

# **Administrative Manual – Part III WATER QUALITY REGULATIONS**

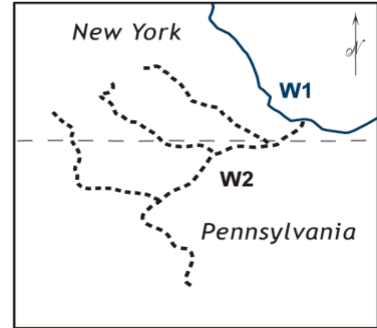
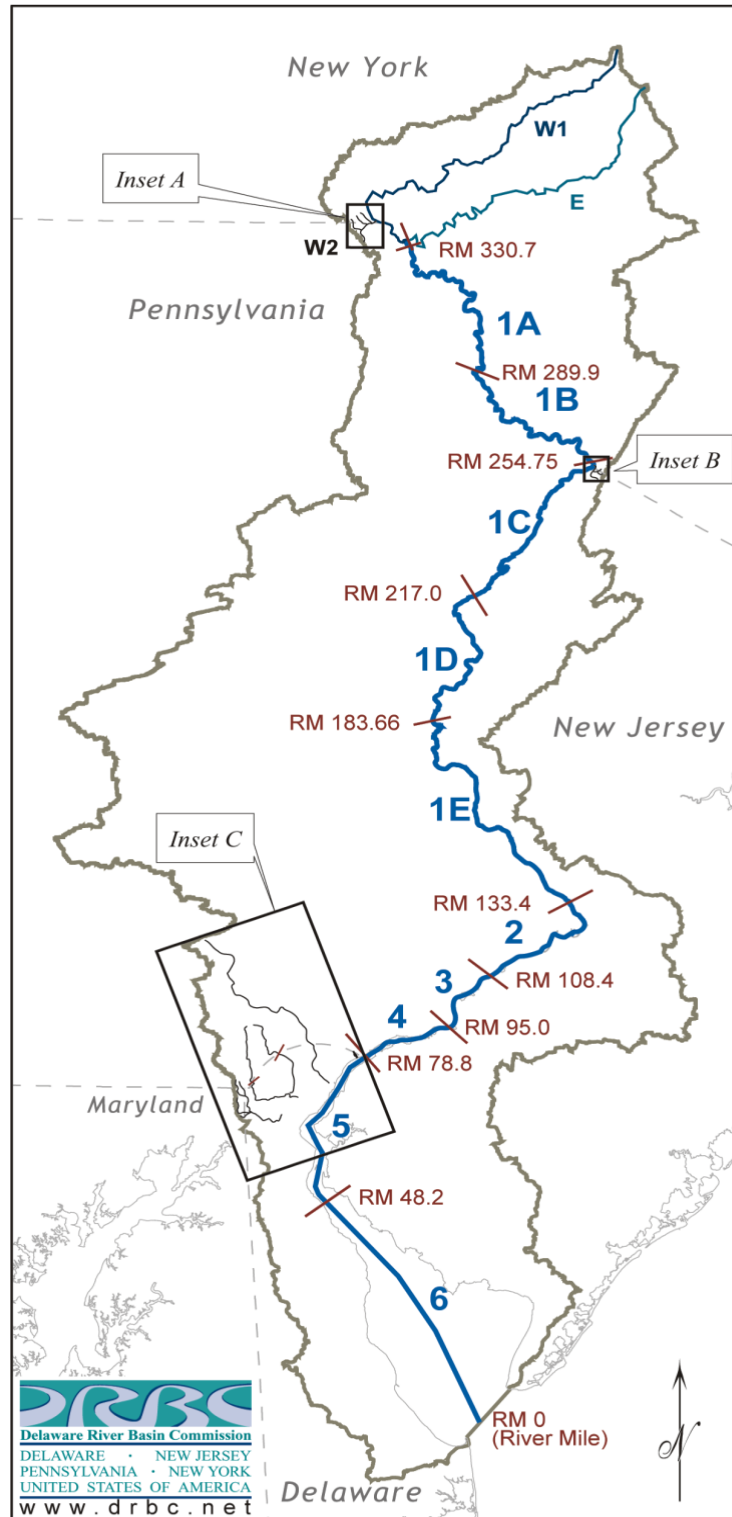
**WITH AMENDMENTS THROUGH  
DECEMBER 7, 2022**

## **18 CFR PART 410**

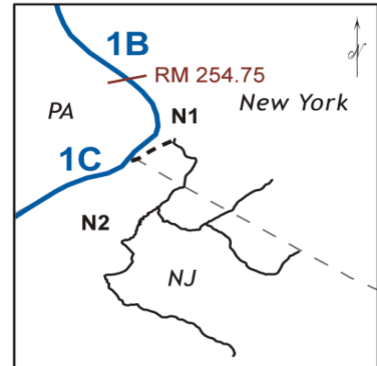


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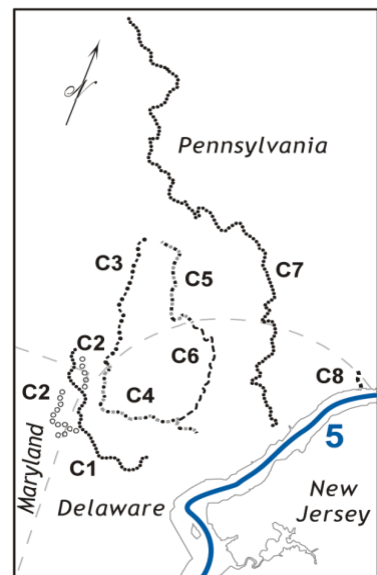
## Delaware River Basin Interstate Zones



Inset A - West Branch



Inset B - Neversink



Inset C - Christina

## PREFACE

For reference purposes, following is a summary of Commission actions on water quality standards and regulations to date:

<b>Resolution</b>	<b>Date</b>	<b>Subject</b>
1962-14	July 25, 1962	INCODEL Standards added to Comprehensive Plan.
1965-03	February 24, 1965	Primary treatment required as a minimum, Basinwide.
1967-02	March 2, 1967	Water quality standards for tidal waters.
1967-07	April 26, 1967	Water quality standards for non-tidal interstate streams; Resolution 67-2 recodified and incorporated; Resolution 65-3 repealed; Secondary treatment required as a minimum; Allocation of assimilative capacity policy; INCODEL Standards repealed to the extent inconsistent with this resolution.
1968-02	March 7, 1968	Water quality regulations; Allocation of assimilative capacity procedures; Abatement schedule procedures; Resolution 67-7 incorporated and recodified.
1968-06	July 31, 1968	Regional policy for wastewater management.
1968-08	September 25, 1968	Minor change in regulations on allocation procedure.
1970-03	March 26, 1970	Nondegradation policy; Addition to water quality criteria; Minor changes in definition of secondary treatment.
1970-24	November 24, 1970	Changes in dissolved oxygen and temperature criteria for trout waters.
1972-01	January 26, 1972	Interpretive Guideline No. 1.
1972-14	December 12, 1972	Groundwater quality standards.
1973-04	January 24, 1973	Groundwater quality regulations.
1973-11	October 31, 1973	Abatement schedules transferred to appropriate signatory agencies.
1974-01	February 27, 1974	Amendments primarily to be consistent with Federal Law (P.L. 92-500); Recodification, reflecting all above amendments, including the INCODEL Standards saved from repeal by Resolution 67-7, and also including Resolution 72-1.
1978-07	May 24, 1978	Intermittent stream policy; Changes in total dissolved solids standards; Changes in effluent color regulation; Policy for dilute industrial process wastewater.
1978-08	May 24, 1978	Confirmation of groundwater standards and policies in Comprehensive Plan.
1980-02	March 10, 1980	Suspended solids effluent requirement; INCODEL Standards for Zones 1 and 2 repealed.
1983-11	June 29, 1983	Changes in chloride criteria and addition of sodium criteria for tidal waters.
1985-03	January 30, 1985	Effluent requirements for oil and grease.
1986-08	May 28, 1986	Disinfection requirements for intrastate streams deleted.
1986-18	July 30, 1986	Temporary suspension of disinfection requirements for discharges to Zones 2, 3 and 4, from October 1, 1987 to April 30, 1988.
1991-06	May 22, 1991	Recreational stream criteria and uses for tidal waters based on Use Attainability Assessment recommendations.
1992-21	December 9, 1992	Special Protection Waters policies.
1994-02	February 23, 1994	Control of Nonpoint Sources of Pollution in Special Protection Waters.
1996-12	October 23, 1996	Control of Toxic Pollutants from Point Source Discharges to the Delaware River Estuary.
2005-02	January 19, 2005	Temporary Designation of the Lower Delaware River as Special Protection Waters.

