes including allowance for the variable factors of surface and ground waters, such as size of the stream, flow movement, location, character, self-purification, and usage of the waters affected. After such investigation, notice and hearing the commission may adopt and from time to time amend and repeal rules, regulations and standards to control such future pollution and abate existing pollution, and to require such treatment of sewage, industrial or other waste within a time reasonable for the construction of the necessary works, as may be required to protect the public health or to preserve the waters of the basin for uses in accordance with the comprehensive plan."

3.10 BASINWIDE SURFACE WATER QUALITY STANDARDS

3.10.1 **Application** *(Resolution No. 67-7)*. This Article shall apply to all surface waters of the Delaware River Basin.

3.10.2 **Water Uses**

A. **Uses Paramount** *(Resolution No. 67-7)*. Water uses shall be paramount in determining stream quality objectives which, in turn, shall be the basis for determining effluent quality requirements.

B. **Uses to be Protected** *(Resolution Nos. 67-7 and 78-7)*. The quality of Basin waters, except intermittent streams, shall be maintained in a safe and satisfactory condition for the following uses:

1. agricultural, industrial, and public water supplies after reasonable treatment, except where natural salinity precludes such uses;

2. wildlife, fish and other aquatic life;

3. recreation;

4. navigation;

5. controlled and regulated waste assimilation to the extent that such use is compatible with other uses;

6. such other uses as may be provided by the Comprehensive Plan.

C. **Other Uses** *(Resolution No. 78-7)*.

1. Current uses of intermittent streams may, at the discretion of the Commission, be maintained.

3.10.3 **Stream Quality Objectives**

A. **Antidegradation of Waters.**

1. **Interstate Waters** *(Resolution No. 70-3)*.

It is the policy of the Commission to maintain the quality of interstate waters, where existing quality is better than the established stream quality objectives, unless it can be affirmatively demonstrated to the Commission that such change is justifiable as a result of necessary economic or social development or to improve significantly another body of water. In implementing this policy, the Commission will require the highest degree of waste treatment determined to be practicable. No change will be considered which would be injurious to any designated present or future use.

2. **Special Protection Waters** *(Resolution Nos. 92-21, 94-2, and 2008-9).*

It is the policy of the Commission that there be no measurable change in existing water quality except towards natural conditions in waters considered by the Commission to have exceptionally high scenic, recreational, ecological, and/or water supply values. Waters with exceptional values may be classified by the Commission as either Outstanding Basin Waters or Significant Resource Waters.

In determining waters suitable for classification as Special Protection Waters, the Commission will consider nomination petitions from local, state and federal agencies and governing bodies, and the public for waters potentially meeting the definition of Outstanding Basin Waters and Significant Resource Waters as described in 3.10.3A.2.a.

The following policies shall apply to waters classified by the Commission as Outstanding Basin Waters or Significant Resource Waters and their drainage areas:

a. Definitions

1) "Outstanding Basin Waters" are interstate and contiguous intrastate waters that are contained within the established boundaries of national parks; national wild, scenic and recreational rivers systems; and/or national wildlife refuges that are classified by the Commission under Subsection 2.g.1) hereof as having exceptionally high scenic, recreational, and ecological values that require special protection.

2) "Significant Resource Waters" are interstate waters classified by the Commission under Subsection 2.g.2) hereof as having exceptionally high scenic, recreational, ecological, and/or water supply uses that require special protection.

3) "Existing Water Quality" for purposes of the Special Protection Waters program is defined for a limited set of parameters, consisting of those listed in Tables 1 and 2. Existing water quality is defined in Table 1 for stream reaches between Hancock, New York and the Delaware Water Gap and in Table 2 for stream reaches between the Delaware Water Gap and Trenton, New Jersey. Where existing water quality is not defined in Tables 1 and 2, existing water quality may be defined by extrapolation from the nearest upstream or downstream Interstate Control Point, from data obtained from sites within the same ecoregion, or on the basis of best scientific judgment.

4) "Measurable Change to Existing Water Quality" is defined as an actual or estimated change in a seasonal or non-seasonal mean (for SPW waters upstream of and including River Mile 209.5[*]) or median (for SPW waters downstream of River Mile 209.5) in-stream pollutant concentration that is outside the range of the two-tailed upper and lower 95 percent confidence intervals that define existing water quality.

5) "Public Interest" is a determination of all the positive and negative social, economic and water resource impacts associated with a project affecting a Significant Resource Water. A project that is in the public interest is one that, at a minimum, provides housing, employment, and/or public facilities needed to accommodate the adopted future population, land use, and other goals of a community and region without causing deleterious impacts on the local and regional environment and economy. In general, such a project would be one that conforms to a locally-adopted growth management plan which is undergoing active implementation by local officials, is supported by the larger community as a whole, and is compatible with national, state and regional objectives as well. For a project not fully meeting the above criteria, the Commission will weigh the positive and negative impacts to determine public interest.

6) "Regional Resources Management Plan" is a management plan developed and adopted by the government agency that is assigned primary responsibilities for the overall management of a National park, scenic and recreational river and/or wildlife refuge which contains waters that have been classified by the Commission as Outstanding Basin Waters. A regional resources management plan is one that addresses, among other subjects, the location and general size of allowable wastewater treatment facilities. A regional resources management plan, or applicable portions thereof, may be incorporated into the Commission's Comprehensive Plan.

[*] River Mile 209.5 is the downstream boundary of the Delaware Water Gap National Recreation Area. SPW waters upstream of and including this point received SPW designation in 1992 and SPW waters below this point received SPW designation in 2005. The water quality strategy used to support the later designation differed from that employed a decade earlier.

7) "Natural Condition" is the ecological state of a water body that represents conditions without human influence.

8) "Non-discharging/Load Reduction Options" are options whereby the amount of wastewater discharged to a surface stream is reduced by (a) instituting load reduction measures involving reductions in pollutants at the source, possibly accompanied by water conservation practices to reduce the amount of flow received at a wastewater treatment plant; and/or (b) using land-based wastewater disposal whereby treated wastewater effluent is further treated by percolation and other soil-based processes instead of in-stream processes.

9) “Natural Wastewater Treatment Systems” are soil-based, vegetative and/or aquatic wastewater treatment systems characterized by the use of low energy treatment processes that use and simulate "natural" environmental processes such as primary and secondary productivity, crop production, wetlands, ponds and others.

10) "Non-Point Sources" are sources of pollutants carried by surface and sub-surface runoff that are derived from human activities and land use.

11) "Cumulative Impact" is the net sum of all individual impacts including all point and non-point source impacts.

12) "Boundary Control Points" are locations where monitoring and other activities occur to determine existing water quality, no measurable change, and related pollution control requirements as applicable. Boundary Control Points for Outstanding Basin Waters will generally correspond to federally-established boundaries for National parks, etc. while those for Significant Resource Waters will generally correspond to the confluence of an intrastate tributary with the classified interstate water. The locations of Boundary and Interstate Control Points are described in Part C of Table 1 for the reach between Hancock, N.Y. and the Delaware Water Gap and in Tables 2A and 2B for the reach between the Delaware Water Gap and Trenton, N.J.).

13) "Interstate Control Points" are general locations used to assess water quality for purposes of defining and protecting Existing Water Quality. The locations of Boundary and Interstate Control Points are described in Part C of Table 1 for the reach between Hancock, N.Y. and the Delaware Water Gap and in Tables 2A and 2B for the reach between the Delaware Water Gap and Trenton, N.J.).

14) "Growth Management Plans" are locally developed and adopted plans expressing the social, economic, and environmental goals and objectives of the local community. A growth management plan in this context can be one plan, a series of plans, local ordinances, and other official documents of a municipality. Growth management plans outline the community's desired growth patterns and related infrastructure. To be considered in the Commission's determination of public interest, growth management plans must be undergoing

active implementation and forming the basis for local governmental decisions.

15) An "Expanding Wastewater Treatment Project" is a project involving either (a) alterations or additions to an existing wastewater treatment facility that result in a reviewable project in accordance with the Commission's *Rules of Practice and Procedure***;** or (b) a new load or increased flow or loading from an existing facility that was not included in a NPDES permit or docket effective on the date of SPW designation.

16) "Substantial Alterations or Additions" are those additions and alterations resulting in: (a) a complete upgrade or modernization of an existing wastewater treatment plant, including substantial replacement or rehabilitation of the existing wastewater treatment process or major physical structures such as headworks, settling tanks, and biological/chemical treatment and filtration tanks, whether conducted as a single phase or a multi-phased project or related projects; or (b) a new load or increased flow or loading from an existing facility that was not included in a NPDES permit or docket effective on the date of SPW designation. Among other projects, modifications made solely to address wet weather flows; and alterations that are limited to changes in the method of disinfection and/or the addition of treatment works for nutrient removal are not deemed to be "Substantial Alterations or Additions."

17) "Load" and "loading" are used interchangeably in these regulations and refer to the amount of a substance or material, expressed as a weight per unit time (pounds per day, for example), that is discharged from a facility.

18) "Incremental load" and "incremental loading" are used interchangeably in these regulations and refer to the load that is greater than the actual load discharged by a facility at the time of SPW designation.

19) "Best Management Practices" are any structural or non-structural measure designed to reduce stormwater runoff and resulting non-point source loads.

20) "Watershed Non-Point Source Management Plan" is a plan prepared for a watershed that describes the basis for, and overall control strategy of, a plan for controlling, limiting, and abating all relevant non-point source loadings within the watershed. The plan will identify and assess important natural and anthropogenic features and influences on water quality; existing local, state and other non-point source control programs; potential non-point source loads on Special Protection Waters; watershed-specific protection requirements; and the institutional needs and arrangements required to implement the plan.

21) "Non-Point Source Pollution Control Plan" is a plan describing the Best Management Practices to be used at the project site and in the project service area to control increases in non-point source pollutant loadings resulting from the project.

22) "Priority Watershed" is a watershed that has been evaluated in conjunction with other watersheds draining to Special Protection Waters and designated by the Commission as having a substantial potential pollution impact on the water quality of Special Protection Waters in comparison with other watersheds.

b. No Measurable Change to Existing Water Quality

1) Outstanding Basin Waters shall be maintained at their existing water quality. Point and non-point sources of pollutants originating from outside the boundaries of stream reaches classified as Outstanding Basin Waters shall be treated as required and then dispersed in the receiving water so that no measurable change occurs at Boundary and Interstate Control Points. Point sources of pollutants discharged to Outstanding Basin Waters shall be treated as required and then dispersed in such a manner that complete mixing of effluent with the receiving stream is, for all practical intents and purposes, instantaneous.

2) Significant Resource Waters shall not be degraded below existing water quality as defined in these regulations, although localized degradation of water quality may be allowed for initial dilution if the Commission**,** after consultation with the state NPDES permitting agency, finds that the public interest warrants these changes. Point and non-point sources of pollutants originating from outside the boundaries of stream reaches classified as Significant Resource Waters shall be treated as required and then dispersed in the receiving water so that no measurable change occurs at Boundary and Interstate Control Points, unless a mixing zone is allowed in Significant Resource Waters, and then to the extent of the mixing zone designated as set forth in this section. If degradation of water quality is allowed for initial dilution purposes, the Commission**,** after consultation with the state NPDES permitting agency, will designate mixing zones for each point source and require the highest possible point source treatment levels necessary to limit the size and extent of the mixing zones. The dimensions of the mixing zone will be determined by the Commission after consultation with the state NPDES permitting agency based upon an evaluation of (a) site-specific conditions, including channel characteristics**;** (b) the cost and feasibility of treatment technologies; and (c) the design of the discharge structure. Mixing zones will be developed using the wastewater treatment facility design conditions and low ambient flow conditions unless site-specific characteristics indicate otherwise. Non-point sources shall be subject to the requirements of Section 3.10.3 A.2.e. for the implementation of non-point source control plans.

c. Allowable Discharges

1) Direct discharges of wastewater to Special Protection Waters are discouraged. The following categories of projects discharging directly to Special Protection Waters may be approved only after the applicant demonstrates that it has fully evaluated all non-discharge/load reduction alternatives and is unable to implement these alternatives because of technical and/or financial infeasibility**:** new wastewater treatment facilities and substantial alterations or additions to existing wastewater treatment facilities. When evaluating non-discharge/load reduction alternatives, the applicant shall consider alternatives to any and all loadings – both existing and proposed – in excess of actual loadings at the time of SPW designation.

2) The following categories of projects within the drainage area of Special Protection Waters may be approved only after the applicant demonstrates that it has fully evaluated all natural wastewater treatment system alternatives and is unable to implement these alternatives because of technical and/or financial infeasibility: new wastewater treatment facilities and substantial alterations or additions to existing wastewater treatment facilities. When evaluating natural treatment alternatives, the applicant shall consider alternatives to any and all loadings – both existing and proposed – in excess of actual loadings at the time of SPW designation.

3) The following categories of projects discharging directly to Significant Resource Waters may be approved only following a determination that the project is in the public interest as that term is defined in Section 3.10.3.A.2.a.5): new wastewater treatment facilities and substantial alterations or additions to existing wastewater treatment facilities.

4) The general number, location and size of future wastewater treatment facilities discharging to Outstanding Basin Waters (if any) shall be developed taking into consideration any adopted regional resource management plan as defined in Section 3.10.3 A.2.a.6) and, on an individual project basis, considering the feasibility of non-discharge/load reduction alternatives.

d. Wastewater Treatment Facilities

1) All wastewater treatment facilities discharging to waters classified as Special Protection Waters shall have available standby power facilities unless it can be shown that a proposed discharge can be interrupted for an extended period with no threat to the water quality of Special Protection Waters. Existing facilities must comply with this requirement upon their next permit renewal under the delegated national pollutant discharge elimination system (NPDES) permit program.

2) All wastewater treatment facilities discharging to Special Protection Waters that are not staffed 24 hours every day shall have a remote alarm that will continuously monitor plant operations whenever the plant is not staffed. The alarm system will be designed to alert someone available with authority and knowledge to take appropriate action. Existing facilities must comply with this requirement upon their next permit renewal under the delegated NPDES program.

3) All new wastewater treatment facilities discharging to Outstanding Basin Waters shall not have visual discharge plumes. Existing facilities must comply with this requirement upon their next permit renewal under the delegated NPDES program.

4) All new wastewater treatment facilities discharging to Special Protection Waters shall prepare and implement an emergency management plan following the guidance provided in the Water Pollution Control Federation's *Manual of Practice SM-8, Emergency Planning for Municipal Wastewater Facilities*, the U.S. EPA's *Design Criteria for Mechanical, Electric and Fluid System and Component Reliability* or other suitable manuals. Emergency management plans shall include an emergency notification procedure covering all affected downstream users. Existing facilities must comply with this requirement upon their next permit renewal under the delegated NPDES program.

5) The minimum level of wastewater treatment for the following categories of projects will be "Best Demonstrable Technology" as defined below: all new wastewater treatment facilities and all projects involving substantial alterations or additions to existing wastewater treatment facilities when the new or expanding facility discharges directly to Outstanding Basin Waters or Significant Resource Waters. Equivalent effluent criteria for industrial facilities and seasonal limits, if any, will be developed on a case-by-case basis. The following 30-day average effluent criteria define Best Demonstrable Technology*:

5-day CBOD:	10 mg/l or less
Dissolved oxygen:	6.0 mg/l or greater
Total suspended solids:	10 mg/l or less
Ammonia-nitrogen:	1.5 mg/l or less
Total nitrogen:	10.0 mg/l or less
Total phosphorus:	2.0 mg/l or less
Fecal coliform:	50/100 ml or less

* The effluent criteria that define Best Demonstrable Technology (BDT) were established by these Regulations in 1992 when DRBC originally promulgated the Special Protection Waters regulations for point source discharges. Although treatment technologies have advanced since that year, these "BDT" criteria have been retained for the limited purposes of the SPW program. BDT as defined herein may be superseded, however, by applicable federal, state or DRBC criteria that are more stringent.

6) Best demonstrable technology for disinfection shall be ultraviolet light disinfection or an equivalent disinfection process that results in no harm to aquatic life, does not produce toxic chemical residuals, and results in effective bacterial and viral destruction.

7) For wastewater treatment facility discharge projects that satisfy applicable requirements of Sections 3.10.3 A.2.b. through d. above, the Commission may approve effluent trading on a voluntary basis between point sources within the same watershed or between the same Interstate or Boundary Control Points to achieve no measurable change to existing water quality. Applicants seeking the Commission's approval for a trade must demonstrate equivalent load and pollutant reductions and the ability (through contracts, docket conditions, NPDES effluent limits or other legal instruments) to ensure continuous achievement of the required reductions for a term of not less than five (5) years or the time required for the point source(s) to install the treatment needed to demonstrate no measurable change to Existing Water Quality, whichever term is longer. States will be encouraged to incorporate appropriate conditions in the next NPDES permits issued to the trading dischargers.

8) For wastewater treatment facilities within the drainage area to Special Protection Waters, the actual loads and design flows included in a NPDES permit or docket effective at the time of Special Protection Waters designation ("SPW designation") may continue without triggering the additional treatment requirements and alternatives analyses required by these regulations. However, when Substantial Alterations or Additions as defined herein are proposed, although the actual discharge at the time of SPW designation remains exempt from additional requirements, the proposed expansion cannot be approved until (a) the applicant demonstrates that it has evaluated all non-discharge load reduction alternatives for all or a portion of the incremental load and is unable to implement these alternatives because of technical or financial infeasibility (for discharges directly to Outstanding Basin Waters (OBW) and Significant Resource Waters (SRW)); (b) the applicant demonstrates that it has evaluated all natural wastewater treatment system alternatives for all or a portion of the incremental load and is unable to implement these alternatives because of technical or financial infeasibility (for discharges directly to OBW and SRW and for tributary discharges); (c) the Commission has determined that the project is demonstrably in the public interest as defined herein (for discharges directly to SRW); (d) the minimum level of treatment to be provided for the incremental discharge is Best Demonstrable Technology as defined herein (for discharges directly to OBW and SRW); and (e) the applicant demonstrates that the project will cause no measurable change to Existing Water Quality as defined herein (for discharges directly to OBW and SRW and for tributary discharges).

9) For wastewater treatment facility projects subject to the no measurable change requirement, the demonstration of no measurable change to existing water quality shall be satisfied if the applicant demonstrates that the new or incremental increase in the facility's flow or load will cause no measurable change at the relevant water quality control point for the parameters denoted by asterisks in Tables 1 and 2 of this section: ammonia (NH_3 N); dissolved oxygen (DO); fecal coliform (FC); nitrate (NO_3 N) or nitrite + nitrate (NO_2 N + NO_3 N); total nitrogen (TN) or total Kjeldahl nitrogen (TKN); total phosphorus (TP); total suspended solids (TSS); and biological oxygen demand (BOD) (Table 1 only). In making the demonstration required in the preceding sentence the applicant shall use a DRBC-approved model of the tributary or main stem watershed if available. Where a DRBC-approved model is not available, the applicant shall use other methodologies submitted to and approved in advance by the Commission to estimate cumulative effect at the applicable control point.

e. Control of Non-Point Sources

1) Projects subject to review under Section 3.8 of the Compact that are located in the drainage area of Special Protection Waters must submit for approval a Non-Point Source Pollution Control Plan that controls the new or increased non-point source loads generated within the portion of the project's service area which is also located within the drainage area of Special Protection Waters.

The plan will document which Best Management Practices described in handbooks, manuals and other documents prepared by the applicable state environmental agency that the project sponsor will use to control, to the extent possible, the non-point source loads from the project.

In approving the plan, the Commission may consider, but not require, tradeoffs, that the project sponsor might propose, between the reduction of potential new non-point source loads and (a) equivalent reductions in existing non-point source loads; (b) equivalent point source loads; and c) equivalent non-point source loads from outside the affected service area. Applicants desiring Commission approval of tradeoff strategies must provide information concerning the amount of non-point source loads to be reduced through an equivalent tradeoff process and, where necessary, the enforceable mechanisms and/or agreements required to implement the tradeoffs. Where tradeoffs have been approved, control measures for existing non-point sources must be substantially in-place prior to project operation.

The Executive Director may, upon agreement with the state, delegate review and approval responsibilities under this section to the appropriate state environmental agency.