2005-09	May 18, 2005	Pollutant Minimization Plan Requirements for Discharges of Toxic Pollutants.
2005-15	September 26, 2005	Extending SPW designation for the Lower Delaware through September 30, 2006.
2006-22	September 27, 2006	Extending SPW designation for the Lower Delaware through September 30, 2007.
2007-13	September 26, 2007	Extending SPW designation for the Lower Delaware through May 15, 2008.
2008-09	July 16, 2008	Permanent Designation of the Lower Delaware River as Special Protection Waters.
2010-13	December 8, 2010	Updating stream quality objectives for toxic pollutants in Delaware Estuary and Extending these Objectives to Delaware Bay
2013-8	December 4, 2013	Revising stream quality objectives for total polychlorinated biphenyls (PCBs) in Delaware Estuary and Bay for protection of human health from carcinogenic effects
2013-9	December 4, 2013	Updating stream quality objectives for pH for the non-tidal Delaware River, the Delaware River Estuary and Delaware Bay
2022-04	December 7, 2022	Incorporating sections of DRBC's Special Regulations at 18 CFR Part 440 – High Volume Hydraulic Fracturing (HVHF) to facilitate implementation in state-issued permits of the prohibition on discharges of wastewater from HVHF and HVHF-related activities effected by those regulations.

**ADMINISTRATIVE MANUAL – PART III**  
**WATER QUALITY REGULATIONS**  
**With Amendments through December 7, 2022**

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**DELAWARE RIVER BASIN COMMISSION  
BASIN REGULATIONS - WATER QUALITY**

**ARTICLE 1 - GENERAL; DEFINITIONS**

**Section 1.10 General**

**1.10.1 Effect of the Comprehensive Plan.** The Comprehensive Plan prescribes standards which govern the review of proposed new projects and action by the Commission to control and abate pollution with respect to existing facilities. Section X of the Comprehensive Plan, *Water Quality Standards for the Delaware River Basin* (as reproduced in Article 3 herein), sets forth these water quality standards.

**1.10.2 Project Review.** The process by which the Commission will include projects in the Comprehensive Plan and review and screen proposed projects to determine their compatibility with the Plan is set forth in the Commission's Administrative Manual (Part II) - *Rules of Practice and Procedure*.

**1.10.3 Control and Abatement**

- A. These Regulations are adopted pursuant to Article 5 and Section 14.2 of the Compact, to implement the cited Water Quality Standards.
- B. Where applicable state standards require higher quality water than these Standards and Regulations, state standards will be controlling.

**Section 1.20 Definitions.** For the purpose of these Regulations and for interpretation and application of the Comprehensive Plan, unless the context otherwise requires:

- 1.20.1 "Standards" means Section X of the Comprehensive Plan (as reproduced in Article 3 herein).
- 1.20.2 "Pollution" means the introduction into waters of the Basin of substances or properties which impair the uses specified in the Comprehensive Plan.
- 1.20.3 "Effluent quality requirements" mean the requirements relating to effluents which are prescribed by the Standards or by these Regulations.
- 1.20.4 "Waste assimilation" means the chemical, physical, and biological process resulting when waste substances or properties are introduced into Basin waters.
- 1.20.5 "Waste assimilative capacity" means the measure of a stream's capacity for waste assimilation without impairment of the uses designated by the Standards.
- 1.20.6 "Water uses" means the protected uses prescribed by the Standards, and without limitation thereto:

- A. "Agricultural use" includes water used for livestock and for irrigation;
  - B. "Industrial use" includes water for processing and cooling;
  - C. "Public water supplies" include water suitable for drinking purposes and for other domestic, industrial, municipal or institutional uses;
  - D. "Wildlife" includes all undomesticated animals and fowl;
  - E. "Fish and other aquatic life" includes all species of resident, anadromous, and catadromous fish, shellfish, and other aquatic biota;
  - F. "Recreation" includes all water-contact sports.
  - G. "Recreation - secondary contact" restricts activities to where the probability of significant contact or water ingestion is minimal, encompassing but not limited to:
    - 1. boating,
    - 2. fishing,
    - 3. those other activities involving limited contact with surface waters incident to shoreline recreation.
- 1.20.7 "Unregulated streams" means streams where the quantity of flow, including its distribution in time or place, are not significantly altered by the activities or works of man.
- 1.20.8 "Regulated streams" are streams where the quantity of flow, including its distribution in time or place, are altered by the activities or works of man.
- 1.20.9 "Special Protection Waters" are waters classified as either Outstanding Basin Waters or Significant Resource Waters by the Commission (see 3.10.3 of Article 3).
- 1.20.10 Additional definitions. See 3.10.6 of Article 3 and Article 4 of these Regulations and Section 1.2 of the Compact.

## ARTICLE 2 - INTERSTATE COOPERATION

**Section 2.10 Administrative Agreements.** To avoid unnecessary duplication and achieve maximum efficiency, signatory agencies to the Delaware River Basin Compact concerned with pollution control will be utilized to the maximum practical extent in enforcing these Regulations. To that end, the Executive Director is authorized to enter into cooperative administrative agreements with these agencies.

**Section 2.20 Additional Requirements.** Any of the signatory parties may impose standards, including water quality criteria and effluent quality requirements, with respect to waste discharges within its jurisdiction more stringent than those provided by the Comprehensive Plan and these Regulations.

**Section 2.30 Regional Requirements.** It shall be the policy of the Commission to promote and encourage planning for regional solutions to water pollution problems including problems derived from both point and non-point sources of pollution. The Commission may recognize that the most efficient and environmentally acceptable regional solution may be small multiple facilities spread throughout a watershed. The use of regional water pollution control facilities and/or institutional arrangements providing optimum combinations of efficiency, reliability and service area will be required throughout the Delaware River Basin to the maximum extent feasible. The Commission will cooperate with industries and state, county and municipal agencies seeking a regional solution to water pollution problems. The Commission may provide planning, and when necessary, constructing, financing and operating services required for regional solutions to water pollution problems where other appropriate agencies do not provide such services.

**ARTICLE 3 - WATER QUALITY STANDARDS  
FOR THE DELAWARE RIVER BASIN  
[COMPREHENSIVE PLAN, SECTION X]**

**Section 3.10 Basinwide Surface Water Quality Standards.**

**3.10.1 Application.** This Article shall apply to all surface waters of the Delaware River Basin.

**3.10.2 Water Uses.**

A. **Uses Paramount.** 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.** 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**

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.**

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.**

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.
- 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.

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\* 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.

- 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<sub>3</sub> N); dissolved oxygen (DO); fecal coliform (FC); nitrate (NO<sub>3</sub> N) or nitrite + nitrate (NO<sub>2</sub> N + NO<sub>3</sub> 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**

PART A: UPPER DELAWARE SCENIC & RECREATIONAL RIVER <sup>1</sup>				
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 <sub>5</sub> * (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 <sub>3</sub> )	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

<sup>1</sup> 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.

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.

PART B: DELAWARE RIVER FROM MILLRIFT THROUGH THE DELAWARE WATER GAP INCLUDING THE MIDDLE DELAWARE SCENIC AND RECREATIONAL RIVER <sup>2</sup>				
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 <sub>5</sub> * (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 <sub>3</sub> )	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.