Exceptions to this policy are:

(a) Public authorities, other special purpose districts, and private corporations that do not have the legal authority to implement non-point source controls in their new or expanded service areas. Such entities are subject, however, to the requirement set forth in paragraph 3.10.3 A.2.e.2) below, that no new connection may be approved unless the area(s) served is (are) regulated by a non-point source pollution control plan approved by the Commission.

(b) The requirement for service area non-point source control plans is automatically satisfied if the project service area is part of a watershed non-point source management plan that has been adopted into the Commission's Comprehensive Plan and is being implemented.

(c) Projects located above major surface water impoundments listed in Section 3.10.3.A.2.g.5) where time of travel and relevant hydraulic and limnological factors preclude a direct impact on Special Protection Waters.

(d) Projects located in municipalities that have adopted and are actively implementing non-point source/stormwater control ordinances that have been reviewed and approved by the Commission.

(e) Projects located in watersheds where the applicable state environmental agency, county government, and local municipalities are participating in the development of a watershed plan being prepared under the auspices of these regulations, the federal Clean Water Act, or state initiatives.

2) Approval of a new or expanded water withdrawal and/or wastewater discharge project will be subject to the condition that any new connection to the project system only serve an area(s) regulated by a non-point source pollution control plan which has been approved by the Commission.

3) Within two years after the adoption of Special Protection Waters non-point source control regulations, the Commission shall, after substantial consultation with local, county, state and federal agencies and the general public, publish a report presenting its methodology for prioritizing watersheds in the Special Protection Waters drainage area including alternatives, if any; a preliminary listing of priority watersheds in the drainage area; and a recommended plan of study for the development of watershed-specific management plans. For waters classified as Special Protection Waters after December 1992, the watershed prioritization process will be completed within two years after the Special Protection Waters are classified.

Watershed priorities will be determined from a comparative analysis of each watershed's location and potential, future impact on existing water quality at designated Boundary and Interstate Control Points. In determining priorities, the Commission will consider:

(a) the physical characteristics of the watershed including slopes, soils, existing land use and land cover, drainage characteristics, and others;

(b) the status of existing water quality and trends, if any, of the watershed as measured at its Boundary Control Point;

(c) the anticipated mass loadings of new non-point sources;

(d) the watershed management and planning priorities of applicable local, state and federal agencies;

(e) the current status of local land use/non-point source controls in the watershed;

(f) the stormwater permitting activity in the NPDES permitting program; and

(g) other natural and anthropogenic factors.

4) Once the public has been given an opportunity to comment, the Commission will adopt a list of priority watersheds. This listing will be reviewed and modified as necessary on a two year basis after adoption.

5) Within five years after adopting a list of priority watersheds draining to Special Protection Waters, the Commission shall develop, or encourage the development of, watershed non-point source management plans for each priority watershed unless new circumstances result in deferring plan completion. Watershed non-point source management plans will focus on non-point source loadings but will consider total loads including both point and non-point sources and their interrelationship where necessary.

During plan development, the Commission will seek technical assistance from the applicable state environmental agency and all other applicable federal, state, county, and local governmental units; and will consider direct delegation of plan development (with concurrence of the state environmental agency) to any county or other applicable governmental entity desiring to perform the watershed planning activities on behalf of, or instead of, the Commission. Where more than one political unit shares a watershed, joint plan development arrangements between the Commission and delegated agencies will be developed.

6) Watershed management plans developed by the Commission or approved by the Commission will be incorporated into the Commission's Comprehensive Plan in accordance with the *Rules of Practice and Procedure*.

7) The Commission shall encourage the voluntary development of watershed management plans for tributary watersheds entering Special Protection Waters and local non-point source regulatory programs that conform to the goals and objectives of the Special Protection Waters regulations as promulgated in Sections 3.10.3A.2. Within the limits of its resources, the Commission will provide technical assistance, a clearinghouse for non-point sources information, regulatory authority, inter-agency coordination, and other services to local and other governmental units desiring to develop and implement stormwater and non-point source watershed plans and local regulatory programs.

8) The Commission shall encourage the submission of watershed management plans prepared voluntarily and independently from these regulations for consideration of inclusion into the Commission's Comprehensive Plan.

f. Policies Regarding Inter-Government Responsibilities

1) Inter-relationship of State and Commission Responsibilities.

The applicable state environmental agency shall assure to the extent possible that existing water quality in Special Protection Waters is not measurably changed by pollution discharged into the intrastate tributary watersheds within its jurisdiction. For water quality management purposes, the state environmental agency and the Commission will jointly establish Boundary Control Points as described in Section 3.10.3.A.2a.12) and g.4).

In performing this responsibility, the state environmental agency shall require that all new or expanding wastewater treatment facilities and existing wastewater treatment plants applying for a discharge permit or permit renewal under the delegated NPDES program to comply with the policies as prescribed in Section 3.10.3.A.2.d. unless it can be demonstrated, after consultation with the Commission, that these requirements are not necessary for the protection of existing water quality in the Special Protection Waters due to distance from Special Protection Waters, time of travel, the existence of water storage impoundments, the waste assimilation characteristics of the receiving stream, and other relevant hydrological and limnological factors.

The Commission shall, to the extent practicable and necessary, coordinate and oversee all Special Protection Waters activities and assist the efforts of each state environmental agency to control pollutants originating from intrastate tributary watersheds. The Commission shall determine pollution control requirements for

discharges to Special Protection Waters; for non-point sources draining directly into Special Protection Waters; and total non-point source loads emanating from intrastate tributary watersheds as measured at Boundary Control Points.

g. Classified Special Protection Waters

1) The following stream reaches are classified as Outstanding Basin Waters:

(a) The Upper Delaware Scenic and Recreational River (Delaware River between River Mile 330.7 and 258.4);

(b) Those portions of intrastate tributaries located within the established boundary of the Upper Delaware Scenic and Recreational River Corridor;

(c) The Middle Delaware Scenic and Recreational River (Delaware River between River Miles 250.1 and 209.5);

(d) Those portions of tributaries located within the established boundary of the Delaware Water Gap National Recreation Area.

2) The following stream reaches are classified as Significant Resource Waters:

(a) The Delaware River between River Miles 258.4 (the downstream boundary of the Upper Delaware Scenic and Recreational River) and 250.1 (the upstream boundary of the Delaware Water Gap National Recreation Area);

(b) The Lower Delaware River between River Miles 209.5 (the downstream boundary of the Delaware Water Gap National Recreation Area) and 134.34 (the Calhoun Street Bridge near the Head of Tide at Trenton, NJ).

3) Definitions of Existing Water Quality for waters classified in paragraphs 1) and 2) above are presented in Part A of Table 1 for the Upper Delaware Scenic & Recreational River and Part B of Table 1 for the reach from Millrift, Pa. to the Delaware Water Gap, including the Middle Delaware Scenic and Recreational River; and in Table 2 for the reach between the Delaware Water Gap and Trenton, N.J.

4) The locations of Boundary and Interstate Control Points are described in Part C of Table 1 for the reach between Hancock, N.Y. and the Delaware Water Gap and in Table 2 for the reach between the Delaware Water Gap and Trenton, N.J.

5) Major surface water impoundments referenced in Section 3.10.3A.2.e.1)c.) are the following:

(a) Cannonsville Reservoir (New York State)

(b) Pepacton Reservoir (New York State)

(c) Neversink Reservoir (New York State)

(d) Lake Wallenpaupack (Pennsylvania)

(e) Mongaup System (New York State).

TABLE 1. DEFINITION OF EXISTING WATER QUALITY IN THE DELAWARE RIVER BETWEEN HANCOCK, NEW YORK AND THE DELAWARE WATER GAP[1]

PART A: UPPER DELAWARE SCENIC & RECREATIONAL RIVER[2]

PARAMETER	MEAN	95 PERCENT CONFIDENCE LIMITS OF MEAN	10TH AND 90TH PERCENTILES	ADDITIONAL
Dissolved oxygen* (mg/l)	9.0	8.9 to 9.2	7.5 and 11.0	Never below 6.0 mg/l (night time); May-Sept; reachwide
BOD_5* (mg/l)	0.67	0.6 to 0.8	0.3 and 1.9	May-Sept; reachwide
Conductivity (umhos/cm)	68	66.6 to 69.3	52 and 88	non-seasonal; reachwide
Fecal coliform* (colonies/100 ml)	24	21 to 28	4 and 200	May-Sept; reachwide
Total suspended* solids (mg/l)	4.0	2.9 to 5.6	2.0 and 16	non-seasonal; reachwide
Total phosphorus* (ug/l)	29	27 to 31	18 and 50	non-seasonal; reachwide
Ammonia + ammonium* (ug/l)	15	13 to 18	10 and 50	as nitrogen; May-Sept; reachwide
Ammonia + ammonium* (ug/l)	22	20 to 25	10 and 60	as nitrogen; non-seasonal; reachwide
Total kjeldahl nitrogen* (ug/l)	202	172 to 237	100 and 530	May-Sept; reachwide
Nitrite + nitrate nitrogen* (ug/l)	293	256 to 336	123 and 492	May-Sept; reachwide
Hardness (mg/l as $CaCo_3$)	21	19.9 to 22.2	17.0 and 27.0	non-seasonal; reachwide
Biocriteria: Shannon-Wiener	3.6	3.4 to 3.8	2.7 and 4.3	May-Sept; reachwide
Biocriteria: Equitability	0.8	0.7 to 0.9	0.5 and 1.1	May-Sept; reachwide
Biocriteria: EPT	15.5	13.8 to 17.2	8.0 and 24.0	May-Sept; reachwide

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

[1] The numeric values for Existing Water Quality set forth in Parts A, B and C of Table 1 were developed through field measurements and laboratory analysis of data collected over a time period determined by the Commission to adequately reflect the natural range of the hydraulic and climatologic factors that affect water quality. Existing water quality is defined in terms of (a) an annual or seasonal mean of the available water quality data, (b) two-tailed upper and lower 95 percent confidence limits around the mean, and (c) the 10^{th} and 90^{th} percentiles of the data set from which the mean was calculated.

PART B: DELAWARE RIVER FROM MILLRIFT THROUGH THE DELAWARE WATER GAP INCLUDING THE MIDDLE DELAWARE SCENIC AND RECREATIONAL RIVER[2]				
PARAMETER	MEAN	95 PERCENT CONFIDENCE LIMITS OF MEAN	10TH AND 90TH PERCENTILES	ADDITIONAL
Dissolved oxygen* (mg/l)	9.2	9.1 to 9.4	7.5 and 12.8	Never below 6.0 mg/l (night time); non-seasonal; reachwide
BOD_5* (mg/l)	0.63	0.6 to 0.7	0.3 and 1.6	May-Sept; reachwide
Conductivity (umhos/cm)	76	75 to 77	60 and 95	non-seasonal; reachwide
Fecal coliform* (colonies/100 ml)	47	42 to 53	9 and 272	May-Sept; reachwide
Total suspended solids* (mg/l)	3.4	3.0 to 3.8	1.0 and 12.0	non-seasonal; reachwide
Total phosphorus* (ug/l)	27	25 to 29	14 and 40	May-Sept; reachwide
Ammonia + ammonium* (ug/l)	23	21 to 26	10 and 50	May-Sept; reachwide
Ammonia + ammonium* (ug/l)	41	37 to 44	10 and 187	non-seasonal; reachwide
Total kjeldahl nitrogen* (ug/l)	293	276 to 312	101 and 860	non-seasonal; reachwide
Total kjeldahl nitrogen* (ug/l)	206	189 to 225	100 and 490	May-Sept; reachwide
Nitrite + nitrate nitrogen* (ug/l)	246	233 to 260	100 and 490	non-seasonal; reachwide
Nitrite + nitrate nitrogen* (ug/l)	206	191 to 223	92 and 392	May-Sept; reachwide
Hardness (mg/l as $CaCo_3$)	24	24 to 25	20 and 30	non-seasonal; reachwide
Biocriteria: Shannon-Wiener	3.6	3.4 to 3.7	3.2 and 4.1	May-Sept; reachwide
Biocriteria: Equitability	0.8	0.7 to 0.9	0.5 and 1.1	May-Sept; reachwide
Biocriteria: EPT	13.9	12.8 to 15.1	8.0 and 20.0	May-Sept; reachwide

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

[2] The definitions of Existing Water Quality presented in Parts A and B of this table were developed by performing parametric statistical analyses using logarithmic transformation of available water quality data to derive normality. The numbers represent the anti-log of the statistical results and, thus, will differ from numbers generated by using non-transformed data. Means derived from log transformations, for example, will be lower than means derived from non-transformed data. The 95 percent confidence limits were derived from a two-tailed distribution. Biocriteria were not developed using log-transformed data. The three indices used to develop the biocriteria were derived from specialized transformations of the original data, resulting in values that are normally distributed.

PART C: BOUNDARY AND INTERSTATE CONTROL POINTS FOR THE DELAWARE RIVER BETWEEN HANCOCK, N.Y. AND THE DELAWARE WATER GAP		
BOUNDARY	CONTROL POINTS	MAP REFERENCE
Northern Boundary-UDSRR	Delaware River Mile 330.7	DRBC River Mile maps & UDSRR River Management Plan
Eastern Boundary-UDSRR	New York streams in Delaware & Sullivan Counties: Blue Mill; Humphries; Abe Lord; Bouchoux; Pea; Hoolihan; Basket; Hankins; Callicoon; Mitchell Pond; Tenmile; Grassy Swamp; Narrow Falls; York Lake; Beaver Brook; Halfway; Mill; Fish Cabin; Mongaup; Shingle Kill	UDSRR River Management PLAN
Western Boundary-UDSRR	Pennsylvania streams in Wayne & Pike Counties: Shingle Hollow; Stockport; Factory; Equinunk; Weston; Little Equinunk; Cooley; Hollister; Schoolhouse; Beaverdam; Calkins; Peggy Run; Masthope; Westcolang; Lackawaxen; Verga Pond; Panther; Shohola; Twin Lakes; Pond Eddy; Bush Kill	UDSRR River Management PLAN
Northern Boundary-Eight mile reach between UDSRR and MDSRR	Delaware River Mile 258.4 (railroad crossing at Millrift, Pennsylvania)	DRBC River Mile maps; UDSRR River Management Plan
Eastern & Western Boundaries-Eight mile reach between UDSRR & MDSRR	Confluence of New York streams (Orange County); Pennsylvania streams (Pike County); and New Jersey streams (Sussex County) with the Delaware River: Sparrowbush; Neversink; Cummins	U.S.G.S. Port Jervis South & North topographic maps
Northern Boundary-DWGNRA	Delaware River Mile 250.1 near the confluence of Cummins Creek	DRBC River Mile map & DWGNRA Tract Map
Eastern Boundary-DWGNRA	New Jersey streams in Sussex County: Shimers; White; Big Flatbrook; Little Flatbrook	DWGNRA Tract Maps
Western Boundary-DWGNRA	Pennsylvania streams in Pike & Monroe Counties: Crawford Branch; Vandermark; Sawkill; Raymondskill; Conashaugh; Dry; Adams; Dingmans; Hornbeck; Deckers; Alicias; Brodhead-Hellers; Hellers; Toms; Denmark; Little Bushkill; Bushkill; Shawnee; Brodhead; Cherry; Caledonia; Slateford	DWGNRA Tract Maps
INTERSTATE	CONTROL POINTS (General Locations)	RIVER MILE
Upper Delaware Scenic & Recreational River	Buckingham Access Area Lordville Bridge Kellams Bridge Callicoon Access Areas Damascus/Cochecton Skinners Falls Narrowsburg area Ten Mile River Access Area Lackawaxen Access Area Barryville/Shohola Bridge Pond Eddy Bridge	325 322 313 303 298 295 290 284 277 273 266
Delaware River between the UDSRR & the DWGNRA	Millrift Matamoras/Port Jervis Northern boundary-DWGNRA	258 254 250
INTERSTATE	CONTROL POINTS (General Locations)	RIVER MILE
Delaware Water Gap National Recreation Area	Milford Beach Dingmans Access Area Eshback Access Area Bushkill Access Area Depew Access Area Smithfield Beach Worthington S.F. Access Kittatinny Visitor Center Upstream end of Arrow Island	247 239 232 228 221 218 215 211 210

TABLE 2A. INDEX to Lower Delaware River CONTROL POINTS, by River Mile Location.

EWQ Table	Tributary or Delaware River Site	Latitude	Longitude	River Mile	Control Point (ICP = Interstate CP BCP = Boundary CP)	Drainage Area (square miles)
Table 2C	Portland ICP	40.784722	-75.184722	207.50	Portland ICP	4,165
	Jacoby Creek (PA)			207.48	Belvidere ICP	6.45
Table 2D	Paulins Kill (NJ)	40.920833	-75.088333	207.16-0.07	Paulins Kill BCP	177.0
	Delawanna Creek (NJ)			205.20	Belvidere ICP	4.49
	Allegheny Creek (PA)			199.76	Belvidere ICP	9.06
Table 2E	Belvidere ICP	40.828889	-75.085000	197.84	Belvidere ICP	4,378
Table 2F	Pequest River (NJ)	40.834167	-75.061111	197.80-1.48	Pequest River BCP	157.0
	Pophandusing Brook (NJ)			197.66	Easton ICP	5.62
	Oughoughton Creek (PA)			194.32	Easton ICP	11.9
	Buckhorn Creek (NJ)			192.90	Easton ICP	11.8
Table 2G	Martins Creek (PA)	40.784722	-75.184722	190.65-0.96	Martins Creek BCP	44.5
	Mud Run (PA)			189.10	Easton BCP	6.00
Table 2H	Bushkill Creek (PA)	40.695278	-75.206111	184.10-0.05	Bushkill Creek BCP	80.0
Table 2I	Easton ICP	40.691111	-75.204167	183.82	Easton ICP	4,717
Table 2J	Lehigh River (PA)	40.691111	-75.204722	183.66-0.27	Lehigh River BCP	1,368
	Lopatcong Creek (NJ)			182.00	Riegelsville ICP	14.7
Table 2K	Pohatcong Creek (NJ)	40.624722	-75.186111	177.36-0.35	Pohatcong Creek BCP	57.1
	Fry's Run (PA)			176.60	Riegelsville ICP	6.14
Table 2L	Riegelsville ICP	40.593889	-75.191111	174.80	Riegelsville ICP	6,172
Table 2M	Musconetcong River (NJ)	40.592500	-75.186667	174.60-0.15	Musconetcong BCP	156.0
Table 2N	Cooks Creek (PA)	40.586667	-75.211944	173.70-1.06	Cooks Creek BCP	29.5
	Gallows Run (PA)			171.80	Milford ICP	8.72
Table 2O	Milford ICP	40.566389	-75.098889	167.70	Milford ICP	6,381
	Hakihokake Creek (NJ)			167.20	Bulls Island ICP	17.5
	Harihokake Creek (NJ)			165.70	Bulls Island ICP	9.85
Table 2P	Nishisakawick Creek (NJ)	40.526389	-75.060278	164.10-0.35	Nishisakawick BCP	11.1
	Little Nishisakawick Creek (NJ)			164.00	Bulls Island ICP	3.51
	Copper Creek (NJ)			162.90	Bulls Island ICP	3.27
Table 2Q	Tinicum Creek (PA)	40.485278	-75.072500	161.60-0.24	Tinicum Creek BCP	24.0
	Warford Creek (NJ)			160.50	Bulls Island ICP	1.43
	Smithtown Creek (PA)			159.90	Bulls Island ICP	1.38
	Warsaw Creek (NJ)			159.50	Bulls Island ICP	1.60

EWQ Table	Tributary or Delaware River Site	Latitude	Longitude	River Mile	Control Point (ICP = Interstate CP BCP = Boundary CP)	Drainage Area (square miles)
Table 2R	Tohickon Creek (PA)	40.423056	-75.066667	157.00-0.19	Tohickon Creek BCP	112.0
	Hickory Creek (PA)			156.98	Bulls Island ICP	1.50
Table 2S	Paunacussing Creek (PA)	40.407500	-75.041667	155.90-0.12	Paunacussing BCP	7.87
Table 2T	Bulls Island ICP	40.407500	-75.037778	155.40	Bulls Island ICP	6,598
	Cuttalossa Creek (PA)			154.50	Lambertville ICP	3.00
Table 2U	Lockatong Creek (NJ)	40.415833	-75.018056	154.00-0.75	Lockatong Creek BCP	23.2
Table 2V	Wickecheoke Creek (NJ)	40.411667	-74.986944	152.51-0.21	Wickecheoke BCP	26.6
	Primrose Creek (PA)			150.50	Lambertville ICP	3.00
	Alexauken Creek (NJ)			149.50	Lambertville ICP	15.0
	Rabbit Run (PA)			149.45	Lambertville ICP	0.42
Table 2W	Lambertville ICP	40.365833	-74.949167	148.70	Lambertville ICP	6,680
	Swan Creek (NJ)			148.60	Wash. Crossing ICP	3.28
	Aquetong Creek (PA)			148.50	Wash. Crossing ICP	8.01
	Dark Hollow Run (PA)			148.20	Wash. Crossing ICP	0.71
Table 2X	Pidcock Creek (PA)	40.32907	-74.94566	146.30-0.90	Pidcock Creek BCP	12.7
	Moore Creek (NJ)			145.20	Wash. Crossing ICP	10.2
	Jericho Creek (PA)			144.20	Wash. Crossing ICP	9.63
	Fiddlers Creek (NJ)			143.20	Wash. Crossing ICP	2.02
Table 2Y	Washington Crossing ICP	40.295278	-74.868889	141.80	Wash. Crossing ICP	6,735
	Houghs Creek (PA)			140.60	Trenton ICP	5.19
	Jacobs Creek (NJ)			140.46	Trenton ICP	13.3
	Dyers Creek (PA)			139.80	Trenton ICP	1.20
	Reeds Run (NJ)			138.50	Trenton ICP	1.50
	Buck Creek (PA)			138.00	Trenton ICP	6.99
	Gold Run (NJ)			137.25	Trenton ICP	1.66
Table 2Z	Trenton ICP	40.219722	-74.778333	134.34	Trenton ICP	6,780

TABLE 2B. Alphabetical INDEX to Lower Delaware River CONTROL POINTS.

EWQ Table	Tributary or Delaware River Site	Latitude	Longitude	River Mile	Control Point (ICP = Interstate CP BCP = Boundary CP)	Drainage Area (square miles)
	Alexauken Creek (NJ)			149.50	Lambertville ICP	15.0
	Allegheny Creek (PA)			199.76	Belvidere ICP	9.06
	Aquetong Creek (PA)			148.50	Wash. Crossing ICP	8.01
Table 2E	Belvidere ICP	40.828889	-75.085000	197.84	Belvidere ICP	4,378
	Buck Creek (PA)			138.00	Trenton ICP	6.99
	Buckhorn Creek (NJ)			192.90	Easton ICP	11.8
Table 2T	Bulls Island ICP	40.407500	-75.037778	155.40	Bulls Island ICP	6,598
Table 2H	Bushkill Creek (PA)	40.695278	-75.206111	184.10-0.05	Bushkill Creek BCP	80.0
Table 2N	Cooks Creek (PA)	40.586667	-75.211944	173.70-1.06	Cooks Creek BCP	29.5
	Copper Creek (NJ)			162.90	Bulls Island ICP	3.27
	Cuttalossa Creek (PA)			154.50	Lambertville ICP	3.00
	Dark Hollow Run (PA)			148.20	Wash. Crossing ICP	0.71
	Delawanna Creek (NJ)			205.20	Belvidere ICP	4.49
	Dyers Creek (PA)			139.80	Trenton ICP	1.20
Table 2I	Easton ICP	40.691111	-75.204167	183.82	Easton ICP	4,717
	Fiddlers Creek (NJ)			143.20	Wash. Crossing ICP	2.02
	Fry's Run (PA)			176.60	Riegelsville ICP	6.14
	Gallows Run (PA)			171.80	Milford ICP	8.72
	Gold Run (NJ)			137.25	Trenton ICP	1.66
	Hakihokake Creek (NJ)			167.20	Bulls Island ICP	17.5
	Harihokake Creek (NJ)			165.70	Bulls Island ICP	9.85
	Hickory Creek (PA)			156.98	Bulls Island ICP	1.50
	Houghs Creek (PA)			140.60	Trenton ICP	5.19
	Jacobs Creek (NJ)			140.46	Trenton ICP	13.3
	Jacoby Creek (PA)			207.48	Belvidere ICP	6.45
	Jericho Creek (PA)			144.20	Wash. Crossing ICP	9.63
Table 2W	Lambertville ICP	40.365833	-74.949167	148.70	Lambertville ICP	6,680
Table 2J	Lehigh River (PA)	40.691111	-75.204722	183.66-0.27	Lehigh River BCP	1,368
	Little Nishisakawick Creek (NJ)			164.00	Bulls Island ICP	3.51
Table 2U	Lockatong Creek (NJ)	40.415833	-75.018056	154.00-0.75	Lockatong Creek BCP	23.2
	Lopatcong Creek (NJ)			182.00	Riegelsville ICP	14.7
Table 2G	Martins Creek (PA)	40.784722	-75.184722	190.65-0.96	Martins Creek BCP	44.5

EWQ Table	Tributary or Delaware River Site	Latitude	Longitude	River Mile	Control Point (ICP = Interstate CP BCP = Boundary CP)	Drainage Area (square miles)
Table 2O	Milford ICP	40.566389	-75.098889	167.70	Milford ICP	6,381
	Moore Creek (NJ)			145.20	Wash. Crossing ICP	10.2
	Mud Run (PA)			189.10	Easton BCP	6.00
Table 2M	Musconetcong River (NJ)	40.592500	-75.186667	174.60-0.15	Musconetcong BCP	156.0
Table 2P	Nishisakawick Creek (NJ)	40.526389	-75.060278	164.10-0.35	Nishisakawick BCP	11.1
	Oughoughton Creek (PA)			194.32	Easton ICP	11.9
Table 2D	Paulins Kill (NJ)	40.920833	-75.088333	207.16-0.07	Paulins Kill BCP	177.0
Table 2S	Paunacussing Creek (PA)	40.407500	-75.041667	155.90-0.12	Paunacussing BCP	7.87
Table 2F	Pequest River (NJ)	40.834167	-75.061111	197.80-1.48	Pequest River BCP	157.0
Table 2X	Pidcock Creek (PA)	40.32907	-74.94566	146.30-0.90	Pidcock Creek BCP	12.7
Table 2K	Pohatcong Creek (NJ)	40.624722	-75.186111	177.36-0.35	Pohatcong Creek BCP	57.1
	Pophandusing Brook (NJ)			197.66	Easton ICP	5.62
Table 2C	Portland ICP	40.784722	-75.184722	207.50	Portland ICP	4,165
	Primrose Creek (PA)			150.50	Lambertville ICP	3.00
	Rabbit Run (PA)			149.45	Lambertville ICP	0.42
	Reeds Run (NJ)			138.50	Trenton ICP	1.50
Table 2L	Riegelsville ICP	40.593889	-75.191111	174.80	Riegelsville ICP	6,172
	Smithtown Creek (PA)			159.90	Bulls Island ICP	1.38
	Swan Creek (NJ)			148.60	Wash. Crossing ICP	3.28
Table 2Q	Tinicum Creek (PA)	40.485278	-75.072500	161.60-0.24	Tinicum Creek BCP	24.0
Table 2R	Tohickon Creek (PA)	40.423056	-75.066667	157.00-0.19	Tohickon Creek BCP	112.0
Table 2Z	Trenton ICP	40.219722	-74.778333	134.34	Trenton ICP	6,780
	Warford Creek (NJ)			160.50	Bulls Island ICP	1.43
	Warsaw Creek (NJ)			159.50	Bulls Island ICP	1.60
Table 2Y	Washington Crossing ICP	40.295278	-74.868889	141.80	Wash. Crossing ICP	6,735
Table 2V	Wickecheoke Creek (NJ)	40.411667	-74.986944	152.51-0.21	Wickecheoke BCP	26.6

Table 2C. Definition of Existing Water Quality: Portland ICP

Delaware River at Portland-Columbia Pedestrian Bridge, Pennsylvania/New Jersey, River Mile 207.50

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	12	11	13	Y = -0.00019515 Q + 13.325
Chlorophyll a (mg/m^3)	2.13	1.30	2.70	
Dissolved Oxygen (mg/l) mid-day*	8.70	8.38	9.06	
Dissolved Oxygen Saturation (%)	97%	95%	99%	
E. coli (colonies/100 ml)	16	8	25	Y = antilog (0.00007074 Q + 0.6659)
Enterococcus (colonies/100 ml)	20	12	60	
Fecal coliform (colonies/100 ml) *	20	12	36	Y = antilog (0.00006854 Q + 0.955)
Nitrate NO3-N (mg/l) *	0.68	0.48	0.74	
Orthophosphate (mg/l)	0.01	0.005	0.01	
pH	7.40	7.29	7.58	
Specific Conductance (umhos/cm)	97	88	104	Y = -0.00151181 Q + 106.6
Total Dissolved Solids (mg/l)	83	74	91	
Total Kjeldahl Nitrogen (mg/l)	0.29	0.19	0.40	
Total Nitrogen (mg/l) *	0.86	0.74	1.05	
Total Phosphorus (mg/l) *	0.04	0.03	0.05	
Total Suspended Solids (mg/l) *	3.0	2.0	4.0	Y = 0.00122363 Q - 2.8618
Turbidity (NTU)	1.6	1.1	2.8	Y = antilog (0.00005157 Q – 0.1356)
Alkalinity (mg/l)	20	16	22	Y = -0.00046984 Q + 23.547
Hardness (mg/l)	30	28	31	

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ value does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2D. Definition of Existing Water Quality: Paulins Kill BCP

Paulins Kill, New Jersey, River Mile 207.16 – 0.07
Boundary Control Point is located at Route 46 bridge.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.06	0.04	0.08	
Chloride (mg/l)	41.9	36	48	Y = -17.4858 (log Q) + 79.5946
Chlorophyll a (mg/m^3)	3.3	2.7	5.3	
Dissolved Oxygen (mg/l) mid-day *	7.95	7.31	8.39	
Dissolved Oxygen Saturation (%)	88%	83%	91%	
E. coli (colonies/100 ml)	75	40	140	Y = antilog (0.7993 (log Q) + 0.157)
Enterococcus (colonies/100 ml)	120 **	84 **	180 **	
Fecal coliform (colonies/100 ml) *	110	84	190	Y = antilog (0.967 (log Q) – 0.0255)
Nitrate NO3-N (mg/l) *	0.75	0.70	0.86	
Orthophosphate (mg/l)	0.02	0.01	0.02	
pH	7.79	7.70	7.87	
Specific Conductance (umhos/cm)	416	380	453	Y = -141.2449 (log Q) + 715.5098
Total Dissolved Solids (mg/l)	280	250	300	Y = -75.186 (log Q) + 426.1389
Total Kjeldahl Nitrogen (mg/l)	0.39	0.29	0.53	
Total Nitrogen (mg/l) *	1.13	0.99	1.28	
Total Phosphorus (mg/l) *	0.05	0.05	0.06	
Total Suspended Solids (mg/l) *	7.0	5.0	8.0	
Turbidity (NTU)	4.0	3.0	4.8	Y = antilog (0.4057 (log Q) – 0.269)
Alkalinity (mg/l)	125	110	140	Y = -49.5 (log Q) + 229.2
Hardness (mg/l)	158	140	176	Y = -56.8657 (log Q) + 280.7477

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ value does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2E. Definition of Existing Water Quality: Belvidere ICP

Delaware River at Belvidere-Riverton Bridge, NJ/PA, River Mile 197.84

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	14	12	15	Y = -0.00020113 Q + 14.872
Chlorophyll a (mg/m^3)	1.9	1.3	2.7	
Dissolved Oxygen (mg/l) mid-day*	8.52	8.00	8.95	
Dissolved Oxygen Saturation (%)	94%	92%	96%	
E. coli (colonies/100 ml)	20	5	30	Y = antilog (0.00005716 Q + 0.8244)
Enterococcus (colonies/100 ml)	50	35	68	
Fecal coliform (colonies/100 ml) *	30	20	50	Y = antilog (0.00006282 Q + 1.0055)
Nitrate NO3-N (mg/l) *	0.53	0.47	0.71	
Orthophosphate (mg/l)	0.01	0.01	0.02	
pH	7.49	7.25	7.60	
Specific Conductance (umhos/cm)	111.5	105.0	125.0	Y = -0.00185194 Q + 125.8
Total Dissolved Solids (mg/l)	98	86	100	
Total Kjeldahl Nitrogen (mg/l)	0.33	0.24	0.40	
Total Nitrogen (mg/l) *	0.89	0.82	1.11	
Total Phosphorus (mg/l) *	0.04	0.04	0.05	
Total Suspended Solids (mg/l) *	3.0	2.0	4.0	Y = 0.00120841 Q – 3.003
Turbidity (NTU)	1.7	1.2	2.5	Y = antilog (0.00003844 Q + 0.0483)
Alkalinity (mg/l)	26	24	28	Y = -0.00046346 Q + 29.199
Hardness (mg/l)	35	33	36	

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2F. Definition of Existing Water Quality: Pequest River BCP

Pequest River, New Jersey, River Mile 197.80 – 1.48
Boundary Control Point is located at Orchard Street Bridge, Belvidere

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.05	
Chloride (mg/l)	35.9	34.0	38.0	Y = -12.7769 (log Q) + 62.875
Chlorophyll a (mg/m^3)	2.14	2.00	2.70	
Dissolved Oxygen (mg/l) mid-day *	9.89	9.37	10.37	
Dissolved Oxygen Saturation (%)	103%	99%	107%	
E. coli (colonies/100 ml)	130	110	160	
Enterococcus (colonies/100 ml)	250 **	140 **	460 **	
Fecal coliform (colonies/100 ml) *	180	150	230 **	
Nitrate NO3-N (mg/l) *	1.29	1.13	1.45	
Orthophosphate (mg/l)	0.05	0.05	0.07	
pH	8.20	8.10	8.30	
Specific Conductance (umhos/cm)	491	472	511	Y = -0.18929204 Q + 517.8326
Total Dissolved Solids (mg/l)	330	310	340	Y = -75.8279 (log Q) + 479.4783
Total Kjeldahl Nitrogen (mg/l)	0.47	0.32	0.55	
Total Nitrogen (mg/l) *	1.69	1.54	2.00	
Total Phosphorus (mg/l) *	0.10	0.08	0.11 **	
Total Suspended Solids (mg/l) *	6.5	4.0	11.0	
Turbidity (NTU)	3.4	2.1	5.8	Y = antilog (1.0964 (log Q) - 1.87)
Alkalinity (mg/l)	189	180	200	Y = -64.33 (log Q) + 319.85
Hardness (mg/l)	228	220	230	Y = -50.0952 (log Q) + 329.8323

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2G. Definition of Existing Water Quality: Martins Creek BCP

Martins Creek, Pennsylvania, River Mile 190.65 – 0.96
Boundary Control Point is located at Little Creek Road bridge in Martins Creek Village.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	0.02***	0.05	
Chloride (mg/l)	21	19	24.3	Y = -11.0817 (log Q) + 39.9172
Chlorophyll a (mg/m^3)	1.80	0.50	2.70	
Dissolved Oxygen (mg/l) mid-day *	9.55	9.23	9.62	
Dissolved Oxygen Saturation (%)	98%	96%	99%	
E. coli (colonies/100 ml)	150	48	350	
Enterococcus (colonies/100 ml)	380	260	620	
Fecal coliform (colonies/100 ml) *	355 **	190	640 **	
Nitrate NO3-N (mg/l) *	2.38	2.04	2.80	
Orthophosphate (mg/l)	0.11	0.07	0.13	
pH	7.73	7.6	7.78	
Specific Conductance (umhos/cm)	322	283	338	Y = -114.3186 (log Q) + 506.634
Total Dissolved Solids (mg/l)	229	210	250	Y = -89.8812 (log Q) + 373.2748
Total Kjeldahl Nitrogen (mg/l)	0.34	0.28	0.50	
Total Nitrogen (mg/l) *	2.95	2.65	3.32	
Total Phosphorus (mg/l) *	0.13	0.10	0.20	
Total Suspended Solids (mg/l) *	4.0	2.0	5.0	
Turbidity (NTU)	2.4	1.6	4.0	Y = antilog (0.642 (log Q) - 0.684)
Alkalinity (mg/l)	50	43	52	Y = -19.48 (log Q) + 81.48
Hardness (mg/l)	120	112	130	Y = -46.9931 (log Q) + 201.407

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

*** Based on laboratory 'J' values reported below the 0.05 lower reporting limit.

Table 2H. Definition of Existing Water Quality: Bushkill Creek BCP

Bushkill Creek, Northampton County, Pennsylvania, River Mile 184.10 – 0.05
Boundary Control Point is located at Route 611 bridge, Easton.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.10	0.07	0.13	
Chloride (mg/l)	27	25	28.4	Y = -13.4942 (log Q) + 54.7837
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	10.10	9.69	10.30	
Dissolved Oxygen Saturation (%)	102%	100%	104%	
E. coli (colonies/100 ml)	330	220	620	
Enterococcus (colonies/100 ml)	350	280	540	
Fecal coliform (colonies/100 ml) *	540 **	370 **	880 **	
Nitrate NO3-N (mg/l) *	3.90	3.63	4.26	
Orthophosphate (mg/l)	0.02	0.02	0.03	
pH	8.00	7.99	8.08	
Specific Conductance (umhos/cm)	578	542	615	Y = -1.32108663 Q + 751.3559
Total Dissolved Solids (mg/l)	410	360	440	Y = -394.9208 (log Q) + 1231.0249
Total Kjeldahl Nitrogen (mg/l)	0.40	0.29	0.50	
Total Nitrogen (mg/l) *	4.41	4.11	4.73	
Total Phosphorus (mg/l) *	0.05	0.04	0.06	
Total Suspended Solids (mg/l) *	5.0	3.0	8.0	
Turbidity (NTU)	3.0	2.5	5.1	
Alkalinity (mg/l)	140	130	155	Y = -152.34 (log Q) + 459
Hardness (mg/l)	218	210	225	Y = -159.4372 (log Q) + 549.8009

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2I. Definition of Existing Water Quality: Easton ICP

Delaware River at Northampton Street Bridge, Easton-Phillipsburg, PA/NJ, River Mile 183.82

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<.05	<.05	<0.05	
Chloride (mg/l)	16	14	17	Y = -0.00022184 Q + 16.751
Chlorophyll a (mg/m^3)	1.45	1.07	2.14	
Dissolved Oxygen (mg/l) mid-day*	8.10	7.90	8.58	
Dissolved Oxygen Saturation (%)	95%	92%	96%	
E. coli (colonies/100 ml)	31	24	64	Y = antilog (0.00004425 Q + 1.273)
Enterococcus (colonies/100 ml)	145	80	250	
Fecal coliform (colonies/100 ml) *	100	64	130	
Nitrate NO3-N (mg/l) *	0.85	0.70	0.90	
Orthophosphate (mg/l)	0.02	0.01	0.02	
pH	7.55	7.41	7.70	
Specific Conductance (umhos/cm)	142	127	155	Y = -0.0024666 Q + 158.76
Total Dissolved Solids (mg/l)	110	103	120	
Total Kjeldahl Nitrogen (mg/l)	0.35	0.26	0.46	
Total Nitrogen (mg/l) *	1.19	1.01	1.35	
Total Phosphorus (mg/l) *	0.05	0.04	0.06	
Total Suspended Solids (mg/l) *	4.0	3.0	5.0	Y = 0.00177536 Q – 4.8027
Turbidity (NTU)	2.6	1.8	4.0	Y = antilog (0.00003836 Q + 0.1845)
Alkalinity (mg/l)	34	30	39	Y = -0.00073929 Q + 39.867
Hardness (mg/l)	48	45	52	

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2J. Definition of Existing Water Quality: Lehigh River BCP