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	325
	Lordville Bridge	322
	Kellams Bridge	313
	Callicoon Access Areas	303
	Damacus/Cochecton	298
	Skinners Falls	295
	Narrowsburg area	290
	Ten Mile River Access Area	284
	Lackawaxen Access Area	277
	Barryville/Shohola Bridge	273
Pond Eddy Bridge	266	
Delaware River between the UDSRR & the DWGNRA	Millrift	258
	Matamoras/Port Jervis	254
	Northern boundary-DWGNRA	250

INTERSTATE	CONTROL POINTS (General Locations)	RIVER MILE
Delaware Water Gap National Recreation Area	Milford Beach	247
	Dingmans Access Area	239
	Eshback Access Area	232
	Bushkill Access Area	228
	Depew Access Area	221
	Smithfield Beach	218
	Worthington S.F. Access	215
	Kittatinny Visitor Center	211
	Upstream end of Arrow Island	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

EWQ Table	Tributary or Delaware River Site	Latitude	Longitude	River Mile	Control Point (ICP = Interstate CP BCP = Boundary CP)	Drainage Area (square miles)
	Smithtown Creek (PA)			159.90	Bulls Island ICP	1.38
	Warsaw Creek (NJ)			159.50	Bulls Island ICP	1.60
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 <sup>3</sup> )	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	$Y = \text{antilog}(0.00007074 Q + 0.6659)$
Enterococcus (colonies/100 ml)	20	12	60	
Fecal coliform (colonies/100 ml) *	20	12	36	$Y = \text{antilog}(0.00006854 Q + 0.955)$
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	$Y = \text{antilog}(0.00005157 Q - 0.1356)$
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 <sup>3</sup> )	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	$Y = \text{antilog} (0.7993 (\log Q) + 0.157)$
Enterococcus (colonies/100 ml)	120 **	84 **	180 **	
Fecal coliform (colonies/100 ml) *	110	84	190	$Y = \text{antilog} (0.967 (\log Q) - 0.0255)$
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	$Y = \text{antilog} (0.4057 (\log Q) - 0.269)$
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 NH <sub>3</sub> -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 <sup>3</sup> )	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 NO <sub>3</sub> -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 NH <sub>3</sub> -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 <sup>3</sup> )	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 NO <sub>3</sub> -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	$Y = \text{antilog} (1.0964 (\log Q) - 1.87)$
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 <sup>3</sup> )	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	$Y = \text{antilog} (0.642 (\log Q) - 0.684)$
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 <sup>3</sup> )	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 <sup>3</sup> )	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 NH <sub>3</sub> -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 <sup>3</sup> )	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	$Y = \text{antilog} (1.5045 (\log Q) - 3.0132)$
Enterococcus (colonies/100 ml)	110	56	210	
Fecal coliform (colonies/100 ml) *	120	70	200	$Y = \text{antilog} (1.4387 (\log Q) - 2.5712)$
Nitrate NO <sub>3</sub> -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	$Y = \text{antilog} (0.901 (\log Q) - 2.335)$
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 <sup>3</sup> )	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	$Y = \text{antilog}(1.0503(\log Q) + 0.976)$
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	$Y = \text{antilog}(0.867(\log Q) - 0.69)$
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 NH <sub>3</sub> -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 <sup>3</sup> )	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	$Y = \text{antilog} (0.0000513 Q + 0.9973)$
Enterococcus (colonies/100 ml)	80	52	110	
Fecal coliform (colonies/100 ml) *	84	54	160	$Y = \text{antilog} (0.00003636 Q + 1.5438)$
Nitrate NO <sub>3</sub> -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	$Y = \text{antilog} (0.00002645 Q + 0.2252)$
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 <sup>3</sup> )	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 <sup>3</sup> )	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	$Y = \text{antilog} (1.1307 (\log Q) + 0.6483)$
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	$Y = \text{antilog} (0.888 (\log Q) - 0.981)$
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 20. 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 NH <sub>3</sub> -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 <sup>3</sup> )	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 NO <sub>3</sub> -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 NH <sub>3</sub> -N (mg/l) *	<0.05	<0.05	0.06	
Chloride (mg/l)	15	14	16	
Chlorophyll a (mg/m <sup>3</sup> )	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	$Y = \text{antilog}(0.5217(\log Q) + 1.5665)$
Enterococcus (colonies/100 ml)	240 **	170 **	790 **	
Fecal coliform (colonies/100 ml) *	85	50	120	
Nitrate NO <sub>3</sub> -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	$Y = \text{antilog}(0.0315 Q - 0.1328)$
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.

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

**TABLE 2Q. Definition of Existing Water Quality: Tincum Creek BCP**

Tincum Creek, Pennsylvania, River Mile 161.60 – 0.24  
 Boundary Control Point is located on private property by Tincum 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 <sup>3</sup> )	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	$Y = \text{antilog} (0.4453 (\log Q) - 0.2226)$
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 <sup>3</sup> )	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	$Y = \text{antilog} (0.8609 (\log Q) + 0.2319)$
Enterococcus (colonies/100 ml)	540	250	980	
Fecal coliform (colonies/100 ml) *	90	60	170	$Y = \text{antilog} (0.6939 (\log Q) + 0.9399)$
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	$Y = \text{antilog} (0.5292 (\log Q) - 0.6216)$
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 <sup>3</sup> )	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	$Y = \text{antilog}(0.742(\log Q) + 1.3102)$
Enterococcus (colonies/100 ml)	320	160	520	
Fecal coliform (colonies/100 ml) *	80	60	130	$Y = \text{antilog}(0.5676(\log Q) + 1.7382)$
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 <sup>3</sup> )	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 <sup>3</sup> )	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	$Y = \text{antilog} (0.6703 (\log Q) + 1.1906)$
Enterococcus (colonies/100 ml)	260 **	98 **	480 **	
Fecal coliform (colonies/100 ml) *	32	20	76	$Y = \text{antilog} (1.0321 (\log Q) + 1.1157)$
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	$Y = \text{antilog}(0.6517 (\log Q) - 0.2066)$
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 <sup>3</sup> )	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 NH <sub>3</sub> -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 <sup>3</sup> )	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 NO <sub>3</sub> -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 <sup>3</sup> )	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	$Y = \text{antilog}(0.6675(\log Q) + 1.5652)$
Enterococcus (colonies/100 ml)	485	170	720	
Fecal coliform (colonies/100 ml) *	195	130	310 **	$Y = \text{antilog}(0.6669(\log Q) + 1.8192)$
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	$Y = \text{antilog}(0.6463(\log Q) + 0.163)$
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 NH <sub>3</sub> -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 <sup>3</sup> )	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 NO <sub>3</sub> -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 <sup>3</sup> )	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. 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. the concentration of total dissolved solids, except intermittent streams, shall not exceed 133 percent of background.
2. 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.**

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**

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.** All wastes shall receive a minimum of secondary treatment, regardless of the stated stream quality objective.
- B. Disinfection.** 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.** Effluents shall not create a menace to public health or safety at the point of discharge.
- D. Limits.**
  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.**
      - 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.**

**1) Oil Storage Terminal Runoff.**

- (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.** 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. Total dissolved solids shall not exceed 1000 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.** 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.**

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.** 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.**

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.** The Delaware River and Bay and their tributaries may be divided into zones which will facilitate the management of surface and underground water quality.

**D. Streamflow.** 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.** 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.** Biochemical oxygen demand as determined under standard laboratory procedures for 5 days at 20EC.

**B. Carbonaceous Oxygen Demand.** That part of the ultimate oxygen demand associated with biochemical oxidation of carbonaceous, as distinct from nitrogenous, material.

**C. Effective Disinfection.** The destruction of pathogenic organisms in such manner and under such controls as shall be prescribed by Commission regulations.

**D. Secondary Treatment.**

1. The removal of practically all suspended solids at all times;
2. 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.** 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.** 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.** The observed concentration of total dissolved solids during low flow conditions or, in the absence thereof, an estimate acceptable to the Commission.
- H. IRIS.** 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.** 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.** A substance having a threshold exposure which must be exceeded before deleterious effects (other than cancer) are observed in organ systems.
- K. Acute Effects.** Effects (including but not limited to lethality) due to exposure to a toxicant over a short time period.
- L. Chronic Effects.** 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).** 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)<sup>-1</sup>.
- N. Reference Dose (RfD).** 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).** The maximum permissible level of a contaminant in water which is delivered to any user of a public water system.
- P. Stream Quality Objectives.** 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.

### **Section 3.20 Interstate Streams - Nontidal.**

**3.20.1 Application.** 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.** 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.** 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.**
  - 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.** Except in designated heat dissipation areas, [See 4.30.6.F.1.]
  - 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.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.** Unless exceeded due to natural conditions
  - a. maximum 30-day average 10 units,
  - b. maximum 150 units.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.
2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.1.]

- 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.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
  4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
  5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
  7. **Radioactivity.**
    - 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.** 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.** Not to exceed
    - a. 133 percent of background, or
    - b. 500 mg/l, whichever is less.
  10. **Turbidity.** Unless exceeded due to natural conditions
    - a. maximum 30-day average 10 units,
    - b. maximum 150 units.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.
- 2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.1.]
  - a. not to exceed 5°F (2.8°C) rise above ambient temperature until stream temperature reaches 87°F (30.6EC),
  - b. natural temperature will prevail above 87°F (30.6°C).
- 3. **pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
- 4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
- 5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
- 6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
- 7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
- 10. **Turbidity.** Unless exceeded due to natural conditions.
  - a. maximum 30-day average 20 units,
  - b. maximum 150 units.

**D. Effluent Quality Requirements.**

- 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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.
2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.2.]
  - 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.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
- 10. **Turbidity.** Unless exceeded due to natural conditions
  - a. maximum 30-day average 20 units,
  - b. maximum 150 units.

**D. Effluent Quality Requirements.**

- 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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.2.]
  - 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.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.** Unless exceeded due to natural conditions
  - a. maximum 30-day average 30 units,
  - b. maximum 150 units.
11. **Alkalinity.** Not less than 20 mg/l.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - 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.** Except in designated heat dissipation areas, [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - 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.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - 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.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.
2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.5 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.

6. **Synthetic Detergents** (M.B.A.S.). Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
  - 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** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.5 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents** (M.B.A.S.). Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.** 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.** 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.**
    - a. not less than 4.0 mg/l at any time,
    - b. minimum 24-hour average of 5.0 mg/l.
  2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
    - 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.** Between 6.0 and 8.5.
  4. **Phenols.** Not to exceed 0.005 mg/l unless due to natural conditions.
  5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
  7. **Radioactivity.**
    - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
  
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
  - a. not less than 4.0 mg/l at any time;
  - b. minimum 24-hour average of 5.0 mg/l.
2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
    - 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.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
    - 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.** Between 6.0 and 8.5.
  4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
  5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
  7. **Radioactivity.**
    - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
    - a. not less than 4.0 mg/l at any time;
    - b. minimum 24-hour average of 5.0 mg/l.



2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
    - 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.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
    - 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.** Between 6.0 and 8.5.
  4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
  5. **Threshold Odor Number** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents** (M.B.A.S.). Not to exceed 0.5 mg/l.
  7. **Radioactivity.**
    - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
  
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
    - a. not less than 4.0 mg/l at any time;
    - b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
  - 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.** Between 6.0 and 8.5.
4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
10. **Turbidity.**
  - 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.**

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.** 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.** 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.**
    - a. not less than 4.0 mg/l at any time;
    - b. minimum 24-hour average of 5.0 mg/l.
  2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]
    - 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.** Between 6.5 and 8.5.
  4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
  5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
  7. **Radioactivity.**
    - 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.** 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.** Not to exceed
    - a. 133 percent of background, or
    - b. 500 mg/l, whichever is less.

10. **Turbidity.**

- 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.** Not to exceed 1.0 mg/l.

D. **Effluent Quality Requirements.**

- 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.** Zone C8 is Naaman Creek extending from its source in Pennsylvania to the head of tidewater in Delaware.

B. **Water Uses to be Protected.** 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.**

- a. not less than 4.0 mg/l at any time;
- b. minimum 24-hour average of 5.0 mg/l.

2. **Temperature.** Except in designated heat dissipation areas [See 4.30.6.F.5.]

- 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.** Between 6.0 and 8.5.

4. **Phenols.** Not to exceed 0.005 mg/l, unless due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents (M.B.A.S.).** Not to exceed 0.5 mg/l.
7. **Radioactivity.**
  - 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.** 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.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.

**D. Effluent Quality Requirements.**

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.

**Section 3.30 Interstate Streams – Tidal.**

**3.30.1 Application.** 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.** 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.** 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. a. recreation;
  - 4. a. navigation.

**C. Stream Quality Objectives.**

- 1. **Dissolved Oxygen.**
  - 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.** 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. [See 4.30.6.F.3.]
- 3. **pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
- 4. **Phenols.** Maximum 0.005 mg/l unless exceeded due to natural conditions.
- 5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
- 6. **Synthetic Detergents (M.B.A.S.).** Maximum 30-day average 0.5 mg/l.
- 7. **Radioactivity.**
  - a. alpha emitters - maximum 3 pc/l (picocuries per liter);
  - b. beta emitters - maximum 1,000 pc/l.
- 8. **Bacteria.**
  - a. **Fecal Coliform.** Maximum geometric average 200 per 100 milliliters.
  - b. **Enterococcus.** Maximum geometric average 33 per 100 milliliters.
- 9. **Total Dissolved Solids.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
- 10. **Turbidity.** 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.** Between 20 and 100 mg/l.



12. **Chlorides.** Maximum 15-day average 50 mg/l.

13. **Hardness.** Maximum 30-day average 95 mg/l.

14. **Toxic Pollutants.**

- 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.**

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)
<b>Metals</b>	
Arsenic	10
Barium	2000
Beryllium	4
Chromium (trivalent)	100
Copper	1300
Lead	15
Selenium	50
<b>Pesticides/PCBs</b>	
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
<b>Volatile Organic Compounds (VOCs)</b>	
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
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>	
Benzo(a)Pyrene	0.2
<b>Other Compounds</b>	
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 (µg/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
<b>Metals</b>				
Aluminum <sup>a,b</sup>	750	87	NA	NA
Arsenic (trivalent) <sup>c</sup>	340	150	69	36
Cadmium <sup>c</sup>	0.651*EXP(1.0166*LN(hardness)-3.924)	0.651*EXP(0.7409*LN(hardness)-4.719)	40	8.8
Chromium (trivalent) <sup>c</sup>	0.277*EXP(0.819*LN(hardness)+3.7256)	0.277*EXP(0.819*LN(hardness)+0.6848)	NA	NA
Chromium (hexavalent) <sup>c</sup>	16	11	1,100	50
Copper <sup>c</sup>	0.908*EXP(0.9422*LN(hardness)-1.7)	0.908*EXP(0.8545*LN(hardness)-1.702)	4.8	3.1
Lead <sup>c</sup>	38	5.4	210	8.1
Mercury <sup>c</sup>	1.4	0.77	1.8	0.94
Nickel <sup>c</sup>	0.846*EXP(0.846*LN(hardness)+2.255)	0.846*EXP(0.846*LN(hardness)+0.0584)	64	22
Selenium <sup>a</sup>	20	5.0	290	71
Silver <sup>c</sup>	0.85*EXP(1.72*LN(hardness)-6.59)	NA	1.9	NA
Zinc <sup>c</sup>	0.95*EXP(0.8473*LN(hardness)+0.884)	0.95*EXP(0.8473*LN(hardness)+0.884)	90	81
<b>Pesticides/PCBs</b>				
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) <sup>d</sup>	1.1	0.001	0.13	0.001
Dieldrin	0.24	0.056	0.71	0.0019
Endosulfan <sup>e</sup>	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				
<b>Cyanide (free)</b>	22	5.2	1	1
Pentachlorophenol	$e^{(1.005 \cdot \text{pH} - 4.83)}$	$e^{(1.005 \cdot \text{pH} - 5.29)}$	13	7.9
Indicator Parameters				
Whole Effluent Toxicity	0.3 Toxic Units <sub>acute</sub>	1.0 Toxic Units <sub>chronic</sub>	0.3 TU <sub>a</sub>	1.0 TU <sub>c</sub>

Footnotes to Table 5:

- <sup>a</sup> Total recoverable criteria
- <sup>b</sup> Aluminum criteria listed are restricted to waters with pH between 6.5 and 9.0.
- <sup>c</sup> Dissolved criteria
- <sup>d</sup> Criteria apply to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).
- <sup>e</sup> 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
<b>Metals</b>			
Arsenic	*	NA	NA
<b>Pesticides/PCBs</b>			
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
<b>Volatile Organic Compounds (VOCs)</b>			
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