Lehigh River, Pennsylvania, River Mile 183.66 – 0.27
Boundary Control Point is located at Route 611 bridge, Easton.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.08	0.06	0.09	
Chloride (mg/l)	21	19	24	Y = -16.5077 (log Q) + 76.7534
Chlorophyll a (mg/m^3)	2.70	1.80	3.60	
Dissolved Oxygen (mg/l) mid-day *	8.85	8.39	9.20	
Dissolved Oxygen Saturation (%)	97%	94%	98%	
E. coli (colonies/100 ml)	49	36	120	Y = antilog (1.5045 (log Q) – 3.0132)
Enterococcus (colonies/100 ml)	110	56	210	
Fecal coliform (colonies/100 ml) *	120	70	200	Y = antilog (1.4387 (log Q) – 2.5712)
Nitrate NO3-N (mg/l) *	1.80	1.70	2.00	
Orthophosphate (mg/l)	0.11	0.09	0.15	
pH	7.61	7.50	7.70	
Specific Conductance (umhos/cm)	264	218	292	Y = -186.4602 (log Q) + 870.6296
Total Dissolved Solids (mg/l)	180	158	195	Y = -93.4568 (log Q) + 482.4929
Total Kjeldahl Nitrogen (mg/l)	0.50	0.41	0.58	
Total Nitrogen (mg/l) *	2.43	2.13	2.74	
Total Phosphorus (mg/l) *	0.17	0.15	0.24	
Total Suspended Solids (mg/l) *	4.0	3.0	6.0	
Turbidity (NTU)	3.1	2.2	6.0	Y = antilog (0.901 (log Q) – 2.335)
Alkalinity (mg/l)	55	49	69	Y = -51.44 (log Q) + 227.86
Hardness (mg/l)	94	77	105	Y = -58.1224 (log Q) + 285.2788

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2K. Definition of Existing Water Quality: Pohatcong Creek BCP

Pohatcong Creek, New Jersey, River Mile 177.36 – 0.35
Boundary Control Point is located at River Road bridge.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<.05	<.05	<0.05	
Chloride (mg/l)	20	19	21	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.50	9.20	9.90	
Dissolved Oxygen Saturation (%)	97%	96%	100%	
E. coli (colonies/100 ml)	305	190	550	Y = antilog (1.0503 (log Q) + 0.976)
Enterococcus (colonies/100 ml)	610 **	380 **	820 **	
Fecal coliform (colonies/100 ml) *	580 **	420 **	810 **	
Nitrate NO3-N (mg/l) *	2.61	2.30	2.88	
Orthophosphate (mg/l)	0.05	0.05	0.07	
pH	7.90	7.88	7.95	
Specific Conductance (umhos/cm)	340	316	352	Y = -0.84542072 Q + 365.5539
Total Dissolved Solids (mg/l)	220	211	260	Y = -99.9173 (log Q) + 381.5349
Total Kjeldahl Nitrogen (mg/l)	0.33	0.19	0.36	
Total Nitrogen (mg/l) *	3.14	2.87	3.26	
Total Phosphorus (mg/l) *	0.10	0.08	0.11 **	
Total Suspended Solids (mg/l) *	6.5	5.0	8.0	
Turbidity (NTU)	4.6	2.1	5.1	Y = antilog (0.867 (log Q) – 0.69)
Alkalinity (mg/l)	116	104	120	Y = -81.8 (log Q) + 238.83
Hardness (mg/l)	140	135	160	Y = -76.5277 (log Q) + 261.5315

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2L. Definition of Existing Water Quality: Riegelsville ICP

Delaware River at Riegelsville Bridge, PA/NJ, River Mile 174.80

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.05	
Chloride (mg/l)	17	15	19	Y = -0.00026948 Q + 19.644
Chlorophyll a (mg/m^3)	2.42	1.80	3.60	
Dissolved Oxygen (mg/l) mid-day *	8.80	8.20	9.05	
Dissolved Oxygen Saturation (%)	97%	95%	98%	
E. coli (colonies/100 ml)	40	20	80	Y = antilog (0.0000513 Q + 0.9973)
Enterococcus (colonies/100 ml)	80	52	110	
Fecal coliform (colonies/100 ml) *	84	54	160	Y = antilog (0.00003636 Q + 1.5438)
Nitrate NO3-N (mg/l) *	1.17	1.02	1.23	
Orthophosphate (mg/l)	0.04	0.04	0.07	
pH	7.60	7.48	7.80	
Specific Conductance (umhos/cm)	183	155	197	Y = -0.00298102 Q + 207.26
Total Dissolved Solids (mg/l)	140	130	150	Y = -0.00168753 Q + 152.78
Total Kjeldahl Nitrogen (mg/l)	0.31	0.22	0.46	
Total Nitrogen (mg/l) *	1.44	1.31	1.62	
Total Phosphorus (mg/l) *	0.09	0.07	0.12	
Total Suspended Solids (mg/l) *	4.5	3.5	6.5	Y = 0.00061523 Q + 0.2725
Turbidity (NTU)	2.7	2.1	3.5	Y = antilog (0.00002645 Q + 0.2252)
Alkalinity (mg/l)	42	36	48	Y = -0.0008322 Q + 50.44
Hardness (mg/l)	65	54	70	Y = -0.00121951 Q + 73.708

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2M. Definition of Existing Water Quality: Musconetcong River BCP

Musconetcong River, New Jersey, River Mile 174.60 – 0.15
Boundary Control Point is located at River Road (Rt. 627) bridge

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.06	0.05	0.08	
Chloride (mg/l)	43	42	45	
Chlorophyll a (mg/m^3)	3.20	2.56	3.71	
Dissolved Oxygen (mg/l) mid-day *	9.10	8.90	9.60	
Dissolved Oxygen Saturation (%)	99%	97%	100%	
E. coli (colonies/100 ml)	125	70	240	
Enterococcus (colonies/100 ml)	210 **	150 **	360 **	
Fecal coliform (colonies/100 ml) *	270 **	190	400 **	
Nitrate NO3-N (mg/l) *	2.09	1.85	2.30	
Orthophosphate (mg/l)	0.02	0.02	0.03	
pH	7.90	7.90	8.00	
Specific Conductance (umhos/cm)	396	375	426	Y = -0.23045946 Q + 440.1906
Total Dissolved Solids (mg/l)	255	240	270	Y = -0.0954 Q + 272.5773
Total Kjeldahl Nitrogen (mg/l)	0.49	0.37	0.87	
Total Nitrogen (mg/l) *	2.56	2.36	2.91	
Total Phosphorus (mg/l) *	0.07	0.05	0.09	
Total Suspended Solids (mg/l) *	7.0	5.5	11.0	
Turbidity (NTU)	3.5	2.3	5.4	Y = antilog (0.86 (log Q) – 1.294)
Alkalinity (mg/l)	103	97	118	Y = -79.84 (log Q) + 298.41
Hardness (mg/l)	149	130	160	Y = -67.6003 (log Q) + 297.8314

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2N. Definition of Existing Water Quality: Cooks Creek BCP

Cooks Creek, Pennsylvania, River Mile 173.70 – 1.06
Boundary Control Point is located at Red Bridge Road bridge.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	9.7	8.9	10.9	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.93	9.70	10.30	
Dissolved Oxygen Saturation (%)	102%	98%	108%	
E. coli (colonies/100 ml)	110	80	200	Y = antilog (1.1307 (log Q) + 0.6483)
Enterococcus (colonies/100 ml)	380	250	520	
Fecal coliform (colonies/100 ml) *	210 **	140	360 **	
Nitrate NO3-N (mg/l) *	1.80	1.70	1.90	
Orthophosphate (mg/l)	0.01	0.01	0.02	
pH	8.04	7.94	8.19	
Specific Conductance (umhos/cm)	258	244	278	Y = -0.94618228 Q + 290.6508
Total Dissolved Solids (mg/l)	180	161	194	Y = -0.7015 Q + 197.6165
Total Kjeldahl Nitrogen (mg/l)	0.21	0.13	0.34	
Total Nitrogen (mg/l) *	2.01	1.95	2.32	
Total Phosphorus (mg/l) *	0.04	0.03	0.06	
Total Suspended Solids (mg/l) *	2.5	2.0	4.0	
Turbidity (NTU)	1.5	1.1	2.3	Y = antilog (0.888 (log Q) – 0.981)
Alkalinity (mg/l)	98	89	104	Y = -50.25 (log Q) + 168.52
Hardness (mg/l)	120	110	125	Y = -40.8625 (log Q) + 175.8628

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2O. Definition of Existing Water Quality: Milford ICP

Delaware River at Milford-U. Black Eddy Bridge, NJ/PA, River Mile 167.70

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.05	
Chloride (mg/l)	17	15	20	Y = -0.00027835 Q + 20.221
Chlorophyll a (mg/m^3)	1.80	0.90	2.70	
Dissolved Oxygen (mg/l) mid-day *	8.74	8.20	8.96	
Dissolved Oxygen Saturation (%)	96%	95%	97%	
E. coli (colonies/100 ml)	28	15	60	Y = antilog (0.00004814 Q + 0.905)
Enterococcus (colonies/100 ml)	45	28	98	
Fecal coliform (colonies/100 ml) *	60	40	120	Y = antilog (0.00004177 Q + 1.2688)
Nitrate NO3-N (mg/l) *	1.09	0.96	1.25	
Orthophosphate (mg/l)	0.04	0.04	0.07	
pH	7.58	7.44	7.80	
Specific Conductance (umhos/cm)	189	159	203	Y = -0.00313416 Q + 212.42
Total Dissolved Solids (mg/l)	149	130	160	Y = -0.00270722 Q + 173.806
Total Kjeldahl Nitrogen (mg/l)	0.34	0.26	0.46	
Total Nitrogen (mg/l) *	1.48	1.23	1.68	
Total Phosphorus (mg/l) *	0.09	0.07	0.12	
Total Suspended Solids (mg/l) *	6.0	4.5	7.0	Y = 0.0006379 Q + 0.3729
Turbidity (NTU)	2.9	2.2	3.8	Y = antilog (0.00002693 Q + 0.1674)
Alkalinity (mg/l)	44	37	49	Y = -0.00087657 Q + 51.613
Hardness (mg/l)	67	55	73	Y = -0.0011369 Q + 74.63

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2P. Definition of Existing Water Quality: Nishisakawick Creek BCP

Nishisakawick Creek, New Jersey, River Mile 164.10 – 0.35
Boundary Control Point is located at Route 12 bridge, Frenchtown.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.06	
Chloride (mg/l)	15	14	16	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.65	9.11	10.10	
Dissolved Oxygen Saturation (%)	101%	99%	105%	
E. coli (colonies/100 ml)	48	20	96	Y = antilog (0.5217 (log Q) + 1.5665)
Enterococcus (colonies/100 ml)	240 **	170 **	790 **	
Fecal coliform (colonies/100 ml) *	85	50	120	
Nitrate NO3-N (mg/l) *	1.62	1.52	1.83	
Orthophosphate (mg/l)	0.04	0.03	0.05	
pH	7.89	7.56	8.00	
Specific Conductance (umhos/cm)	181	176	190	Y = -24.8604 (log Q) + 189.4554
Total Dissolved Solids (mg/l)	130	120	144	Y = -0.9989 Q + 139.9081
Total Kjeldahl Nitrogen (mg/l)	0.35	0.21	0.59	
Total Nitrogen (mg/l) *	2.09	1.70	2.39	
Total Phosphorus (mg/l) *	0.06	0.05	0.07	
Total Suspended Solids (mg/l) *	1.5	1.0	2.0	
Turbidity (NTU)	1.3	0.9	2.0	Y = antilog (0.0315 Q – 0.1328)
Alkalinity (mg/l)	45	40	51	Y = -16.39 (log Q) + 55.14
Hardness (mg/l)	60	59	65	Y = -12.5184 (log Q) + 66.8341

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

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** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2Q. Definition of Existing Water Quality: Tinicum Creek BCP

Tinicum Creek, Pennsylvania, River Mile 161.60 – 0.24
Boundary Control Point is located on private property by Tinicum Creek Road, just below confluence of first unnamed tributary.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	14	12	16	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.80	8.90	10.10	
Dissolved Oxygen Saturation (%)	104%	101%	107%	
E. coli (colonies/100 ml)	80	55	180	
Enterococcus (colonies/100 ml)	200	96	340	
Fecal coliform (colonies/100 ml) *	155	124	280 **	
Nitrate NO3-N (mg/l) *	0.79	0.64	1.00	
Orthophosphate (mg/l)	0.01	0.01	0.02	
pH	8.00	7.70	8.30	
Specific Conductance (umhos/cm)	247	219	262	Y = -69.3482 (log Q) + 285.899
Total Dissolved Solids (mg/l)	180	170	190	Y = -39.2799 (log Q) + 204.5375
Total Kjeldahl Nitrogen (mg/l)	0.30	0.13	0.41	
Total Nitrogen (mg/l) *	1.14	0.79	1.23	
Total Phosphorus (mg/l) *	0.04	0.03	0.04	
Total Suspended Solids (mg/l) *	2.0	1.0	3.0	
Turbidity (NTU)	1.1	0.9	1.8	Y = antilog (0.4453 (log Q) – 0.2226)
Alkalinity (mg/l)	61	52	72	Y = -19.56 (log Q) + 75.97
Hardness (mg/l)	91	75	101	Y = -29.6089 (log Q) + 113.3701

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2R. Definition of Existing Water Quality: Tohickon Creek BCP

Tohickon Creek, Pennsylvania, River Mile 157.00 – 0.19
Boundary Control Point is located at the Delaware Canal Aqueduct crossing in Point Pleasant.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	27	25	29	Y = -4.6046 (log Q) + 34.3562
Chlorophyll a (mg/m^3)	2.14	1.07	3.20	
Dissolved Oxygen (mg/l) mid-day *	9.06	8.60	9.20	
Dissolved Oxygen Saturation (%)	100%	98%	103%	
E. coli (colonies/100 ml)	38	20	60	Y = antilog (0.8609 (log Q) + 0.2319)
Enterococcus (colonies/100 ml)	540	250	980	
Fecal coliform (colonies/100 ml) *	90	60	170	Y = antilog (0.6939 (log Q) + 0.9399)
Nitrate NO3-N (mg/l) *	0.63	0.52	0.72	
Orthophosphate (mg/l)	0.015	0.01	0.02	
pH	8.00	7.80	8.20	
Specific Conductance (umhos/cm)	218	212	226	Y = -27.1873 (log Q) + 261.345
Total Dissolved Solids (mg/l)	162	150	170	Y = -27.494 (log Q) + 204.9618
Total Kjeldahl Nitrogen (mg/l)	0.37	0.34	0.49	
Total Nitrogen (mg/l) *	1.03	0.87	1.16	
Total Phosphorus (mg/l) *	0.04	0.04	0.05	
Total Suspended Solids (mg/l) *	2.0	1.0	2.5	
Turbidity (NTU)	1.3	0.9	2.0	Y = antilog (0.5292 (log Q) – 0.6216)
Alkalinity (mg/l)	46	40	49	Y = -8.96 (log Q) + 60
Hardness (mg/l)	64	62	68	Y = -10.6687 (log Q) + 81.5734

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2S. Definition of Existing Water Quality: Paunacussing Creek BCP

Paunacussing Creek, Pennsylvania, River Mile 155.90 – 0.12
Boundary Control Point is located at Route 32 bridge, Lumberville.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	24	23	25	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.42	8.90	9.81	
Dissolved Oxygen Saturation (%)	98%	96%	101%	
E. coli (colonies/100 ml)	28	15	84	Y = antilog (0.742 (log Q) + 1.3102)
Enterococcus (colonies/100 ml)	320	160	520	
Fecal coliform (colonies/100 ml) *	80	60	130	Y = antilog (0.5676 (log Q) + 1.7382)
Nitrate NO3-N (mg/l) *	2.58	2.15	2.75	
Orthophosphate (mg/l)	0.05	0.04	0.05	
pH	7.60	7.47	7.72	
Specific Conductance (umhos/cm)	229	218	242	Y = -18.8373 (log Q) + 238.7433
Total Dissolved Solids (mg/l)	130	120	144	Y = -24.3907 (log Q) + 154.9198
Total Kjeldahl Nitrogen (mg/l)	0.30	0.17	0.36	
Total Nitrogen (mg/l) *	2.96	2.83	3.15	
Total Phosphorus (mg/l) *	0.07	0.06	0.08	
Total Suspended Solids (mg/l) *	1.0	1.0	2.0	
Turbidity (NTU)	0.8	0.5	1.6	
Alkalinity (mg/l)	47	42	55	Y = -13.64 (log Q) + 52.88
Hardness (mg/l)	80	75	85	Y = -12.1905 (log Q) + 84.3707

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2T. Definition of Existing Water Quality: Bulls Island ICP

Delaware River at Bulls Island (Lumberville-Raven Rock) Foot Bridge, PA/NJ, River Mile 155.40

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	17	15	20	Y = -0.00044266 Q + 21.906
Chlorophyll a (mg/m^3)	2.70	1.07	3.20	
Dissolved Oxygen (mg/l) mid-day *	8.80	8.40	9.30	
Dissolved Oxygen Saturation (%)	98%	95%	100%	
E. coli (colonies/100 ml)	40	23	80	
Enterococcus (colonies/100 ml)	49	32	100	
Fecal coliform (colonies/100 ml) *	71	36	90	Y = antilog (0.00003537 Q + 1.3646)
Nitrate NO3-N (mg/l) *	1.00	0.88	1.23	
Orthophosphate (mg/l)	0.04	0.04	0.06	
pH	7.60	7.50	7.74	
Specific Conductance (umhos/cm)	186	170	202	Y = -0.00482529 Q + 229.19
Total Dissolved Solids (mg/l)	140	130	160	Y = -0.00277475 Q + 169.368
Total Kjeldahl Nitrogen (mg/l)	0.32	0.27	0.55	
Total Nitrogen (mg/l) *	1.48	1.26	1.59	
Total Phosphorus (mg/l) *	0.10	0.07	0.12	
Total Suspended Solids (mg/l) *	5.0	4.0	7.0	Y = 0.0007482 Q - 0.48
Turbidity (NTU)	3.8	2.2	6.0	
Alkalinity (mg/l)	45	38	51	Y = -0.00129755 Q + 56.978
Hardness (mg/l)	68	60	72	Y = -0.00134498 Q + 78.78

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2U. Definition of Existing Water Quality: Lockatong Creek BCP

Lockatong Creek, New Jersey, River Mile 154.00 – 0.75
Boundary Control Point is located at Rosemont-Raven Rock Road bridge.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	13	11	14	Y = -3.0659 (log Q) + 14.6262
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	8.70	8.30	9.10	
Dissolved Oxygen Saturation (%)	94%	90%	96%	
E. coli (colonies/100 ml)	33	20	50	Y = antilog (0.6703 (log Q) + 1.1906)
Enterococcus (colonies/100 ml)	260 **	98 **	480 **	
Fecal coliform (colonies/100 ml) *	32	20	76	Y = antilog (1.0321 (log Q) + 1.1157)
Nitrate NO3-N (mg/l) *	1.13	0.92	1.40	
Orthophosphate (mg/l)	0.03	0.02	0.04	
pH	7.30	7.20	7.50	
Specific Conductance (umhos/cm)	180	165	191	Y = -35.3137 (log Q) + 193.0827
Total Dissolved Solids (mg/l)	140	130	142	Y = -24.7785 (log Q) + 150.0884
Total Kjeldahl Nitrogen (mg/l)	0.39	0.23	0.58	
Total Nitrogen (mg/l) *	1.56	1.26	1.81	
Total Phosphorus (mg/l) *	0.05	0.05	0.06	
Total Suspended Solids (mg/l) *	1.0	0.5	2.0	
Turbidity (NTU)	1.2	0.8	3.0	Y = antilog(0.6517 (log Q) - 0.2066)
Alkalinity (mg/l)	43	35	46	Y = -11.425 (log Q) + 48.85
Hardness (mg/l)	60	56	63	

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2V. Definition of Existing Water Quality: Wickecheoke Creek BCP

Wickecheoke Creek, New Jersey, River Mile 152.51 – 0.21
Boundary Control Point is located at Route 29 bridge, Stockton.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	17	15	18	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	9.45	8.95	9.90	
Dissolved Oxygen Saturation (%)	101%	96%	104%	
E. coli (colonies/100 ml)	52	40	76	
Enterococcus (colonies/100 ml)	170 **	84 **	300 **	
Fecal coliform (colonies/100 ml) *	92	65	190	
Nitrate NO3-N (mg/l) *	1.83	1.69	2.20	
Orthophosphate (mg/l)	0.03	0.03	0.04	
pH	7.53	7.40	7.70	
Specific Conductance (umhos/cm)	183	175	200	Y = -28.7787 (log Q) + 199.7338
Total Dissolved Solids (mg/l)	130	120	134	Y = -30.5576 (log Q) + 148.5061
Total Kjeldahl Nitrogen (mg/l)	0.44	0.30	0.70	
Total Nitrogen (mg/l) *	2.12	1.99	2.65	
Total Phosphorus (mg/l) *	0.06	0.05	0.07	
Total Suspended Solids (mg/l) *	1.0	0.5	1.5	
Turbidity (NTU)	1.2	0.7	2.0	Y = antilog(0.5729 (log Q) - 0.2123)
Alkalinity (mg/l)	40	33	43	Y = -9.35 (log Q) + 45.46
Hardness (mg/l)	58	51	62	

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2W. Definition of Existing Water Quality: Lambertville ICP

Delaware River at Lambertville-New Hope Bridge, NJ/PA, River Mile 148.70

Parameter (Y) Note: only the parameters marked (*) are currently used in NMC analysis for new and expanding discharges	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	0.05	
Chloride (mg/l)	18	16	20	Y = -0.00046965 Q + 22.449
Chlorophyll a (mg/m^3)	2.95	2.00	4.70	
Dissolved Oxygen (mg/l) mid-day *	8.50	7.90	8.63	
Dissolved Oxygen Saturation (%)	94%	93%	95%	
E. coli (colonies/100 ml)	40	16	62	Y = antilog (0.00004662 Q + 1.0027)
Enterococcus (colonies/100 ml)	60	38	80	
Fecal coliform (colonies/100 ml) *	55	32	120	Y = antilog (0.00003689 Q + 1.3656)
Nitrate NO3-N (mg/l) *	1.11	0.90	1.28	
Orthophosphate (mg/l)	0.04	0.04	0.07	
pH	7.55	7.40	7.60	
Specific Conductance (umhos/cm)	191	156	207	Y = -0.00448812 Q + 229.4
Total Dissolved Solids (mg/l)	140	127	160	Y = -0.0020763 (log Q) + 159.338
Total Kjeldahl Nitrogen (mg/l)	0.46	0.34	0.66	
Total Nitrogen (mg/l) *	1.56	1.36	1.84	
Total Phosphorus (mg/l) *	0.10	0.08	0.12	
Total Suspended Solids (mg/l) *	6.5	3.5	9.0	Y = 0.00075399 Q – 0.3458
Turbidity (NTU)	2.5	1.8	6.0	Y = antilog (0.00003256 Q + 0.0989)
Alkalinity (mg/l)	46	36	52	Y = -0.00162641 Q + 60.322
Hardness (mg/l)	68	56	77	Y = -0.00146091 Q + 80.092

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2X. Definition of Existing Water Quality: Pidcock Creek BCP

Pidcock Creek, Pennsylvania, River Mile 146.30 – 0.90
Boundary Control Point is located at stone foot bridge within Bowman's Hill Wildflower Preserve.

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.05	<0.05	0.06	
Chloride (mg/l)	19	17	21	
Chlorophyll a (mg/m^3)	n/a	n/a	n/a	
Dissolved Oxygen (mg/l) mid-day *	7.45	7.20	8.50	
Dissolved Oxygen Saturation (%)	81%	78%	86%	
E. coli (colonies/100 ml)	91	64	170	Y = antilog (0.6675 (log Q) + 1.5652)
Enterococcus (colonies/100 ml)	485	170	720	
Fecal coliform (colonies/100 ml) *	195	130	310 **	Y = antilog (0.6669 (log Q) + 1.8192)
Nitrate NO3-N (mg/l) *	0.99	0.90	1.28	
Orthophosphate (mg/l)	0.07	0.05	0.08	
pH	7.39	7.20	7.44	
Specific Conductance (umhos/cm)	255	243	276	Y = -45.1671 (log Q) + 281.0884
Total Dissolved Solids (mg/l)	185	170	190	
Total Kjeldahl Nitrogen (mg/l)	0.50	0.28	0.72	
Total Nitrogen (mg/l) *	1.63	1.46	2.09	
Total Phosphorus (mg/l) *	0.10	0.08	0.12	
Total Suspended Solids (mg/l) *	3.0	2.0	4.0	
Turbidity (NTU)	3.7	2.5	5.3	Y = antilog (0.6463 (log Q) + 0.163)
Alkalinity (mg/l)	77	64	87	Y = -27.32 (log Q) + 92.67
Hardness (mg/l)	108	97	110	Y = -15.6248 (log Q) + 112.7103

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2Y. Definition of Existing Water Quality: Washington Crossing ICP

Delaware River at Washington Crossing Bridge, PA/NJ, River Mile 141.80

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	0.05	<0.05	0.09	
Chloride (mg/l)	18	16	20	Y = -0.00032977 Q + 21.336
Chlorophyll a (mg/m^3)	2.30	1.30	4.27	
Dissolved Oxygen (mg/l) mid-day *	8.69	8.46	9.00	
Dissolved Oxygen Saturation (%)	96%	95%	99%	
E. coli (colonies/100 ml)	33	20	60	
Enterococcus (colonies/100 ml)	55	23	90	
Fecal coliform (colonies/100 ml) *	70	48	110	
Nitrate NO3-N (mg/l) *	0.99	0.86	1.20	
Orthophosphate (mg/l)	0.04	0.03	0.06	
pH	7.69	7.52	7.90	
Specific Conductance (umhos/cm)	187	158	206	Y = -0.00579709 Q + 239.8
Total Dissolved Solids (mg/l)	138	130	160	Y = -0.00317926 Q + 175.218
Total Kjeldahl Nitrogen (mg/l)	0.37	0.30	0.64	
Total Nitrogen (mg/l) *	1.47	1.24	1.69	
Total Phosphorus (mg/l) *	0.10	0.07	0.12	
Total Suspended Solids (mg/l) *	6.0	5.0	8.0	Y = 0.0007895 Q + 0.7126
Turbidity (NTU)	4.0	2.4	5.3	
Alkalinity (mg/l)	45	36	50	Y = -0.00128607 Q + 56.134
Hardness (mg/l)	67	53	75	Y = -0.0019019 Q + 82.144

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

Table 2Z. Definition of Existing Water Quality: Trenton ICP

Delaware River at Calhoun Street Bridge, Trenton-Morrisville, NJ/PA, River Mile 134.34

Parameter (Y)	Definition of Existing Water Quality			
	Median	Lower 95%CI	Upper 95%CI	Flow Relationships Site specific regression equation.
Ammonia NH3-N (mg/l) *	<0.05	<0.05	<0.05	
Chloride (mg/l)	17	16	21	Y = -0.00046454 Q + 22.687
Chlorophyll a (mg/m^3)	2.70	1.60	4.81	
Dissolved Oxygen (mg/l) mid-day *	8.74	8.40	9.20	
Dissolved Oxygen Saturation (%)	97%	94%	101%	
E. coli (colonies/100 ml)	40	24	65	
Enterococcus (colonies/100 ml)	45	20	80	
Fecal coliform (colonies/100 ml) *	88	60	140	
Nitrate NO3-N (mg/l) *	1.05	0.85	1.21	
Orthophosphate (mg/l)	0.04	0.03	0.06	
pH	7.78	7.56	8.00	
Specific Conductance (umhos/cm)	185	163	202	Y = -0.00563728 Q + 240.35
Total Dissolved Solids (mg/l)	140	130	156	Y = -0.00300322 Q + 169.514
Total Kjeldahl Nitrogen (mg/l)	0.48	0.36	0.58	
Total Nitrogen (mg/l) *	1.45	1.22	1.71	
Total Phosphorus (mg/l) *	0.10	0.07	0.12	
Total Suspended Solids (mg/l) *	6.3	5.0	8.5	Y = 0.00085809 Q – 0.2021
Turbidity (NTU)	2.9	2.2	5.8	
Alkalinity (mg/l)	45	36	50	Y = -0.00160669 Q + 58.973
Hardness (mg/l)	69	60	73	Y = -0.00141561 Q + 79.891

EWQ values represent data collected twice per month from May through September 2000-2004. Total number of samples varied by parameter, however, due to design and sampling constraints.

* Wastewater treatment facility projects subject to the no measurable change requirement must demonstrate no measurable change to EWQ for this parameter. Implementation guidance should be consulted.

** EWQ does not meet DRBC water quality criterion, state water quality criterion or both.

B. **Limits.**

1. *(Resolution No. 67-7)*. The waters of the Basin shall not contain substances attributable to municipal, industrial, or other discharges in concentrations or amounts sufficient to preclude the specified water uses to be protected. Within this requirement:

   a. the waters shall be substantially free from unsightly or malodorous nuisances due to floating solids, sludge deposits, debris, oil, scum, substances in concentrations or combinations which are toxic or harmful to human, animal, plant, or aquatic life, or that produce color, taste, odor of the water, or taint fish or shellfish flesh;

   b. *(Resolution Nos. 74-1 and 78-7)*. the concentration of total dissolved solids, except intermittent streams, shall not exceed 133 percent of background.

2. *(Resolution No. 67-7)*. In no case shall concentrations of substances exceed those values given for rejection of water supplies in the United States Public Health Service Drinking Water Standards.

C. **Aquatic Life Objectives for Toxic Pollutants** *(Resolution No. 96-12)*. It is the policy of the Commission to designate numerical stream quality objectives for the protection of aquatic life for the Delaware River Estuary and Bay (Zones 2 through 6) which correspond to the designated uses of each zone. Aquatic life objectives for the protection from both acute and chronic effects are herein established on a pollutant-specific basis for:

pollutants listed as toxic under Section 307(a)(1) of the Clean Water Act for which the U.S. Environmental Protection Agency (EPA) has published final criteria,

other chemicals for which EPA has published final criteria under Section 304(a) of the Act, and

pollutants and other chemicals in combinations.

Other toxic substances for which any of the three Estuary states have adopted criteria or standards may also be considered for the development of stream quality objectives.

1. For the purpose of determining compliance with stream quality objectives for the protection of aquatic life, the duration of exposure of aquatic organisms shall be 1 hour for acute objectives and 4 days for chronic objectives.

2. Stream quality objectives for cadmium, chromium, copper, lead, nickel, silver and zinc shall be expressed as the dissolved form of the metal. Adjustment factors established by the Commission based upon the best available scientific information shall be used to convert total recoverable criteria published by the U.S. Environmental Protection Agency to dissolved stream quality objectives. In the absence of data to develop a factor for any of the metals, an adjustment factor of 1.0 shall be utilized. Stream quality objectives for other metals shall be expressed as the concentration of the total recoverable form of the metal.

D. **Human Health Objectives for Toxic Pollutants** *(Resolution No. 96-12)*. It is the policy of the Commission to designate numerical stream quality objectives for the protection of human health for the Delaware River Estuary and Bay (Zones 2 through 6) which correspond to the designated uses of each zone. Stream quality objectives for protection from both carcinogenic and systemic effects are herein established on a pollutant-specific basis for:

pollutants listed as toxic under Section 307(a)(1) and other toxic pollutants, and

other chemicals for which EPA has published final criteria under Section 304(a) of the Act.

Other toxic substances for which any of the three Estuary states have adopted criteria or standards may also be considered for the development of stream quality objectives.

1. An objective to protect against carcinogenic effects shall only be established if the pollutant is classified A, B or C under the U.S. EPA classification system for carcinogens, and if a cancer potency factor (CPF) exists in IRIS.

2. An objective to protect against systemic effects shall only be established for a pollutant if a reference dose (RfD) exists in IRIS. An additional safety factor of 10 shall be utilized in establishing the stream quality objectives to protect against systemic effects for pollutants classified as carcinogens if a CPF is not available in IRIS.

3. In the absence of toxicological data for an RfD or CPF in IRIS, data published in the 1980 U.S. EPA water quality criteria documents will be considered.

4. In establishing stream quality objectives for carcinogens, the level of risk is established at 10^{-6} or one additional cancer in every 1,000,000 humans exposed for a lifetime (70 years).

5. For the purpose of determining compliance with human health stream quality objectives, the duration of exposure shall be 70 years for carcinogens and 30 days for systemic toxicants.

6. A rate of ingestion of water of 2.0 liters per day is assumed in calculating objectives for river zones where the designated uses include public water supplies after reasonable treatment. A rate of ingestion of fish of 17.5 grams per day (equivalent to consuming a ½ pound portion every 13 days) is assumed in calculating freshwater and marine stream quality objectives for the protection of human health.

7. Maximum Contaminant Levels (MCLs) shall be applied as stream quality objectives in Zones 2 and 3 which are designated for use as public water supplies for those toxic pollutants where the MCL value is more stringent than the calculated human health objectives for carcinogens or systemic toxicants.

8. Numerical criteria for toxic pollutants to protect the taste and odor of ingested water and fish shall be applied as stream quality objectives in Zones 2 – 6 if these

criteria are more stringent than the calculated human health objectives for carcinogens or systemic toxicants.

3.10.4 Effluent Quality Requirements

A. **Minimum treatment** *(Resolution No. 67-7)*. All wastes shall receive a minimum of secondary treatment, regardless of the stated stream quality objective.

B. **Disinfection** *(Resolution No. 86-8)*. Wastes (exclusive of stormwater bypass) containing human excreta or disease producing organisms shall be effectively disinfected before being discharged into surface bodies of water as needed to meet applicable Commission or State water quality standards.

C. **Public Safety** *(Resolution No. 67-7)*. Effluents shall not create a menace to public health or safety at the point of discharge.

D. **Limits** *(Resolution No. 67-7)*.

1. Discharges shall not contain more than negligible amounts of debris, oil, scum, or other floating materials, suspended matter which will settle to form sludge, toxic substances, or substances or organisms that produce color, taste, odor of the water, or taint fish or shellfish flesh.

a. **Suspended Solids** *(Resolution No. 80-2)*.

1. For wastewater treatment facilities, not to exceed:

(i) 30 mg/l as a 30-day average

(ii) 45 mg/l as a 7-day average.

2. For industrial wastewater treatment facilities' discharges with a concentration greater than 1(i) or 1(ii):

(i) up to 100 mg/l as a 30-day average may be permitted; and

(ii) at least 85 percent reduction as a 30-day average is achieved as may be modified by Section 3.10.6D3.

(iii) The limit in 2(i) may be waived upon application, if it is determined that there is an established USEPA best conventional pollutant control technology (BCT) effluent limitation and that the treatment level meets the applicable BCT limitation.

b. **Oil and Grease** *(Resolution No. 85-3)*.

1). **Oil Storage Terminal Runoff** *(Resolution No. 85-3)*.

(a) Oil storage terminal runoff shall not exhibit readily visible oil.

(b) Control facilities shall be designed and operated such that the concentration of oil and grease in the effluent shall not exceed 15 mg/l as the average of samples taken during any single storm event during which:

(i) precipitation is not greater than two inches per hour or four and one-half inches in 24 hours; or

(ii) a maximum runoff of 80 gallons per minute per acre over a 24 hour period occurs.

(c) In implementing this standard, signatory parties may adopt and apply either effluent and monitoring standards, or best management practices for design, operation and maintenance of control facilities, provided that the Commission reserves the power to monitor discharges and enforce the 15 mg/l oil and grease standard in section 1).(b) above as an effluent limit.

(d) The average oil and grease concentration for any storm discharge event shall be determined from samples collected in such manner and such location as to be representative of the actual discharge.

2). **Industrial Wastewater Discharges** *(Resolution No. 85-3)*. Shall not exceed the limits as prescribed in the U.S. Environmental Protection Agency's promulgated effluent standards for the industrial category in question.

2. *(Resolution No. 78-7)*. Total dissolved solids shall not exceed 1,000 mg/l, or a concentration established by the Commission which is compatible with designated water uses and stream quality objectives and recognizes the need for reserve capacity to serve future dischargers.

E. **Allocation of Capacity** *(Resolution No. 67-7)*. Where necessary to meet the stream quality objectives, the waste assimilative capacity of the receiving waters shall be allocated in accordance with the doctrine of equitable apportionment.

F. **Intermittent Streams** *(Resolution Nos. 78-7 and 92-21)*.

1. Discharges to intermittent streams may be permitted by the Commission only if the applicant can demonstrate that there is no reasonable economical alternative, the project is environmentally acceptable, and would not violate the stream quality objectives set forth in Section 3.10.3B.1.a.

2. Discharges to intermittent streams shall be adequately treated to protect stream uses, public health and ground water quality, and prevent nuisance conditions.

3.10.5 Other Considerations

A. **Combined Sewers** *(Resolution No. 67-7)*. Any new facility or project combining sanitary or industrial waste with storm-water drainage which would have a substantial effect on the quality of waters of the Basin shall not be permitted, whether or not any such project or facility discharges into an existing combined system.

B. **Access and Reports** *(Resolution No. 67-7)*.

1. The Commission, or its duly authorized representatives, shall have access, at reasonable hours, to observe and inspect waste treatment facilities and to collect samples for analyses.

2. Upon written request, waste treatment facility operation reports shall be submitted to the Commission.

C. **Zones** *(Resolution No. 67-7)*. The Delaware River and Bay and their tributaries may be divided into zones which will facilitate the management of surface and underground water quality. (See Figure 2)

D. **Streamflow** *(Resolution No. 96-12)*. Numerical stream quality objectives are based on a minimum consecutive 7-day flow with a 10-year recurrence interval unless otherwise specified.

E. **Requests for Modification of Stream Quality Objectives**. *(Resolution No. 96-12)*. The Commission will consider requests to modify the stream quality objectives for toxic pollutants based upon site-specific factors. Such requests shall provide a demonstration of the site-specific differences in the physical, chemical or biological characteristics of the area in question, through the submission of substantial scientific data and analysis. The demonstration shall also include the proposed alternate stream quality objectives. The methodology and form of the demonstration shall be approved by the Commission.

3.10.6 Definitions

A. **Biochemical Oxygen Demand** *(Resolution No. 67-7)*. Biochemical oxygen demand as determined under standard laboratory procedures for 5 days at 20°C.

B. **Carbonaceous Oxygen Demand** *(Resolution No. 67-7)*. That part of the ultimate oxygen demand associated with biochemical oxidation of carbonaceous, as distinct from nitrogenous, material.

C. **Effective Disinfection** *(Resolution No. 67-7)*. The destruction of pathogenic organisms in such manner and under such controls as shall be prescribed by Commission regulations.

D. **Secondary Treatment** *(Resolution No. 67-7)*.

1. *(Resolution No. 70-3)* the removal of practically all suspended solids at all times;

2. *(Resolution Nos. 70-3 and 78-7)* the reduction of the biochemical oxygen demand by at least 85 percent; the 85 percent reduction may be modified, upon application, for dilute industrial process wastewater;

3. may include the in-plant control of industrial wastes as prescribed by the Commission.

E. **River Mile** *(Resolution No. 67-7)*. The distance, in statute miles, of a location or item measured from "mile zero."

1. **Delaware Bay and River.**

a. Mile Zero is located at the intersection of the centerline of the navigation channel and a line between the Cape May Light and the tip of Cape Henlopen.

b. Distances from mile zero are measured essentially along the centerline of the navigation channel up to the Trenton-Morrisville Toll Bridge (R.M. 133.4) and above that point along the State boundary line as shown on published quadrangle maps of the United States Geological Survey.

2. **Tributaries.**

a. Mile zero is located at the intersection of the centerline of the tributary and a line joining the opposite banks at its mouth.

b. Distances from mile zero are measured along the centerline of the tributary.

F. **Intermittent Streams** *(Resolution 78-7)*. A stream is intermittent when it meets either of the following conditions:

1. A stream with less than a 0.1 cfs minimum consecutive seven-day natural flow with a ten-year recurrence interval; or,

2. A ditch, canal or natural water course which serves only to convey runoff during and after a storm.

G. **Background, Total Dissolved Solids** *(Resolution 78-7)*. The observed concentration of total dissolved solids during low flow conditions or, in the absence thereof, an estimate acceptable to the Commission.