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)
	Fish & Water Ingestion	Fish Ingestion Only	Fish Ingestion Only
1,3 – Dichloropropene	0.34	21	21
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
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>			
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
<b>Other Compounds</b>			
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

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)
	Fish & Water Ingestion	Fish Ingestion Only	Fish Ingestion Only
N-Nitrosopyrrolidine	0.016	34	34
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
<b>Metals</b>			
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
<b>Pesticides/PCBs</b>			
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

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)
	Fish & Water Ingestion	Fish Ingestion Only	Fish Ingestion Only
Heptachlor	0.18	0.18	0.18
Heptachlor Epoxide	0.0046	0.0046	0.0046
Total PCBs	0.00839	0.00849	0.00149
<b>Volatile Organic Compounds (VOCs)</b>			
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
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>			
Anthracene	8,300	40,000	40,000
Fluoranthene	130	140	140
Fluorene	1,100	5,300	5,300
Pyrene	830	4,000	4,000
<b>Other Compounds</b>			
Acenaphthene	670	990	990

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)
	Fish & Water Ingestion	Fish Ingestion Only	Fish Ingestion Only
Benzidine	59	140	140
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.** 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.** 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.
    - a. recreation - secondary contact;
  4.
    - a. navigation.
- C. **Stream Quality Objectives.**
1. **Dissolved Oxygen.**
    - 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.** 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. [See 4.30.6.F.3.]
  3. **pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
  4. **Phenols.** Maximum 0.005 mg/l, unless exceeded due to natural conditions.
  5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
  6. **Synthetic Detergents.** (M.B.A.S.) Maximum 30-day average 1.0 mg/l.
  7. **Radioactivity.**
    - a. alpha emitters - maximum 3 pc/l (picocuries per liter);
    - b. beta emitters - maximum 1,000 pc/l.

8. **Bacteria.**
  - a. **Fecal Coliform.** Maximum geometric average 770 per 100 milliliters.
  - b. **Enterococcus.** Maximum geometric average 88 per 100 milliliters.
  
9. **Total Dissolved Solids.** Not to exceed
  - a. 133 percent of background, or
  - b. 500 mg/l, whichever is less.
  
10. **Turbidity.** Unless exceeded due to natural conditions
  - a. maximum 30-day average 40 units,
  - b. maximum 150 units.
  
11. **Alkalinity.** Between 20 and 120 mg/l.
  
12. **Chlorides.** Maximum 30-day average concentration of 180 mg/l at R.M. 98.
  
13. **Hardness.** Maximum 30-day average 150 mg/l.
  
14. **Sodium.** Maximum 30-day average concentration of 100 mg/l at R.M. 98.
  
15. **Toxic Pollutants.**
  - 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.**

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.** 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.** 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. 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.**
  - 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.** 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. [See 4.30.6.F.3.]
3. **pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
4. **Phenols.** Maximum 0.02 mg/l, unless exceeded due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents.** (M.B.A.S.). Maximum 30-day average 1.0 mg/l.
7. **Radioactivity.**
  - a. alpha emitters - maximum 3 pc/l (picocuries per liter);
  - b. beta emitters - maximum 1,000 pc/l.
8. **Bacteria.**
  - a. **Fecal Coliform.**
    - 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.** Not to exceed 133 percent of background.

10. **Turbidity.** Unless exceeded due to natural conditions

- a. maximum 30-day average 40 units,
- b. maximum 150 units.

11. **Alkalinity.** Between 20 and 120 mg/l.

12. **Toxic Pollutants.**

- 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.**

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.** 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.** 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. a. recreation;
4. a. navigation.

**C. Stream Quality Objectives.**

**1. Dissolved Oxygen.**

- 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.**

- 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). [See 4.30.6.F.4.]

**3. pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.

**4. Phenols.** Maximum 0.01 mg/l, unless exceeded due to natural conditions.

**5. Threshold Odor Number.** Not to exceed 24 at 60°C.

**6. Synthetic Detergents.** (M.B.A.S.) Maximum 30-day average 1.0 mg/l.

**7. Radioactivity.**

- a. alpha emitters - maximum 3 pc/l (picocuries per liter);
- b. beta emitters - maximum 1,000 pc/l.

**8. Bacteria.**

- a. **Fecal Coliform.** Maximum geometric average 200 per 100 milliliters.
- b. **Enterococcus.** Maximum geometric average 35 per 100 milliliters.

**9. Turbidity.** Unless exceeded due to natural conditions.

- a. maximum 30-day average 40 units,
- b. maximum 150 units.

**10. Alkalinity.** Between 20 and 120 mg/l.

**11. Toxic Pollutants.** 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.**

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.** 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.** 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.**
  - 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.**
  - 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). [See 4.30.6.F.4.]

3. **pH.** Between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
4. **Phenols.** Maximum 0.01 mg/l, unless exceeded due to natural conditions.
5. **Threshold Odor Number.** Not to exceed 24 at 60°C.
6. **Synthetic Detergents.** (M.B.A.S.) Maximum 30-day average 1.0 mg/l.
7. **Radioactivity.**
  - a. alpha emitters - maximum 3 pc/l (picocuries per liter);
  - b. beta emitters - maximum 1,000 pc/l.
8. **Bacteria.**
  - a. **Fecal Coliform.** Maximum geometric average 200 per 100 milliliters.
  - b. **Enterococcus** Maximum geometric average 35 per 100 milliliters.
  - c. **Coliform.** MPN (most probable number) not to exceed federal shellfish standards in designated shellfish areas.
9. **Turbidity.** Unless exceeded due to natural conditions
  - a. maximum 30-day average 40 units,
  - b. maximum 150 units.
10. **Alkalinity.** 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. 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.

**Section 3.40 Ground Water - Basinwide.**

**3.40.1 Application.** This Section shall apply to the ground water of the Delaware River Basin.

**3.40.2 Description.** Ground water shall include all water beneath the surface of the ground.

**3.40.3 Water Uses.**

- 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 Ground Water Quality Objectives.**

- A. **Limits.** 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.** 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.** 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.**
  - 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

**Section 4.10 Water Uses.** Protected water uses are as prescribed by the Comprehensive Plan. In the interpretation and application of the Standards and these Regulations, the purpose of protection of such water uses shall control the meaning. It is the further purpose of this part to preserve and protect the quality of Basin waters in a safe and adequate condition for the uses specified in the Comprehensive Plan.

**Section 4.20 Water Quality Criteria.** Stream quality objectives as set forth in the Standards shall be the criteria under these Regulations.

**4.20.1 Purpose.** It is the purpose and intent of the stream quality objectives specified in the Comprehensive Plan to apply to artificial (man-made as opposed to natural) causes of pollution.

**4.20.2 Additional Specifications.** The Standards have set limits for most of the significant and commonly used indicators which are pertinent to water quality management in the Basin. When a need arises, or upon application to the Commission, additional indicators and limits will be defined.

**A. Background, Total Dissolved Solids.** The following background levels of total dissolved solids shall be utilized for the specified zones of the Delaware River:

Zone	T.D.S.
1A	75 mg/l
1B	90 mg/l
1C	90 mg/l
1D	90 mg/l
1E	200 mg/l
2	200 mg/l

**4.20.3 Water Quality Measurements.** Water quality shall be measured outside of mixing areas when such areas have been designated for particular discharges.

**4.20.4 Tributaries to Interstate Waters.** Waste discharged into, or permitted to flow into or be placed in any intrastate tributary of interstate waters shall be treated to such extent as may be necessary:

- A. to maintain the waters of such intrastate tributary, immediately above its confluence with such interstate waters, in a condition at least equal to the water quality criteria specified for the receiving interstate waters;
- B. so that the assimilation of such waste by the interstate waters will not result in a violation of such water quality criteria.

1. For the purposes of establishing wasteload allocations for toxic pollutants for the Delaware River Estuary, the lower of the 95<sup>th</sup> percentile of the available data at the appropriate criteria duration, or the water quality criterion at or above the head of the tide shall be used to establish boundary conditions.