H. **IRIS** *(Resolution 96-12)*. The Integrated Risk Information System established and maintained by the U.S. Environmental Protection Agency. An electronic data base containing information on the toxicity and carcinogenicity of individual substances which can be accessed by regulatory agencies and the public.

I. **Carcinogen** *(Resolution 96-12)*. A substance for which there is no level of exposure that does not pose a small, finite probability of inducing benign or malignant tumors.

J. **Systemic Toxicant** *(Resolution 96-12)*. A substance having a threshold exposure which must be exceeded before deleterious effects (other than cancer) are observed in organ systems.

K. **Acute Effects** *(Resolution 96-12)*. Effects (including but not limited to lethality) due to exposure to a toxicant over a short time period.

L. **Chronic Effects** *(Resolution 96-12)*. Effects (including but not limited to reduced reproduction, reduced growth and lethality) due to exposure to a toxicant over a relatively long period of time relative to the life span of the exposed organism.

M. **Cancer Potency Factor (CPF)** *(Resolution 96-12)*. The slope of the dose response curve in the low dose region expressed as the risk per milligram of a toxic substance per kilogram of body weight per day $(mg/KG/day)^{-1}$.

N. **Reference Dose (RfD)** *(Resolution 96-12)*. The daily exposure to a substance that is likely to be without an appreciable risk of deleterious effects during a lifetime expressed as milligram of the substance per kilogram of body weight per day (mg/KG/day).

O. **Maximum Contaminant Level (MCL)** *(Resolution 96-12)*. The maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

P. **Stream Quality Objectives** *(Resolution 96-12)*. Numeric values for specific pollutants and narrative descriptions of the quality of a waterbody that will assure that the designated uses of the waterbody, including the protection of aquatic life and human health, are achieved.

3.20 INTERSTATE STREAMS - NONTIDAL

3.20.1 **Application** *(Resolution No. 67-7)*. This Article shall apply to the interstate nontidal streams of the Delaware River Basin. The interstate nontidal streams of the Delaware River Basin are those rivers, lakes, and other waters that flow across or form a part of state boundaries.

3.20.2 **Zone 1A**

A. **Description** *(Resolution Nos. 67-7 and 74-1)*. Zone 1A is that part of the Delaware River extending from the confluence of the East and West Branches of the Delaware River at Hancock, New York, R.M. (River Mile) 330.7, to the Route 652 Bridge at Narrowsburg, New York, R.M. 289.9.

B. **Water Uses to be Protected** (Resolution No. 67-7). The quality of Zone 1A waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. spawning and nursery habitat for anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas,

   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C),
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C),
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 10 units,
    b. maximum 150 units.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.3 **Zone 1B**

A. **Description** *(Resolution Nos. 67-7 and 74-1)*. Zone 1B is that part of the Delaware River extending from the Route 652 bridge at Narrowsburg, New York, R.M. 289.9, to the U.S. Routes 6 and 209 bridge at Port Jervis, New York, R.M. 254.75.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone 1B waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. spawning and nursery habitat for anadromous fish,
   c. passage of anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 10 units,
    b. maximum 150 units.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.4 Zone 1C

A. **Description** *(Resolution Nos. 67-7)*. Zone 1C is that part of the Delaware River extending from the U.S. Routes 6 and 209 bridge at Port Jervis, New York, R.M. 254.75, to Tocks Island Dam, 217.0 (proposed axis of dam).

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone 1C waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. spawning and nursery habitat for anadromous fish,
   c. passage of anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 74-1)*. Unless exceeded due to natural conditions.
    a. maximum 30-day average 20 units,
    b. maximum 150 units.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.5 Zone 1D

A. **Description** *(Resolution Nos. 67-7 and 74-1)*. Zone 1D is that part of the Delaware River extending from Tocks Island Dam, R.M. 217.0 (proposed axis of dam), to the mouth of the Lehigh River at Easton, Pennsylvania, R.M. 183.66.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone 1D waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. spawning and nursery habitat for anadromous fish,
   c. passage of anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 20 units,
    b. maximum 150 units.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.6 **Zone 1E**

A. **Description** *(Resolution Nos. 67-7 and 74-1)*. Zone 1E is that part of the Delaware River extending from the mouth of the Lehigh River at Easton, Pennsylvania, R.M. 183.66, to the head of tidewater at Trenton, New Jersey, R.M. 133.4 (Trenton-Morrisville Toll Bridge).

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone 1E waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. spawning and nursery habitat for anadromous fish,
   c. passage of anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** (Resolution No. 74-1). Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 30 units,
    b. maximum 150 units.

11. **Alkalinity** *(Resolution No. 67-7)*. Not less than 20 mg/l.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.7 Zone E

A. **Description** *(Resolution No. 67-7)*. Zone E is East Branch Delaware River extending from its source in the town of Roxbury, Delaware County, New York to its mouth at Hancock, New York, at R.M. 330.7 on the Delaware River.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone E waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;

c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas,
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C);
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C);
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.8 Zone W1

A. **Description** *(Resolution No. 67-7)*. Zone W1 is West Branch Delaware River extending from its source in the town of Jefferson, Schoharie County, New York, to its mouth at Hancock, New York, at R.M. 330.71 on the Delaware River.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone W1 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C),
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C),
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.9 **Zone W2**

A. **Description** *(Resolution No. 67-7)*. Zone W2 is:

1. Sand Pond Creek extending from R.M. 1.8 at the confluence of Sherman Creek and Starboard Creek in Pennsylvania to its mouth in New York at R.M. 10.1 on the West Branch Delaware River;

2. Cat Hollow Brook extending from its source in New York to its mouth in Pennsylvania at R.M. 1.05 on Sand Pond Creek;

3. Sherman Creek in Pennsylvania extending from its source to its mouth at R.M. 1.8 on Sand Pond Creek;

4. an unnamed tributary of Sherman Creek extending from its source in New York to its mouth in Pennsylvania at R.M. 1.6 on Sherman Creek;

5. Starboard Creek extending from its source in Lake Oquaga in New York to its mouth in Pennsylvania at R.M. 1.81 on Sand Pond Creek.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone W2 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C);
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C);
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.10 Zone N1

A. **Description** *(Resolution No. 67-7)*. Zone N1 is that part of the Neversink River extending from R.M. 0.5 at its confluence with Clove Brook to its mouth on the Delaware River at R.M. 253.64.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone N1 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.11 **Zone N2**

A. **Description** *(Resolution Nos. 67-7)*. Zone N2 is:

1. Clove Brook extending from its source in Steeny Kill Lake in New Jersey to its mouth in New York at R.M. 0.5 on the Neversink River;

2. an unnamed tributary of Clove Brook extending from its source in New York to its mouth in New Jersey at R.M. 1.0 on Clove Brook;

3. an unnamed tributary to the above unnamed tributary of Clove Brook extending from its source in New York to its mouth in New Jersey at R.M. 0.7 on the unnamed tributary of Clove Brook.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone N2 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C);
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C);
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.12 Zone C1

A. **Description** *(Resolution Nos. 67-7)*. Zone C1 is that part of the Christina River extending from its source in Pennsylvania to the head of tide water at R.M. 16.3 at the outlet of Smalley's Pond in Delaware.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C1 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time,
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. Increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.13 **Zone C2**

A. **Description** *(Resolution Nos. 67-7)*. Zone C2 is:

1. West Branch Christina River extending from its source in Maryland to its mouth on the Christina River in Delaware at R.M. 25.7;

2. Persimmon Run extending from its source in Maryland to its mouth on the West Branch Christina River in Delaware at R.M. 0.8;

3. East Branch Christina River extending from its source in Pennsylvania to its mouth on the Christina River at R.M. 30.2.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C2 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.14 **Zone C3**

A. **Description** *(Resolution Nos. 67-7)*. Zone C3 is that part of White Clay Creek extending from its source in Pennsylvania to R.M. 14.7 at the Pennsylvania-Delaware State line.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C3 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time;
   b. minimum 24-hour average of 6.0 mg/l;
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C);
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C);
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
   a. not to exceed
      1) the natural background by 10 units, or
      2) a maximum of 25 units, whichever is less.
   b. increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.15 Zone C4

A. **Description** *(Resolution Nos. 67-7)*. Zone C4 is that part of White Clay Creek extending from R.M. 14.7 at the Pennsylvania-Delaware State line to its mouth on the Christina River in Delaware at R.M. 10.0.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C4 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C);
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.16 Zone C5

A. **Description** *(Resolution No. 67-7)*. Zone C5 is:

1. that part of Red Clay Creek extending from the confluence of East and West branches of Red Clay Creek in Pennsylvania at R.M. 13.4 to R.M. 12.6, at the Pennsylvania-Delaware State Line;

2. West Branch Red Clay Creek extending from its source to its mouth on Red Clay Creek at R.M. 13.4.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C5 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. maintenance and propagation of trout,
   c. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7, 70-24 and 74-1)*.
   a. not less than 5.0 mg/l at any time,
   b. minimum 24-hour average of 6.0 mg/l,
   c. not less than 7.0 mg/l in spawning areas whenever temperatures are suitable for trout spawning.

2. **Temperature** *(Resolution Nos. 67-7, 70-24 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 50°F (10.0°C),
   b. not to exceed 2°F (1.1°C) rise above ambient temperature when stream temperature is between 50°F (10.0°C) and 58°F (14.4°C),
   c. natural temperature will prevail above 58°F (14.4°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.17 **Zone C6**

A. **Description** *(Resolution No. 67-7)*. Zone C6 is that part of Red Clay Creek extending from R.M. 12.6 at the Pennsylvania-Delaware State line to its mouth on White Clay Creek in Delaware at R.M. 2.6.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C6 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. increases not to be attributable to industrial waste discharges.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.18 **Zone C7**

A. **Description** *(Resolution No. 67-7)*. Zone C7 is:

1. Brandywine Creek extending from the confluence of the East and West Branches of Brandywine Creek in Pennsylvania at R.M. 20.0 to the head of tidewater at R.M. 2.0 at the Market Street Bridge in Wilmington, Delaware;

2. West Branch Brandywine Creek extending from its source to its mouth on Brandywine Creek at R.M. 20.0.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C7 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. spawning and nursery habitat for anadromous fish,
   c. passage of anadromous fish,
   d. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C),
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.5 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-7)*.
    a. not to exceed
       1) the natural background by 10 units, or
       2) a maximum of 25 units, whichever is less.
    b. increases not to be attributable to industrial waste discharges.

11. **Fluorides** *(Resolution No. 67-7)*. Not to exceed 1.0 mg/l.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.20.19 Zone C8

A. **Description** *(Resolution No. 67-7)*. Zone C8 is Naaman Creek extending from its source in Pennsylvania to the head of tidewater in Delaware.

B. **Water Uses to be Protected** *(Resolution No. 67-7)*. The quality of Zone C8 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident game fish and other aquatic life,
   b. wildlife;

3. a. recreation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-7 and 74-1)*.
   a. not less than 4.0 mg/l at any time;
   b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature** *(Resolution Nos. 67-7 and 74-1)*. Except in designated heat dissipation areas
   a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6°C);
   b. natural temperature will prevail above 87°F (30.6°C).

3. **pH** *(Resolution No. 67-7)*. Between 6.0 and 8.5.

4. **Phenols** *(Resolution Nos. 67-7 and 74-1)*. Not to exceed 0.005 mg/l, unless due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-7)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution No. 67-7)*. Not to exceed 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-7)*.
   a. alpha emitters - not to exceed 3 pc/l (picocuries per liter);
   b. beta emitters - not to exceed 1,000 pc/l.

8. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Not to exceed 200 per 100 milliliters as a geometric average; samples shall be taken at such frequency and location as to permit valid interpretation.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

D. **Effluent Quality Requirements** *(Resolution No. 67-7)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.30 INTERSTATE STREAMS -- TIDAL

3.30.1 **Application** *(Resolution No. 67-2)*. This Article shall apply to the Delaware River Estuary and Bay, including the tidal portions of the tributaries thereof.

3.30.2 **Zone 2**

A. **Description** *(Resolution No. 67-2)*. Zone 2 is that part of the Delaware River extending from the head of tidewater at Trenton, New Jersey, R.M. (River Mile) 133.4 (Trenton-Morrisville Toll Bridge) to R.M. 108.4 below the mouth of Pennypack Creek, including the tidal portions of the tributaries thereof.

B. **Water Uses to be Protected** *(Resolution No. 67-2)*. The quality of Zone 2 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance and propagation of resident fish and other aquatic life,
   b. passage of anadromous fish,
   c. wildlife;

3. *(Resolution Nos. 74-1 and 91-6)*
   a. recreation;

4. a. navigation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-2 and 74-1)*.
   a. 24-hour average concentration shall not be less than 5.0 mg/l.
   b. During the periods from April 1 to June 15, and September 16 to December 31, the dissolved oxygen shall not have a seasonal average less than 6.5 mg/l.

2. **Temperature** *(Resolution Nos. 67-2 and 74-1)*. Shall not exceed
   a. 5°F (2.8°C) above the average 24-hour temperature gradient displayed during the 1961-66 period, or
   b. a maximum of 86°F (30.0°C), whichever is less.

3. **pH** *(Resolution No. 67-2)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-2)*. Maximum 0.005 mg/l unless exceeded due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-2)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 0.5 mg/l.

7. **Radioactivity** *(Resolution No. 67-2)*.
   a. alpha emitters - maximum 3 pc/l (picocuries per liter);
   b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria.** *(Resolution No. 91-6)*.
   a. **Fecal Coliform** (Resolution Nos. 70-3 and 74-1). Maximum geometric average 200 per 100 milliliters.
   b. **Enterococcus**. Maximum geometric average 33 per 100 milliliters.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution Nos. 67-2 and 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 40 units;
    b. maximum 150 units;
    c. except above R.M. 117.81 during the period May 30 to September 15 when the turbidity shall not exceed 30 units.

11. **Alkalinity** *(Resolution No. 67-2)*. Between 20 and 100 mg/l.

12. **Chlorides** *(Resolution Nos. 67-2 and 74-1)*. Maximum 15-day average 50 mg/l.

13. **Hardness** *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 95 mg/l.

14. **Toxic Pollutants** *(Resolution 96-12)*.

    a. Applicable MCLs and criteria to protect the taste and odor of ingested water and fish are presented in Tables 3 and 4.

    b. Applicable freshwater stream quality objectives for the protection of aquatic life are presented in Table 5.

    c. Applicable freshwater stream quality objectives for the protection of human health are presented in Tables 6 and 7.

D. **Effluent Quality Requirements** *(Resolution No. 67-2)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from all outfalls in the zone (exclusive of stormwater bypass) shall not exceed that assigned by Commission regulations.

TABLE 3: MAXIMUM CONTAMINANT LEVELS TO BE APPLIED AS HUMAN HEALTH STREAM QUALITY OBJECTIVES IN ZONES 2 AND 3 OF THE DELAWARE RIVER ESTUARY.

Parameter	Maximum Contaminant Level (µg/l)
Metals	
Arsenic	10
Barium	2000
Beryllium	4
Chromium (trivalent)	100
Copper	1300
Lead	15
Selenium	50
Pesticides/PCBs	
alpha-BHC	0.2
beta-BHC	0.2
gamma - BHC (Lindane)	2
2,4-Dichloro-phenoxyacetic acid (2,4-D)	70
Methoxychlor	40
Toxaphene	3
Dioxin (2,3,7,8-TCDD)	0.00003
2,4,5 Trichloro-phenoxypropionic acid (2,4,5-TP-Silvex)	50
Volatile Organic Compounds (VOCs)	
Benzene	5
Carbon Tetrachloride	5
1,2-Dichloroethane	5
1,1-Dichloroethylene	7
[1,2 - trans – Dichloroethene] 1,2 - trans – Dichloroethylene	100
Dichloromethane (Methylene Chloride)	5
Tetrachloroethylene (PCE)	5
Toluene	1000
Total Trihalomethanes	80
1,1,1-Trichloroethane	200
1,1,2-Trichloroethane	5

Parameter	Maximum Contaminant Level (µg/l)
Trichloroethylene	5
Vinyl Chloride	2
Polycyclic Aromatic Hydrocarbons (PAHs)	
Benzo(a)Pyrene	0.2
Other Compounds	
Asbestos	7 million fibers/L
Bis(2-Ethylhexyl) Phthalate	6
Fluoride	4,000
Nitrate	10,000
Pentachlorophenol	1
Dioxin (2,3,7,8-TCDD)	0.00003

TABLE 4: CRITERIA TO PROTECT THE TASTE AND ODOR OF INGESTED WATER AND FISH TO BE APPLIED AS HUMAN HEALTH STREAM QUALITY OBJECTIVES IN ALL ZONES OF THE DELAWARE RIVER ESTUARY.

Parameter	STREAM QUALITY OBJECTIVE (Fg/l)
Phenol	300
2 – Chlorophenol	0.1
2,4 – Dichlorophenol	0.3
2,4 – Dimethylphenol	400
4 - Chloro - 3 – methylphenol	3.0 mg/l
Pentachlorophenol	30
Acenaphthene	20
Chlorobenzene	20
Hexachlorocyclopentadiene	1.0
Nitrobenzene	30

TABLE 5: STREAM QUALITY OBJECTIVES FOR TOXIC POLLUTANTS FOR THE PROTECTION OF AQUATIC LIFE IN THE DELAWARE RIVER ESTUARY AND BAY.

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)	
	Acute	Chronic	Acute	Chronic
Metals				
Aluminum[a,b]	750	87	NA	NA
Arsenic (trivalent)[c]	340	150	69	36
Cadmium[c]	0.651*EXP(1.0166* LN(hardness)-3.924)	0.651*EXP(0.7409* LN(hardness)-4.719)	40	8.8
Chromium (trivalent)[c]	0.277*EXP(0.819* LN(hardness)+3.7256)	0.277*EXP(0.819* LN(hardness)+0.6848)	NA	NA
Chromium (hexavalent)[c]	16	11	1,100	50
Copper[c]	0.908*EXP(0.9422* LN(hardness)-1.7)	0.908*EXP(0.8545* LN(hardness)-1.702)	4.8	3.1
Lead[c]	38	5.4	210	8.1
Mercury[c]	1.4	0.77	1.8	0.94
Nickel[c]	0.846*EXP(0.846* LN(hardness)+2.255)	0.846*EXP(0.846* LN(hardness)+0.0584)	64	22
Selenium[a]	20	5.0	290	71
Silver[c]	0.85*EXP(1.72* LN(hardness)-6.59)	NA	1.9	NA
Zinc[c]	0.95*EXP(0.8473* LN(hardness)+0.884)	0.95*EXP(0.8473* LN(hardness)+0.884)	90	81
Pesticides/PCBs				
Aldrin	3	NA	1.3	NA
gamma - BHC (Lindane)	0.95	NA	0.16	NA
Chlordane	2.4	0.0043	0.09	0.004
Chlorpyrifos (Dursban)	0.083	0.041	0.011	0.0056
DDT and metabolites (DDE & DDD)[d]	1.1	0.001	0.13	0.001
Dieldrin	0.24	0.056	0.71	0.0019
Endosulfan[e]	0.22	0.056	0.034	0.0087
Endrin	0.086	0.036	0.037	0.0023
Heptachlor	0.52	0.0038	0.053	0.0036
Heptachlor Epoxide	0.52	0.0038	0.053	0.0036
Parathion	0.065	0.013	NA	NA
PCBs (Total)	1.0	0.014	5.0	0.03
Toxaphene	0.73	0.0002	0.21	0.0002

Other Compounds				
Cyanide (free)	22	5.2	1	1
Pentachlorophenol	$e^{(1.005*pH-4.83)}$	$e^{(1.005*pH-5.29)}$	13	7.9
Indicator Parameters				
Whole Effluent Toxicity	0.3 Toxic Units $_{acute}$	1.0 Toxic Units $_{chronic}$	0.3 TU_a	1.0 TU_c

Footnotes to Table 5:

[a] Total recoverable criteria

[b] Aluminum criteria listed are restricted to waters with pH between 6.5 and 9.0.

[c] Dissolved criteria

[d] Criteria apply to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).

[e] Values were derived from data for endosulfan and are most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.

Criteria for cadmium, chromium (trivalent), copper, nickel, silver and zinc are hardness-dependent and are expressed as the dissolved form (see Section 3.10.3.C.2. on form of metal).

TABLE 6: STREAM QUALITY OBJECTIVES FOR CARCINOGENS FOR THE DELAWARE RIVER ESTUARY AND BAY.

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Metals			
Arsenic	*	NA	NA
Pesticides/PCBs			
Aldrin	0.000049	0.000050	0.000050
alpha – BHC	0.0026	0.0049	0.0049
beta – BHC	0.0091	0.017	0.017
Chlordane	0.00080	0.00081	0.00081
DDD	0.00031	0.00031	0.00031
DDE	0.00022	0.00022	0.00022
DDT	0.00022	0.00022	0.00022
Dieldrin	0.000052	0.000054	0.000054
Heptachlor	0.000079	0.000079	0.000079
Heptachlor Epoxide	0.000039	0.000039	0.000039
PCBs (Total)	0.000016	0.000016	0.000016
Toxaphene	0.00028	0.00028	0.00028
Volatile Organic Compounds (VOCs)			
Acrylonitrile	0.051	0.25	0.25
Benzene	0.61	14	14
Benzidine	0.000086	0.00020	0.00020
Bromoform	4.3	140	140
Bromodichloromethane	0.55	17	17
Carbon Tetrachloride	0.23	1.6	1.6
Chlorodibromomethane	0.40	13	13
Chloroform	5.7	470	470
3,3 - Dichlorobenzidine	0.021	0.028	0.028
1,2 - Dichloroethane	0.38	37	37
1,2 - Dichloropropane	0.50	15	15
1,3 - Dichloropropene	0.34	21	21

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Dichloromethane (Methylene Chloride)	*	590	590
Tetrachloroethylene	0.69	3.3	3.3
1,1,2,2 - Tetrachloroethane	0.17	4.0	4.0
1,1,2 - Trichloroethane	0.59	16	16
Trichloroethylene	2.5	30	30
Vinyl Chloride	0.025	2.4	2.4
Polycyclic Aromatic Hydrocarbons (PAHs)			
Benz[a]anthracene	0.0038	0.18	0.18
Benzo[b]fluoranthene	0.038	0.18	0.18
Benzo[k]fluoranthene	0.38	1.8	1.8
Benzo[a]pyrene	0.0038	0.018	0.018
Chrysene	3.8	18	18
Dibenz[a,h]anthracene	0.0038	0.018	0.018
Indeno[1,2,3-cd]pyrene	0.038	0.18	0.18
Other Compounds			
Bis (2-chloroethyl) ether	0.03	0.53	0.53
Bis (2-ethylhexyl) phthalate	1.2	2.2	2.2
2,4 - Dinitrotoluene	0.11	3.4	3.4
1,2 - Diphenylhydrazine	0.036	0.2	0.2
Hexachlorobenzene	0.00028	0.00029	0.00029
Hexachlorobutadiene	0.44	18	18
Hexachloroethane	1.4	3.3	3.3
Isophorone	35	960	960
N-Nitrosodi-N-butylamine	0.0063	14	14
N-Nitrosodi-N-methylamine	0.00069	3.0	3.0
N-Nitrosodiethylamine	0.0008	1.24	1.24
N-Nitrosodi-N-phenylamine	3.3	6	6
N-Nitrosodi-N-propylamine	0.0050	0.51	0.51
N-Nitrosopyrrolidine	0.016	34	34

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Pentachlorophenol	0.27	3.0	3.0
Dioxin (2,3,7,8 – TCDD)	0.000000005	0.0000000051	0.0000000051
2,4,6 - Trichlorophenol	1.4	2.4	2.4

* The MCL for this compound applies in Zones 2 and 3 and is listed in Table 3.

TABLE 7: STREAM QUALITY OBJECTIVES FOR SYSTEMIC TOXICANTS FOR THE DELAWARE RIVER ESTUARY AND BAY.

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Metals			
Antimony	5.6	640	640
Arsenic	*	NA	NA
Beryllium	*	420	420
Cadmium	3.4	16	16
Chromium (trivalent)	*	380,000	380,000
Chromium (hexavalent)	92	NA	NA
Chromium (total)	NA	750	750
Mercury	0.050	0.051	0.051
Methylmercury	0.3 mg/kg fish tissue	0.3 mg/kg fish tissue	0.3 mg/kg fish tissue
Nickel	500	1,700	1,700
Selenium	170	4,200	4,200
Silver	170	40,000	40,000
Thallium	0.24	0.47	0.47
Zinc	7,400	26,000	26,000
Pesticides/PCBs			
Aldrin	0.025	0.025	0.025
gamma - BHC (Lindane)	0.98	1.8	1.8
Chlordane	0.14	0.14	0.14
DDT and Metabolites (DDD and DDE)	0.037	0.037	0.037
Dieldrin	0.041	0.043	0.043
alpha -Endosulfan	62	89	89
beta- Endosulfan	62	89	89
Endosulfan Sulfate	62	89	89
Endrin	0.059	0.060	0.060
Endrin Aldehyde	0.29	0.30	0.30
Heptachlor	0.18	0.18	0.18

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Heptachlor Epoxide	0.0046	0.0046	0.0046
Total PCBs	0.00839	0.00849	0.00149
Volatile Organic Compounds (VOCs)			
Acrolein	6.1	9.3	9.3
Benzene	*	3,100	3,100
Bromoform	650	9,600	9,600
Bromodichloromethane	680	NA	NA
Dibromochloromethane	680	21,000	21,000
Carbon Tetrachloride	*	150	150
Chloroform	68	2,100	2,100
Chlorobenzene	130	1,600	1,600
1,1 - Dichloroethylene	*	7,100	7,100
1,2 - trans - Dichloroethylene	140	10,000	10,000
1,3 - Dichloropropene	1,000	63,000	63,000
Ethylbenzene	530	2,100	2,100
Methyl Bromide	47	1,500	1,500
Methylene Chloride (Dichloromethane)	*	260,000	260,000
1,1,2 – Trichloroethane	*	3,600	3,600
Tetrachloroethylene	*	1,300	1,300
Toluene	1,300	15,000	15,000
Polycyclic Aromatic Hydrocarbons (PAHs)			
Anthracene	8,300	40,000	40,000
Fluoranthene	130	140	140
Fluorene	1,100	5,300	5,300
Pyrene	830	4,000	4,000
Other Compounds			
Acenaphthene	670	990	990
Benzidine	59	140	140

PARAMETER	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
	FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Bis (2-chloroisopropyl) ether	1,400	65,000	65,000
Bis (2-ethylhexyl) phthalate	*	620	620
Butylbenzyl phthalate	1,500	1,900	1,900
2 - Chloronaphthalene	1,000	1,600	1,600
2 - Chlorophenol	81	150	150
Cyanide	140	140	140
Dibutyl Phthalate	2,000	4,500	4,500
1,2 - Dichlorobenzene	420	1,300	1,300
1,3 - Dichlorobenzene	420	1,300	1,300
1,4 - Dichlorobenzene	63	190	190
2,4 - Dichlorophenol	77	290	290
Diethyl Phthalate	17,000	44,000	44,000
Dimethyl Phthalate	270,000	1,100,000	1,100,000
2,4 - Dimethylphenol	380	850	850
2,4 - Dinitrophenol	69	5,300	5,300
2,4 - Dinitrotoluene	68	2,100	2,100
Hexachlorobenzene	0.35	0.36	0.36
Hexachlorocyclopentadiene	40	1,100	1,100
Hexachloroethane	20	46	46
Isophorone	6,700	180,000	180,000
2-Methyl-4,6-dinitrophenol	13	280	280
Nitrobenzene	17	690	690
Pentachlorobenzene	1.4	1.5	1.5
Pentachlorophenol	*	11,000	11,000
Phenol	10,000	860,000	860,000
1,2,4,5-Tetrachlorobenzene	0.97	1.1	1.1
1,2,4 - Trichlorobenzene	35	70	70
2,4,5-Trichlorophenol	1,800	3,600	3,600
Vinyl Chloride	*	10,000	10,000

* The MCL for this compound applies in Zones 2 and 3 and is listed in Table 3.

3.30.3 **Zone 3**

A. **Description** *(Resolution No. 67-2)*. Zone 3 is that part of the Delaware River extending from R.M. 108.4 to R.M. 95.0 below the mouth of Big Timber Creek, including the tidal portions of the tributaries thereof.

B. **Water Uses to be Protected** *(Resolution No. 67-2)*. The quality of Zone 3 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. public water supplies after reasonable treatment,
   b. industrial water supplies after reasonable treatment,
   c. agricultural water supplies;

2. a. maintenance of resident fish and other aquatic life,
   b. passage of anadromous fish,
   c. wildlife;

3. *(Resolution No. 74-1)*
   a. recreation - secondary contact;

4. a. navigation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-2 and 74-1)*.
   a. 24-hour average concentration shall not be less than 3.5 mg/l.
   b. During the periods from April 1 to June 15, and September 16 to December 31, the dissolved oxygen shall not have a seasonal average less than 6.5 mg/l.

2. **Temperature** *(Resolution Nos. 67-2 and 74-1)*. Shall not exceed
   a. 5°F (2.8°C) above the average 24-hour temperature gradient displayed during the 1961-66 period, or
   b. a maximum of 86°F (30.0°C), whichever is less.

3. **pH** *(Resolution No. 67-2)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-2 and 74-1)*. Maximum 0.005 mg/l, unless exceeded due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-2)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 1.0 mg/l.

7. **Radioactivity** *(Resolution No. 67-2)*.
   a. alpha emitters - maximum 3 pc/l (picocuries per liter);
   b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria** *(Resolution No. 91-6)*
   a. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Maximum geometric average 770 per 100 milliliters.
   b. **Enterococcus**. Maximum geometric average 88 per 100 milliliters.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed
   a. 133 percent of background, or
   b. 500 mg/l, whichever is less.

10. **Turbidity** *(Resolution No. 67-2 and 74-1)*. Unless exceeded due to natural conditions
   a. maximum 30-day average 40 units,
   b. maximum 150 units.

11. **Alkalinity** *(Resolution No. 67-2)*. Between 20 and 120 mg/l.

12. **Chlorides** *(Resolution No. 83-11)*. Maximum 30-day average concentration of 180 mg/l at R.M. 98.

13. **Hardness** *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 150 mg/l.

14. **Sodium** *(Resolution No. 83-11)*. Maximum 30-day average concentration of 100 mg/l at R.M. 98.

15. **Toxic Pollutants** *(Resolution 96-12)*.

   a. Applicable MCLs and criteria to protect the taste and odor of ingested water and fish are presented in Tables 3 and 4.
   b. Applicable freshwater stream quality objectives for the protection of aquatic life are presented in Table 5.
   c. Applicable freshwater stream quality objectives for the protection of human health are presented in Tables 6 and 7.

D. **Effluent Quality Requirements** *(Resolution No. 67-2)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from all outfalls in the zone (exclusive of stormwater bypass) shall not exceed that assigned by Commission regulations.

3.30.4 Zone 4

A. **Description** *(Resolution No. 67-2)*. Zone 4 is that part of the Delaware River extending from R.M. 95.0 to R.M. 78.8, the Pennsylvania-Delaware boundary line, including the tidal portions of the tributaries thereof.

B. **Water Uses to be Protected** *(Resolution No. 67-2)*. The quality of Zone 4 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. industrial water supplies after reasonable treatment;

2. a. maintenance of resident fish and other aquatic life,
   b. passage of anadromous fish,
   c. wildlife;

3. *(Resolution Nos. 74-1 and 91-6)*
   a. recreation - secondary contact above R.M. 81.8,
   b. recreation below R.M. 81.8;

4. a. navigation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-2 and 74-1)*.
   a. 24-hour average concentration shall not be less than 3.5 mg/l.
   b. During the periods from April 1 to June 15, and September 16 to December 31, the dissolved oxygen shall not have a seasonal average less than 6.5 mg/l.

2. **Temperature** *(Resolution Nos. 67-2 and 74-1)*. Shall not exceed
   a. 5°F (2.8°C) above the average 24-hour temperature gradient displayed during the 1961-66 period, or
   b. a maximum of 86°F (30.0°C), whichever is less.

3. **pH** *(Resolution No. 67-2)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-2 and 74-1)*. Maximum 0.02 mg/l, unless exceeded due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-2)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 1.0 mg/l.

7. **Radioactivity** *(Resolution No. 67-2)*.
   a. alpha emitters - maximum 3 pc/l (picocuries per liter);
   b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria** *(Resolution No. 91-6)*.
   a. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*.
      1) Above R.M. 81.8 maximum geometric average 770 per 100 milliliters.
      2) Below R.M. 81.8 maximum geometric average 200 per 100 milliliters.
   b. **Enterococcus**
      1) Above R.M. 81.8 maximum geometric average 88 per 100 milliliters.
      2) Below R.M. 81.8 maximum geometric average 33 per 100 milliliters.

9. **Total Dissolved Solids** *(Resolution No. 74-1)*. Not to exceed 133 percent of background.

10. **Turbidity** *(Resolution No. 67-2 and 74-1)*. Unless exceeded due to natural conditions
    a. maximum 30-day average 40 units,
    b. maximum 150 units.

11. **Alkalinity** *(Resolution No. 67-2)*. Between 20 and 120 mg/l.

12. **Toxic Pollutants** *(Resolution 96-12)*.

    a. Applicable criteria to protect the taste and odor of ingested water and fish are presented in Table 4.
    b. Applicable freshwater stream quality objectives for the protection of aquatic life are presented in Table 5.
    c. Applicable freshwater stream quality objectives for the protection of human health are presented in Tables 6 and 7.

D. **Effluent Quality Requirements** *(Resolution No. 67-2)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from all outfalls in the zone (exclusive of stormwater bypass) shall not exceed that assigned by Commission regulations.

3.30.5 Zone 5

A. **Description** *(Resolution No. 67-2)*. Zone 5 is that part of the Delaware River extending from R.M. 78.8 to R.M. 48.2, Liston Point, including the tidal portions of the tributaries thereof.

B. **Water Uses to be Protected** *(Resolution No. 67-2)*. The quality of waters in Zone 5 shall be maintained in a safe and satisfactory condition for the following uses:

1. a. industrial water supplies after reasonable treatment;

2. a. maintenance of resident fish and other aquatic life,
   b. propagation of resident fish from R.M. 70.0 to R.M. 48.2,
   c. passage of anadromous fish,
   d. wildlife;

3. *(Resolution Nos. 74-1 and 91-6)*
   a. recreation;

4. a. navigation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-2 and 74-1)*.
   a. 24-hour average concentration shall not be less than
      1) 3.5 mg/l at R.M. 78.8,
      2) 4.5 mg/l at R.M. 70.0,
      3) 6.0 mg/l at R.M. 59.5.
   b. During the periods from April 1 to June 15, and September 16 to December 31, the dissolved oxygen shall not have a seasonal average less than 6.5 mg/l in the entire zone.

2. **Temperature** *(Resolution Nos. 67-2 and 74-1)*.
   a. Shall not be raised above ambient by more than
      1). 4°F (2.2°C) during September through May, nor
      2). 1.5°F (0.8°C) during June through August;
   b. nor shall maximum temperatures exceed 86°F (30.0°C).

3. **pH** *(Resolution No. 67-2)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-2 and 74-1)*. Maximum 0.01 mg/l, unless exceeded due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-2)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 1.0 mg/l.

7. **Radioactivity** *(Resolution No. 67-2)*.
   a. alpha emitters - maximum 3 pc/l (picocuries per liter);
   b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria** *(Resolution No. 91-6)*.
   a. **Fecal Coliform** *(Resolution Nos. 70-3 and 74-1)*. Maximum geometric average 200 per 100 milliliters.
   b. **Enterococcus**. Maximum geometric average 35 per 100 milliliters.

9. **Turbidity** *(Resolution No. 67-2 and 74-1)*. Unless exceeded due to natural conditions
   a. maximum 30-day average 40 units,
   b. maximum 150 units.

10. **Alkalinity** *(Resolution No. 67-2)*. Between 20 and 120 mg/l.

11. **Toxic Pollutants** *(Resolution 96-12)*. Freshwater stream quality objectives apply in areas upstream of the Delaware Memorial Bridges (River Mile 68.75), and the more stringent of the freshwater or marine stream quality objectives apply in areas below RM 68.75.

    a. Applicable criteria to protect the taste and odor of ingested water and fish are presented in Table 4.

b. Applicable freshwater and marine stream quality objectives to protect aquatic life are presented in Table 5.
c. Applicable freshwater and marine stream quality objectives to protect human health are presented in Tables 6 and 7.

D. **Effluent Quality Requirements** *(Resolution No. 67-2)*.

1. All discharges shall meet the effluent quality requirements of Section 3.10.

2. The carbonaceous oxygen demand from all outfalls in the zone (exclusive of stormwater bypass) shall not exceed that assigned by Commission regulations.

3.30.6 **Zone 6**

A. **Description** *(Resolution No. 67-2)*. Zone 6 is Delaware Bay extending from R.M. 48.2 to R.M. 0.0, the Atlantic Ocean, including the tidal portions of the tributaries thereof.

B. **Water Uses to be Protected** *(Resolution No. 67-2)*. The quality of Zone 6 waters shall be maintained in a safe and satisfactory condition for the following uses:

1. a. industrial water supplies after reasonable treatment,

2. a. maintenance and propagation of resident fish and other aquatic life,
b. maintenance and propagation of shellfish,
c. passage of anadromous fish,
d. wildlife;

3. a. recreation;

4. a. navigation.

C. **Stream Quality Objectives.**

1. **Dissolved Oxygen** *(Resolution Nos. 67-2 and 74-1)*.
a. 24-hour average concentration shall not be less than 6.0 mg/l;
b. not less than 5.0 mg/l at any time unless due to natural conditions.

2. **Temperature** *(Resolution Nos. 67-2 and 74-1)*.
a. Shall not be raised above ambient by more than
1). 4°F (2.2°C) during September through May, nor
2). 1.5°F (0.8°C) during June through August;
b. nor shall maximum temperatures exceed 85°F (29.4°C).

3. **pH** *(Resolution No. 67-2)*. Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

4. **Phenols** *(Resolution Nos. 67-2 and 74-1)*. Maximum 0.01 mg/l, unless exceeded due to natural conditions.

5. **Threshold Odor Number** *(Resolution No. 67-2)*. Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.) *(Resolution Nos. 67-2 and 74-1)*. Maximum 30-day average 1.0 mg/l.

7. **Radioactivity** *(Resolution No. 67-2)*.
   a. alpha emitters - maximum 3 pc/l (picocuries per liter);
   b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria** *(Resolution No. 91-6)*.
   a. **Fecal Coliform** *(Resolution No. 74-1)*. Maximum geometric average 200 per 100 milliliters.
   b. **Enterococcus** Maximum geometric average 35 per 100 milliliters.
   c. **Coliform** *(Resolution Nos. 67-2 and 70-3)*. MPN (most probable number) not to exceed federal shellfish standards in designated shellfish areas.

9. **Turbidity** *(Resolution Nos. 67-2, 74-1 and 91-6)*. Unless exceeded due to natural conditions
   a. maximum 30-day average 40 units,
   b. maximum 150 units.

10. **Alkalinity** *(Resolution Nos. 67-2 and 91-6)*. Between 20 and 120 mg/l.

11. **Toxic Pollutants.**

    a. Applicable criteria to protect the taste and odor of ingested water and fish are presented in Table 4.
    b. Applicable marine stream quality objectives for the protection of aquatic life are presented in Table 5.
    c. Applicable marine stream quality objectives for the protection of human health are presented in Tables 6 and 7.

D. **Effluent Quality Requirements**

1. *(Resolution No. 67-2)*. All discharges shall meet the effluent quality requirements of Section 3.10.

2. *(Resolution No. 67-7)*. The carbonaceous oxygen demand from an outfall (exclusive of stormwater bypass) shall not exceed that assigned by the Commission to maintain stream quality objectives.