#### **4.20.5 Application of Criteria for Toxic Pollutants.**

##### **A. Delaware River Estuary.**

1. In establishing wasteload allocations and other effluent requirements, exceedence of stream quality objectives for the protection of aquatic life from acute effects may be permitted in small areas near outfall structures, provided that all of the following requirements are met.
  - a. As a guideline, the dimensions of the area where objectives are exceeded should be limited to the more stringent of the following restrictions:
    - 1) a distance of 50 times the discharge length scale in any direction from the outfall structure, or
    - 2) a distance of 5 times the local water depth in any direction from the outfall structure.
  - b. Stream quality objectives shall not be exceeded in areas designated as critical habitat for fish and benthic organisms.
  - c. Stream quality objectives shall not be exceeded where effluent flows over exposed benthic habitat prior to mixing with the receiving waters.
  - d. A zone of passage for free-swimming and drifting organisms equal to 50% of the surface width of the river at the location of the discharge shall be provided.
  - e. The total surface area of the Delaware River Estuary where stream quality objectives for the protection of aquatic life from acute effects are exceeded shall be limited to:
    - 1) 5% of the total surface area of Zones 2, 3 and 4, and
    - 2) 5% of the total surface area of Zone 5.
  - f. Upon the request of one or more dischargers, the Executive Director may consider requests for alternatives to the requirements of subsections a. through e. of Section 4.20.5.A.1. Such requests shall provide a demonstration that the alternative requirement requested will not adversely impact free-swimming, drifting and benthic organisms. The demonstration(s) shall provide a sound rationale, and be supported by substantial scientific data and analysis. The methodology and form of the demonstration shall be approved by the Executive Director. The Executive

Director may reject any requests which are not substantive. The Commission may establish alternative areas where acute stream quality objectives may be exceeded based upon the evaluation of submitted demonstrations.

- g. The Executive Director may consider requests to conduct studies to confirm the mixing characteristics and the predicted dilution isopleth of a discharge. Such requests shall provide a demonstration based upon sound scientific and technical rationale, and be supported by substantial data and analysis. The methodology and form of the demonstration shall be approved by the Executive Director. The Executive Director may reject any requests which are not substantive. The Commission may establish alternative dilution factors based upon the evaluation of submitted demonstrations.
2. For those stream quality objectives whose numerical value is related to hardness, a median hardness value of 74 mg/l as CaCO<sub>3</sub> shall be used to represent the hardness of the receiving water for the purposes of determining the numerical value of those objectives. This median hardness value shall be used to establish the aquatic life objective for protection from chronic effects; and in conjunction with the site-specific median hardness value of the effluent and the dilution factor, the aquatic life objective for protection from acute effects.
3. For those stream quality objectives whose numerical value is related to pH, a median pH value of 7.1 shall be used to represent the pH of the receiving water for the purposes of determining the numerical value of those objectives. This median pH value shall be used to establish the aquatic life objective for protection from chronic effects; and in conjunction with the site-specific median pH value of the effluent and the dilution factor, the aquatic life objective for protection from acute effects.
4. **Assumptions for Estuaries Mixing.** Complete vertical and lateral mixing shall be assumed in the Estuary in applying chronic aquatic life and human health stream quality objectives under design conditions. Site-specific data which does not support this assumption will be considered by the Executive Director in establishing allocations to discharges.
5. **Deriving Total Recoverable Wasteload Allocations for Metals.** Wasteload allocations developed from the dissolved stream quality objectives for seven cationic metals shall be converted into total recoverable wasteload allocations using a translator. The translator shall be determined using procedures specified by the Commission. In the absence of data to develop a translator for any of the metals, the reciprocal of the conversion factor established under Section 3.10.3C.2. shall be used for the translator.

## B. Definitions.

1. **Critical Habitat.** Specific areas within the tidal Delaware River which are or could be occupied by a species absent the toxic effect of pollutants; and which have those physical, chemical and biological features which are essential to the conservation and

maintenance of the Delaware Estuary population. The Commission shall identify and determine critical habitat within the tidal Delaware River. Such determination shall consider the spatial and temporal requirements of the species including critical life stages. Determinations shall be governed by the Commission's *Rules of Practice and Procedure* relating to review, hearing and decisions of objections thereto.

2. **Discharge Length Scale.** The square root of the cross-sectional area of any discharge outlet.

### **Section 4.30 Effluent Quality Requirements.**

**4.30.1 Prohibited Discharges.** No person, firm, partnership, corporation, association or other entity, including any of the signatory parties, any political subdivision, agency department or instrumentality of any of them, shall cause or permit any pollution or violate the effluent quality requirements or allocations of stream assimilative capacity imposed by or determined pursuant to this Article.

#### **4.30.2 Oxygen Demand.**

**A. Biochemical Oxygen Demand.** The biochemical oxygen demand (BOD) shall mean the oxygen utilized during the first five days of aerobic decomposition at 20E C consistent with the latest edition of *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation.

**B. Carbonaceous Oxygen Demand.** The carbonaceous oxygen demand of wastes forms the basis of allocating the capacity of the receiving waters to assimilate the oxygen demand generated by the waste discharges. The carbonaceous, or first stage, oxygen demand is defined as the oxygen utilized in the carbonaceous reaction, as distinguished from that utilized in the nitrogenous or second stage reaction. The carbonaceous oxygen demand is calculated by projecting the logarithmic rate of carbonaceous oxidation to completion.

**C. Nitrogenous Oxygen Demand.** The Commission will consider the nitrogenous demand of wastes, which generates a further gross oxygen demand upon the receiving waters, in establishing treatment requirements where appropriate.

#### **4.30.3 Minimum Treatment.**

##### **A. General.**

1. All wastes shall be treated to remove practically all suspended solids and shall receive such additional treatment as determined by the Commission upon consideration of the waste assimilative capacity of the receiving stream and as required to meet the limitations of Section 3.10 of the Standards.



2. Wastes containing biodegradable matter shall receive a minimum of secondary treatment as defined in the Standards.
3. Biodegradable and other waste matter to be treated or reduced shall not include that incorporated in inflect waters, unless special circumstances as determined by the Commission require such inclusion.

**B. BOD Reduction.**

1. The 85 percent minimum BOD reduction for secondary treatment will be determined by an average of samples taken over each period of thirty consecutive days of the year.
2. It is recognized that optimum efficiency may not be achieved with certain secondary treatment facilities during the colder months. A slight deviation may be permitted by the Commission when it results from reduced plant efficiency caused by temperatures below 59°F (15°C).
3. For dilute industrial process wastewater, the percent BOD reduction may be modified, upon application, provided it has been demonstrated that the best management practices and the highest degree of waste treatment determined to be practicable will be applied.

**4.30.4 Effective Disinfection.** Effective disinfection is defined as the destruction of pathogenic organisms. Since isolation of pathogenic organisms in water is not routine, the test for the fecal coliform group of organisms will be used as an indicator.

**A. Coliform Requirement.** Effective disinfection means the treatment of wastes such that the number of organisms of the fecal coliform group remaining after treatment does not exceed:

1. 200 per 100 milliliters as a geometric average;
2. 1000 per 100 milliliters in more than 10 percent of the samples taken over a period of thirty consecutive days.

**B. Chlorination.**

1. Chlorination facilities shall be designed to obtain a minimum contact time of 15 minutes at peak hourly flow.
2. After the required contact time, maintenance of a free chlorine residual of 1.0 milligram per liter at all times, as determined by the orthotolidine-arsenite (OTA) test, will be considered satisfactory if the effluent is found to meet the coliform requirements of this Section.

- C. Other Methods, Other Tests.** Other methods of achieving effective disinfection and other tests which satisfactorily demonstrate that effective disinfection has been achieved may be approved by the Commission.

**4.30.5 Other Substances in Effluents.**

- A. Color.** For municipal, industrial, or sanitary wastes, the effluent:

1. shall not impart objectionable color to the receiving waters,
2. shall not exhibit more than
  - a. true color of 100 units on the platinum cobalt scale, or its equivalent, or
  - b. the natural color of the receiving waters, whichever is greater.
  - c. A true color intensity greater than specified in (a) or (b) may be permitted when it is demonstrated that:
    - 1) the maximum practicable treatment will be provided, and
    - 2) rapid dispersion will take place, and
    - 3) the natural color characteristics of the receiving waters will be protected.

- B. Dissolved Substances.** Dissolved and colloidal substances, including nutrients, discharged in waste effluents shall be limited where necessary to prevent deposition of sediments, formation of flocculent materials, or excessive aquatic growths, that impair protected uses, violate water quality criteria, or generate additional oxygen demands upon the receiving waters.

- C. pH.**

1. Between 6 and 9.
2. Where streams have high acidity levels a discharge with a pH greater than 9 may be permitted.

- D. Ammonia.**

1. In non-tidal waters, not to exceed a 30-day average of 20 mg/l as nitrogen.
2. In tidal waters, not to exceed a 30-day average of 35 mg/l as nitrogen.

**4.30.6 Temperature.**

- A. Trout Waters.** In waters classified for trout use the discharge of waste effluents shall not increase the ambient temperature of the receiving waters by more than 5°F (2.8°C) until stream temperatures reach 50°F (10.0°C), nor by more than 2°F (1.1°C) when stream temperatures are between 50°F (10.0°C), and 58°F (14.4°C), nor shall such discharge result in stream temperature exceeding 58°F (14.4°C), which temperatures shall be measured in the stream outside of heat dissipation areas as described in 4.30.6.F.

**B. Other Nontidal Waters.** In nontidal waters other than described in 4.30.6.A, the discharge of waste effluents shall not increase the ambient temperature of the receiving waters by more than 5°F (2.8°C), nor shall such discharge result in stream temperature exceeding 87°F (30.6°C), which temperatures shall be measured in the stream outside of heat dissipation areas as described in 4.30.6.F.

**C. Zones 2, 3, and 4.** The induced temperature increase shall not exceed 5°F (2.8°C) above the average 24-hour temperature gradient displayed during the 1961-1966 period, or a maximum of 86°F (30.0°C), whichever is less, which temperatures shall be measured outside of designated heat dissipation areas as described in 4.30.6.F.

1. The average 24-hour temperature gradient displayed during the 1961-1966 period may be interpolated from the following table, which is based on available records:

Date	Zone 2		Zone 3		Zone 4	
	RM 133.4 to 108.4		RM 108.4 to 95.0		RM 95.0 to 78.8	
	°F	°C	°F	°C	°F	°C
January 1	37	2.8	41	5.0	42	5.6
February 1	35	1.7	35	1.7	36	2.2
March 1	38	3.3	38	3.3	40	4.4
April 1	46	7.8	46	7.8	47	8.3
May 1	58	14.4	58	14.4	58	14.4
June 1	71	21.7	71	21.7	72	22.2
July 1	79	26.1	79	26.1	80	26.7
August 1	81	27.2	81	27.2	81	27.2
September 1	78	25.6	79	26.1	78	25.6
September 15	76	24.4	77	25.0	76	24.4
October 1	70	21.1	70	21.1	70	21.1
November 1	59	15.0	61	16.1	60	15.6
December 1	46	7.8	50	10.0	50	10.0
December 15	40	4.4	45	7.2	45	7.2

**D. Zone 5.** The induced increase above ambient temperature shall not exceed 4°F (2.2°C) from September to May and 1.5°F (0.8°C) from June to August, or a maximum of 86°F (30.0°C), whichever is less, which temperatures shall be measured outside of designated heat dissipation areas as described in 4.30.6.F.

**E. Zone 6.** The induced increase above ambient temperature shall not exceed 4°F (2.2°C) from September to May and 1.5°F (0.8°C) from June to August, or a maximum of 85°F (29.4°C), whichever is less, which temperatures shall be measured outside of designated heat dissipation areas as described in 4.30.6.F.

**F. Heat Dissipation Areas.** The limitations specified above may be exceeded by special permit in heat dissipation areas designated on a case-by-case basis, subject to the following conditions:

1. **Zones 1A, 1B, and 1C.**

- a. **Maximum Length.** As a guideline, heat dissipation areas shall not be longer than 1000 feet, or twenty times the average width of the stream, whichever is less, measured from the point where waste discharge enters the stream.
- b. **Maximum Width.** Heat dissipation areas shall not exceed a maximum width of one-half the surface width of the stream or the width encompassing one-half of the entire cross-sectional area of the stream, whichever is less. Within any one heat dissipation area only one shore shall be used in determining the limits of the area.

2. **Zones 1D and 1E.**

- a. **Maximum Length.** As a guideline, heat dissipation areas shall not be longer than 3500 feet, or twenty times the average width of the stream, whichever is less, measured from the point where the waste discharge enters the stream.
- b. **Maximum Width.** Heat dissipation areas shall not exceed a maximum width of one-half the surface width of the stream or the width encompassing one-half of the entire cross-sectional area of the stream, whichever is less. Within any one heat dissipation area only one shore shall be used in determining the limits of the area.

3. **Zones 2, 3, and 4.**

- a. **Maximum Length.** As a guideline, heat dissipation areas shall not be longer than 3500 feet, measured from the point where the waste discharge enters the stream.
- b. **Maximum Width.** Heat dissipation areas shall not exceed a maximum width of two-thirds the surface width measured from shore to shore at any stage of tide. Within any one heat dissipation area, only one shore shall be used in determining the limits of the area.
- c. **Maximum Cross-section.** Heat dissipation areas shall not exceed a maximum of one-quarter of the cross-sectional area of the stream.

4. **Zones 5 and 6.**

- a. **Maximum Length.** As a guideline, heat dissipation areas shall not be longer than 3500 feet, measured from the point where the waste discharge enters the stream.

5. **All Other Zones.**

- a. **Maximum Length.** As a guideline, heat dissipation areas shall not be longer than 1000 feet, or twenty times the average width of the stream, whichever is less, measured from the point where the waste discharge enters the stream.
  - b. **Maximum Width.** Heat dissipation areas shall not exceed a maximum width of one-half the surface width of the stream or the width encompassing one-half of the entire cross-sectional area of the stream, whichever is less. Within any one heat dissipation area, only one shore shall be used in determining the limits of the area.
6. **Adjacent Heat Dissipation Areas.** Where waste discharges would result in heat dissipation areas in such close proximity as to impair protected uses, additional limitations may be prescribed to avoid such impairment.
7. **Other Considerations.**
- a. The rate of temperature change in designated heat dissipation areas shall not cause mortality of fish or shellfish.
  - b. The determination of heat dissipation areas in tidal waters shall take into special consideration the extent and nature of the receiving waters so as to meet the intent and purpose of the criteria and standards, including provisions for the passage of free-swimming and drifting organisms so that negligible or no effects are produced on their populations.

**G. Definitions.**

1. Ambient temperature is the temperature of a water body unaffected by the heated waste discharge or waste discharge complex.
2. Natural temperature is the temperature of a water body unaffected by artificial sources of waste heat.
3. Stream temperature is the temperature of the stream outside of the heat dissipation area.

**4.30.7 Allocation of Capacity.**

**A. Basinwide.** Where necessary to maintain stream quality objectives or protect water uses in a given zone, the waste assimilative capacity of the receiving waters shall be allocated by the Commission among individual dischargers in accordance with the doctrine of equitable apportionment.

1. **Commission Procedure.**

- a. Whenever the Commission determines that allocations of a stream's waste assimilative capacity are necessary in a zone, the Executive Director shall find and determine an allocation for each waste discharge in that zone.

- b. Such determination shall be governed by the Commission's *Rules of Practice and Procedure* relating to review, hearing and decision of objections thereto.
2. **Allocations not a Property Right.** Allocations are not transferable except upon consent of the Commission.
3. **Limitations.**
  - a. No allocation will exceed the residual after treatment as required in accordance with 4.30.3 of this Article.
  - b. No allocation will exceed the residual after treatment necessary to meet any other requirements.
4. **Reserve.** In each zone, as part of the initial allocation, and each subsequent reallocation, a reserve may be set aside by the Commission.
  - a. The reserve in each zone shall be utilized to accommodate new discharges or major revisions to an allocation, or any reallocation, when appropriate in the judgment of the Commission.
  - b. Individual allocations or portions thereof which are no longer needed because use of the facilities to which they are assigned is discontinued or substantially decreased shall be returned to the reserve.
  - c. Where improved waste management practice results in a reduction of the load discharged to less than the allocation, the unused portion of the allocation shall not revert to the reserve.
5. **Reallocations.**
  - a. **Carbonaceous Oxygen Demand**
    - 1) All allocations shall be subject to review by the Commission and, after such review, the Commission may make such reallocation as it deems necessary.
    - 2) If any factors upon which an individual allocation is based change significantly, application shall be made to the Executive Director for a revised allocation.
    - 3) Whenever the reserve in a zone approaches depletion, or when the full use of the assimilative capacity is approached, or when in the judgment of the Commission, the allocations existing at that time are no longer equitable, the capacity in the zone, minus a reserve, will be reallocated among the waste dischargers in that zone.