3.40 GROUND WATER - BASINWIDE

3.40.1 **Application** *(Resolution Nos. 72-14 and 78-8)*. This Section shall apply to the ground water of the Delaware River Basin.

3.40.2 **Description** *(Resolution Nos. 72-14 and 78-8)*. Ground water shall include all water beneath the surface of the ground.

3.40.3 **Water Uses** *(Resolution Nos. 72-14 and 78-8)*.

A. The quality of ground water shall be maintained in a safe and satisfactory condition, except where such uses are precluded by natural quality, for use as:

1. domestic, agricultural, industrial, and public water supplies;

2. a source of surface water suitable for recreation, wildlife, fish and other aquatic life.

B. Other uses may be designated by the Commission.

3.40.4 **Groundwater Quality Objectives.**

A. **Limits** *(Resolution Nos. 72-14 and 78-8)*. The ground waters of the Basin shall not contain substances or properties attributable to the activities of man in concentrations or amounts sufficient to endanger or preclude the water uses to be protected.

1. Within this requirement, the ground waters shall be free from substances or properties in concentrations or combinations which are toxic or harmful to human, animal, plant, or aquatic life, or that produce color, taste, or odor of the waters.

2. Concentrations at any point shall not be degraded by the activities of man to exceed values specified by current U.S. Public Health Service Drinking Water Standards.

B. **Nondegradation of Ground Waters** *(Resolution Nos. 72-14 and 78-8)*. It is the policy of the Commission to prevent degradation of ground water quality. In implementing this policy, the Commission will require the best water management determined to be practicable. No quality change will be considered which, in the judgment of the Commission, may be injurious to any designated present or future ground or surface water use.

3.40.5 **Ground Water Quality Control.**

A. **Controls** *(Resolution Nos. 72-14 and 78-8)*. The processing, handling, transportation, disposal, storage, excavation or removal of any solid, liquid, or gaseous material on or beneath the ground surface of the Basin shall be conducted in such manner and with such facilities, in accordance with such regulations and requirements as the Commission may prescribe, as to prevent any of the criteria or requirements of this Section from being violated.

B. **Limitations** *(Resolution Nos. 72-14 and 78-8)*.

1. No substances or properties which are in harmful or toxic concentrations or that produce color, taste, or odor of the water shall be permitted or induced by the activities of man to become ground water.

2. Heat discharges which may adversely affect ground water shall be regulated by the Commission.

3. Notwithstanding any other criteria or requirements of this Section, the Commission may establish requirements, conditions, or prohibitions which, in its judgment, are necessary to protect ground water quality.

4. Certain activities otherwise prohibited by paragraph (A) of this Section, such as approved solid or liquid waste disposal systems or fertilizer applications for farming practices, may be permitted subject to such requirements as may be prescribed.

ARTICLE 4

APPLICATION OF STANDARDS

4.10 [RESERVED]

4.20 [RESERVED]

4.30 [RESERVED]

4.30.1 [RESERVED]

4.30.2 [RESERVED]

4.30.3 [RESERVED]

4.30.4 [RESERVED]

4.30.5 [RESERVED]

4.30.6 [RESERVED]

4.30.7 [RESERVED]

4.30.8 [RESERVED]

4.30.9 **Pollutant Minimization Plans for Toxic Pollutants**

A. **Applicability.** Following either (i) a determination of assimilative capacity by the Commission for a toxic pollutant in accordance with Section 4.30.7 of these regulations or (ii) the issuance of a total maximum daily load (TMDL) by the U.S. Environmental Protection Agency or a Basin State for a toxic pollutant in accordance with Section 304(d)(1)(C) of the Clean Water Act, the Commission may add such pollutant to the list established at Section 4.30.9A.1, and in accordance with Section 4.30.9.A.2, may require classes of point or non-point dischargers or individual dischargers to prepare pollutant minimization plans (PMPs) to reduce or prevent releases of the toxic pollutant to Basin waters.

1. In accordance with Section 5.2 of the *Delaware River Basin Compact*, the Commission has determined that the effectuation of the Comprehensive Plan requires control and abatement of the pollutants listed below, through the PMP requirements set forth herein.

    a. Total Polychlorinated Biphenyls (PCBs).

2. The following classes of dischargers or individual dischargers shall be subject to Section 4.30.9 of these Regulations and shall be so notified in writing by the Executive Director:

a. any discharger to which the Commission has assigned an individual allocation for a pollutant listed at Section 4.30.9.A.1., in accordance with an assimilative capacity determination issued under Section 4.30.7 of these Regulations

b. any discharger that has received an individual wasteload allocation in a TMDL established by the U.S. Environmental Protection Agency or a Basin State for a pollutant listed at Section 4.30.9.A.1.

Provided, however, that dischargers listed in Group 2 of Tables 3-2 through 3-5 of Appendix 3 of the document, *U.S. Environmental Protection Agency Regions II and III, Total Maximum Daily Loads for Polychlorinated Biphenyls (PCBs) for Zones 2-5 of the Tidal Delaware River* (December 15, 2003) ("Group 2 dischargers"), shall only be subject to Section 4.30.9 in the event that the presence of PCB congeners is confirmed through monitoring in accordance with the requirements set forth in Appendix 3 of the same document.

c. any discharger or class of dischargers of a pollutant listed at Section 4.30.9.A.1 that the Commission determines after public notice and a hearing, has an adverse effect on the water resources of the Basin.

3. Until such time, if any, as the NPDES permitting authority issues a permit in accordance with Section I, the Commission may relieve a discharger of the requirements of Section 4.30.9 for a pollutant, effective upon written notice to the discharger, if the Commission determines, in consultation with the State in which the discharger is located, that the discharger has (a) achieved the maximum practicable reduction of releases of the pollutant to the air, soil or water in accordance with Section 4.30.9.E.9; and (b) is not having or has ceased to have an adverse effect on the water resources of the Basin,. Notice of a determination in accordance with this section shall be published by the Commission in the applicable state register and on the Commission's website.

B. **Purpose.** For toxic pollutants listed in Section 4.30.9.A.1, implementation of a comprehensive set of measures, including trackdown studies, process modifications, materials substitutions, treatment technologies, best management practices and/or procedures tailored to the facility or site may be necessary to achieve required loading reductions. Owners and operators, who possess the greatest knowledge of their operations and site conditions, are in the best position to develop and implement such measures. The pollutant minimization plan requirements of Section 4.30.9 may be used to require owners and operators to perform a systematic analysis of their facilities and sites in order to locate pollutant sources and to design and implement measures to achieve the necessary reductions. The elements of a PMP set forth at Section 4.30.9.E of the rule are intended to ensure that similarly situated dischargers make comparable efforts, and that progress in implementing plans and reducing pollutant loadings is measured and reported. Within these constraints, creative approaches to pollutant trackdown and reduction are encouraged.

C. **Definitions.** For the purposes of Section 4.30.9 of these Regulations, key terms are defined as follows:

1. **Adverse Effect.** A point or non-point source of a toxic pollutant has an "adverse effect" on the water resources of the Basin if it is causing or contributing to a violation of applicable stream quality objectives or water quality standards in Basin waters for which, in accordance with Section 4.30.9.A., a TMDL or assimilative capacity determination has been established.

2. **Maximum Practicable Reduction.** The "maximum practicable reduction" of releases of a toxic pollutant is the maximum degree of reduction in releases of the pollutant to the air, soil and water (including elimination of such releases where achievable), taking into account economic and technological feasibility and any new environmental impacts that would result, that is achievable for a given site or facility through the application of equipment, technology, process or procedure modifications; reformation or redesign of products; substitution of raw materials; or changes in management practices, materials handling, inventory control, or other general operational phases of the site or facility, either alone or in combination. If the pollutant is present within a site or facility but is contained, maximum practicable reduction includes the implementation of measures to prevent its future release. For municipal wastewater treatment plants, maximum practicable reduction shall include system trackdown and analysis and may include, among other things, reductions achieved through education and outreach and coordination with other local, state, and federal regulatory agencies.

3. **Service Area.** A "service area" is the area served by a municipal or industrial wastewater treatment plant. It includes the geographic area served by the plant's collection system, plus any sites or facilities outside the collection system that transport waste to the plant for treatment.

4. **Toxic pollutant.** A "toxic pollutant" is any pollutant defined as toxic in a federal or Basin state statute or a regulation issued by the Commission, the U.S. EPA or a Basin state.

D. **Procedures for Submission, Review, Implementation and Continuation of PMPs.** The following procedures shall apply to a discharger required to develop, submit and implement a PMP in accordance with Section 4.30.9, until such time, if any, as the NPDES permitting authority issues a permit in accordance with Section I:

1. **Time of Submission.** The discharger shall develop and submit the PMP to the Commission and the permitting agency (if any) within 90 days of receipt of notice from the Executive Director.

2. **Completeness Determination.** The Commission staff, in consultation with permitting agency staff (if applicable), shall review each PMP for completeness, and the Executive Director shall issue a completeness determination to the discharger, copied to the permitting agency, confirming that a PMP is complete or identifying deficiencies in the PMP. The completeness determination shall not be construed as a determination of the adequacy of the PMP to achieve the maximum practicable reduction of pollutant discharges to the air, soil or water in accordance with Section E.9.

3. **Cure of Deficiency.** Within 30 days of receipt of a completeness determination in accordance with Section 4.30.9.D.2., above, dischargers shall submit a PMP to the Commission and the State in which the discharger is located that reflects a good faith effort to cure any deficiency identified in the determination. If the revised PMP is satisfactory, the Executive Director shall issue a second determination of completeness stating that the deficiency has been cured. If the revised PMP is still incomplete, the Executive Director in her discretion may either grant the discharger additional time to cure the deficiency or commence an enforcement action and/or seek penalties against the discharger, unless for good cause shown the Executive Director grants a waiver in accordance with Section 4.30.9.E. The Executive Director may commence an enforcement action and/or seek penalties in accordance with Section 14.17 of the *Compact* and Section 4.30.9.D.9 below in the event of persistent or bad faith failure by the discharger to submit a complete PMP.

4. **Commencement of PMP Implementation.** The discharger shall commence implementation of its PMP as submitted, within 60 days of receipt of a determination of completeness under Section 4.30.9.D.2 or D.3.

5. **Initial Term of PMP.** Each PMP shall be designed for an initial term of five years.

6. **Additional Term of PMP.** The term of the PMP shall be reviewed by the Commission staff in consultation with the State in which the discharger is located prior to the expiration of the PMP, and an additional term shall be determined by the Executive Director.

7. **Plans Deemed Non-Compliant.** If the Commission determines at any time, upon the recommendation of the Executive Director, that a PMP being implemented or to be implemented in accordance with Section 4.30.9 is not likely to achieve the maximum practicable reduction of pollutant discharges to the air, soil and water, then the Commission may require the discharger to submit a revised PMP to more aggressively reduce pollutant loading. The discharger shall submit a revised PMP responsive to the Commission's request within 60 days of receipt of the request. The time periods provided in Sections 4.30.9.D.2 through D.4., with respect to curing a deficiency and commencing implementation, shall apply.

8. **Persistent or Bad Faith Failure to Comply.** The Executive Director is authorized to commence an enforcement action against a discharger in accordance with Article 7 of the Commission's *Rules of Practice and Procedure* for persistent or bad faith failure to submit a complete plan, to modify a plan deemed non-compliant, or to implement a plan.

E. **Plan Elements.** A PMP prepared in accordance with these regulations shall contain the following elements:

1. **Good Faith Commitment.** A signed and dated statement by the highest ranking official having day-to-day managerial and operational responsibilities for the facility, expressing the company's good faith commitment to reducing discharges of the target pollutant through the PMP process.

2. **Discharger Contact.** Name and contact information for an individual who will serve as the contact for information concerning the PMP.

3. **Description and Maps of Facility.**

a. For Industrial Facilities:
- company and facility name and address;
- raw materials and industrial processes used, and products generated that either contain the pollutant or that may be related to the generation or release of the pollutant;
- for facilities accepting non-facility wastes, a description of all such wastes;
- a map of all point and nonpoint source releases from the facility or site and a description of such releases;
- all local, state and federal discharge permits and permit numbers for permits that relate to releases of the pollutant; and
- receiving stream for all discharges, including River Mile in instances where the receiving stream is the main stem Delaware River.

b. For Municipal Wastewater Treatment Plants (WWTPs):
- facility name and address;
- description and map of the facility's service area;
- description and map or schematic diagram of the collection system;
- description of any wastes accepted from outside the collection system (e.g., wastes trucked or transported by rail to the collection system for treatment);
- map of all point and nonpoint source releases from the facility or site and description of the nature of such releases;
- all local, state and federal permits and permit numbers for permits that relate to releases of the pollutant;
- receiving stream for all discharges, including River Mile in instances where the receiving stream is the main stem Delaware River; and
- a list of all known industrial users of the collection system and pretreatment permit numbers if any.

4. **Description and Map of Known Sources.**

a. Description of all materials, equipment, processes, soil areas or sediment areas within a facility, site, or service area, from which the pollutant is released directly or indirectly into a wastewater treatment system, sewage collection system, stormwater collection system, stream or river, including a description of the pathways if known.

b. Site map or collection system map showing location of known sources and pathways.

5. **List of Potential Sources.**

   a. For industrial dischargers, identify any material, equipment, process, soil area, sediment area or facility on the site known to contain or generate the pollutant, but that is not deemed a source because it is not known to be releasing the pollutant or because no pathway to surface water or groundwater exists. Provide estimate of the mass of the pollutant present, if known.

   b. For municipal WWTPs, identify any material, equipment, process, soil area, sediment area or facility that is part of the collection system or that is within the service area and that is known to contain the pollutant, but that is not deemed a source because no pathway to surface water or groundwater exists. Provide estimate of the mass of the pollutant present if known.

6. **Strategy for Identifying Unknown Sources of the Pollutant (Trackdown).**

   a. For industrial dischargers, the strategy for identifying pollutant sources may include, but shall not be limited to, investigation of an industrial process used by the discharger that is similar to one known to have generated the pollutant elsewhere; investigation of historic activities on the site; or investigation of possible soil or sediment contamination or stormwater management system contamination as a result of historic or ongoing activities.

   b. For municipal WWTPs, trackdown strategy may include, but shall not be limited to, identification, through screening, of any portions of the collection system containing higher concentrations or masses of the pollutant; identification of industrial users of the collection system that are likely to have used or generated the pollutant in the past; industrial processes known to be in use that could generate the pollutant; sites containing equipment that is likely contaminated with the pollutant, and sites that have been used to dispose of the pollutant.

   c. Trackdown efforts may rely upon analytical methods other than those required under Section 4.30.9.E.13, below, for purposes of screening or identification of pollutant sources.

7. **Previous, Ongoing or Planned Minimization Activities Undertaken Voluntarily or Required by Other Regulatory Programs.** Previous, ongoing or planned pollutant minimization activities underway or to be undertaken voluntarily or in accordance with a federal or state requirement for the pollutant that is the subject of the PMP, including the level of pollutant reduction attained, level of pollutant reduction targeted, measures completed, measures underway, and the schedule for planned activities.

8. **For Municipal WWTPs Only, Recommendations for Action Under Other Regulatory Programs.** Based on information known at the time of PMP submission or identified during implementation of the PMP, recommendations for remediation activities to be undertaken under the auspices of other local, state or federal regulatory agencies or programs.

9. **Pollutant Minimization Measures.** A description of measures to be taken to achieve the maximum practicable reduction of discharges to the air, soil or water.

10. **Source Prioritization.** Prioritization of known and potential sources, either individually or in categories, from most to least significant, on the basis of available information. Factors to be considered in prioritizing known sources should include, but shall not be limited to, available information on pollutant mass (or volume of the discharge and concentration of the pollutant), and likelihood of release into Basin waters. Factors to be considered in prioritizing potential sources may include, but shall not be limited to, current or past industrial activity, presence and type of equipment containing the pollutant, waste management activities and overall condition of the site and facilities.

11. **Key Dates.** Date of submission of waste implementation plan; date by which initiation of plan activities is required; and schedule for implementation of each of the measures described in Section 4.30.9.E.9 above.

12. **Measurement of Progress.**

    a. **Loading Baseline and Reductions.** A PMP shall contain a loading baseline as set forth below and shall provide for the measurement of mass loadings on a biennial basis using methods listed at Section 4.30.9.E.13. In addition to biennial monitoring using methods listed in Section 4.30.9.E.13, a PMP shall contain alternative methods for estimating loading reductions for all non-point sources and may contain such alternative methods for point sources.

    Descriptions of the following shall be included in a PMP:

    - for point sources, procedures and data obtained utilizing the appropriate method listed in Section 4.30.9.E.13 below, for establishing a loading baseline;

    - for non-point sources, procedures and data to be used in establishing a loading baseline;

    - procedures and data, in addition to biennial monitoring using methods listed in Section 4.30.9.E.13, to be used to estimate loading reductions. Such measures may include indirect effluent monitoring, direct and indirect monitoring of treatment plant influent, and/or engineering calculations.

    b. **Additional Measures of Progress.** A PMP shall contain a description of the methods, other than measurement of loading reductions, to be used to measure and report progress toward achieving maximum practicable reduction of the pollutant. Such measures shall reflect the approaches to be taken to achieve maximum practicable reduction of the pollutant.

13. **Sampling and Analytical Methods.** The following sampling and analytical methods shall be used to establish a loading baseline for point sources and to establish pollutant reductions for point and non-point sources, in accordance with section 4.30.9.E.12.a., above.

    a. PCBs – EPA Method 1668, Revision A, including sampling and analytical requirements specified in the document entitled, *Delaware River Estuary Stage 2 PCB TMDL – Polychlorinated Biphenyls – EPA Method 1668A – Project Quality Control Requirements* (DRBC, 2004).

F. **Annual Report.** Each year, commencing one year from the date by which initiation of PMP activities is required to begin in accordance with Section 4.30.9.D.4 above, or such other date as may be specified in a NPDES permit issued in accordance with Section 4.30.9.I, and continuing through the fifth year of the plan, the discharger shall submit to the Commission and the State in which the discharger is located an annual report that:

1. describes any material modifications to the facility's operations, site boundary, service area, or waste streams in the course of the preceding year that might affect releases of the pollutant, along with appropriate revisions made to the PMP;

2. outlines measures under way and completed to achieve maximum practicable reduction of pollutant releases since the last report and since initiation of the PMP;

3. reports incremental and cumulative changes from the pollutant loading baseline established in accordance with Section 4.30.9.E.12.a., above; and

4. describes progress toward achieving maximum practicable reduction of the pollutant, using measures identified in accordance with Section 4.30.9.E.12.b., above.

G. **Waiver.** Until such time, if any, as the NPDES permitting authority issues a permit in accordance with Section I, the Executive Director, in consultation with the State in which the discharger is located, may modify any of the time requirements of Section 4.30.9.D for a PMP for good cause and may waive any of the plan element requirements of Section 4.30.9.E for a PMP, upon a showing that an element listed at Section 4.30.9.E is inapplicable to or inappropriate for the particular facility or site to which the PMP applies. Any discharger seeking such a waiver must submit such request to the Executive Director in writing.

H. **Guidance.** The Commission may develop guidance for the development of PMPs for specific pollutants consistent with the requirements set forth in Section 4.30.9.E.

I. **Relationship to NPDES Permit.** Upon issuance of an initial, renewed or modified NPDES permit by the State in which the discharger is located or the U.S. Environmental Protection Agency to a discharger that has been made subject to Section 4.30.9, which permit contains the requirements to develop, submit to the permitting authority and implement a PMP consistent with that Section, then as to that discharger:

1. the Commission shall cease to administer Section 4.30.9 with respect to the discharge of the pollutant to which the PMP requirements of the permit relate, upon the date such requirements become effective; and

2. the NPDES permitting authority shall apply the more stringent of Section 4.30.9 or other applicable state or federal requirements with respect to the discharge of the pollutant to which the PMP requirements of the permit relate.

J. **Reservation of Authority.** Nothing in this rule shall limit the authority of the Commission or the Executive Director under the *Compact* to control future pollution, abate existing pollution or require review of a project by the Commission under Section 3.8 of the *Compact*, including through the issuance of docket-specific PMP requirements or other methods.

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