**b. Toxic Pollutants**

- 1) All allocations shall be subject to review by the Commission and, after such review, the Commission may make such reallocation as it deems necessary.
  - 2) If any factors upon which an individual allocation is based change significantly, application shall be made to the Executive Director for a revised allocation. The Executive Director shall provide notice to interested and affected parties prior to establishing the revised allocation.
  - 3) Allocations shall, as a minimum, be reviewed and, if required, revised every five years, or as directed by the Commission.
6. **Regionalization.** Whenever two or more waste dischargers with separate allocations formulate a regional plan for water quality control, allocations may be revised by the Commission.
7. **Design Streamflow.** For the purpose of determining the waste assimilative capacity of a stream, the following design minimum streamflows will be used:
- a. **Unregulated Streams.** Where streams are unregulated, a minimum consecutive 7-day (average) flow with a 10-year recurrence interval shall be the design flow.
  - b. **Regulated Streams.** Where the pattern of regulation is such as to result in weekly, daily, or hourly variations in flow significantly different from the natural pattern of variation, the above design flow may reflect the effects of these variations.
  - c. **Lakes and Reservoirs.** Wherever waste discharges may affect the protected uses of lakes or reservoirs, the Commission, after consultation with the appropriate States, will determine the characteristics upon which to base effluent quality requirements in relation to the special characteristics of the receiving body of water.
  - d. **Tidal Waters.** Wherever waste discharges may affect the protected uses or the water quality criteria of tidal waters, the Commission, after consultation with the appropriate States, will determine the characteristics upon which to base effluent quality requirements in relation to the special characteristics of the receiving body of water.
8. **Design Effluent Flow.** For the purpose of determining the waste assimilative capacity of a stream and the wasteload allocations for discharges of toxic pollutants, the following design effluent flows will be used:

- a. For industrial wastewater treatment plant discharges covered by Effluent Limitations Guidelines (ELG) promulgated by the U.S. EPA, the effluent design flow shall be the average daily flow associated with:
  - 1) the month having the highest monthly production rate of the previous twelve months or, if greater,
  - 2) the year having the highest annual production rate of the previous five years.
- b. If the discharge from an industrial wastewater treatment plant is **not** covered by Effluent Limitations Guidelines (ELG) promulgated by the U.S. EPA, is mixed with stormwater or cooling water, or production data are not available, the effluent design flow shall be the average daily flow associated with:
  - 1) the month with the highest monthly flow rate of the previous twelve months, or if greater,
  - 2) the year having the highest annual flow rate of the previous five years.
- c. For municipal wastewater treatment plant discharges, the effluent design flow shall be the higher of:
  - 1) the average daily flow of the plant for the previous three years including a growth factor based upon a five-year projection, if available, or
  - 2) the capacity of the plant that was used to establish effluent limitations for the NPDES permit expressed as the annual average flow.

**B. Delaware River Estuary.**

- 1. **Carbonaceous Oxygen Demand.** Pursuant to the provision of 3.10.4.E of the Standards, the Commission determines that the 1964 carbonaceous oxygen demand of the effluent load to Zones 2, 3, 4, and 5 exceeded the waste assimilative capacity of those zones to meet the stream quality objectives. Accordingly, the total carbonaceous oxygen demand exerted by the sum of all waste discharges to each of these zones shall be reduced to the following:

Zone 2	18,600 pounds per day
Zone 3	144,800 pounds per day
Zone 4	91,000 pounds per day
Zone 5	67,600 pounds per day

- a. **Reserve.** In Zones 2, 3, 4, and 5, as a part of the initial allocation, and each subsequent reallocation, a reserve of about 10 percent of the total permissible load to the Zone may be set aside by the Commission.



**b. Allocation to Individual Dischargers.**

- 1) Within Zones 2, 3, 4, and 5, the pounds of carbonaceous oxygen demand prescribed above, minus the reserve, will be allocated among individual dischargers.
- 2) Allocations will be based upon the concept of uniform reduction of raw waste in a zone.
- 3) Upon application, in special cases, for dilute industrial process wastewater, an allocation may be assigned consistent with Section 4.30.3B.3.

**c. Allowable Variations.**

- 1) The number of pounds in the discharge permitted by the allocation will be determined by an average of samples taken over a period of thirty consecutive days of the year.
- 2) It is recognized that optimum efficiency may not be achieved with certain secondary treatment facilities during the colder months. A discharge exceeding the allocation may be permitted by the Commission when it results from reduced plant efficiency caused by temperatures below 59°F (15°C), provided that the pounds discharged by any individual discharger shall not exceed its allocation by more than an average of two-thirds over any consecutive ten days.

**d. Allocations from the Reserve.** Allocations from the reserve will be made upon the same principles as provided in 4.30.7.B.1.b. based upon the concept of uniform raw waste reduction in a zone at the time the allocation is made.

**e. Reallocations.** Reallocations will be made upon the same principles as provided by 4.30.7.B.1.b., provided that where the waste reduction by any discharger results in lower poundage input than it has been allocated such poundage differential will not be returned to the reserve in the absence of conditions requiring a reallocation for the zone.

**f. Tidal Tributaries.**

- 1) Wastes discharged to the portions of tributaries of the Delaware River Estuary affected by tidal action are included in the total permissible load in each zone, and poundage allocations will be assigned to these dischargers on the same basis as effluents discharged directly to the estuary.

- 2) However, additional requirements may be imposed if any one or group of waste dischargers complying with estuary load allocations exceeds the waste assimilative capacity of the tidal tributary.
2. **Toxic Pollutants.** Pursuant to Sections 3.10.4.E. and 4.30.7.A. of these regulations, the Commission shall establish wasteload allocations and other effluent requirements that may be necessary to meet the stream quality objectives for toxic pollutants contained in Section 3.30.
- a. **Reserve.** A reserve allocation of 5% of the Total Maximum Daily Load (TMDL) shall be established as a part of an allocation or reallocation, by increasing the effluent design flow by 5%.
  - b. **Margin of Safety.** As part of an allocation or reallocation, a proportion of the Total Maximum Daily Load shall be established as a margin of safety. The proportion established shall reflect the degree of uncertainty in the data and resulting water quality-based controls.
  - c. **Allocation to Discharges.**
    - 1) Wasteload allocations shall be established for Phase 1 continuous point source discharges to address acute aquatic life protection, chronic aquatic life protection and both carcinogenic and systemic toxicants.
      - a) The water quality objective for the establishment of any allocation or reallocation shall be the stream quality objectives contained in Section 3.30. If the background concentration of a toxic pollutant at the appropriate criteria duration exceeds the stream quality objective as a result of loadings from sources not subject to control, then the water quality objective shall be the background concentration of the pollutant.
      - b) The minimum flows for aquatic life protection and to protect the taste and odor of ingested water and fish are based on a minimum consecutive 7-day flow with a 10-year recurrence interval for all tributaries; and for the Delaware River, a flow of 2500 cfs at Trenton. For the protection of human health, the harmonic mean flow shall be used for carcinogens, and the minimum consecutive 30-day flow with a 5-year recurrence interval shall be used for systemic toxicants.
    - 2) Allocations shall be determined by the Executive Director using the procedure described in Section 4.30.7.B.2.c.4) or alternative procedures that are consistent with the doctrine of equitable apportionment, and achieve the following:
      - a) assure compliance with applicable stream quality objectives;
      - b) provide maximum equity among competing discharges; and

- c) minimize the overall cost of compliance.
- 3) The loadings of toxic pollutants identified in Section 4.30.7.B.2.c. shall be allocated among individual Phase 1 continuous point source discharges which meet any of the following criteria:
- a) The discharge has an existing permit limit for the parameter,
  - b) Effluent data indicates the presence of the parameter, or
  - c) The reasonable potential exists for the parameter to occur in the discharge.
- 4) Allocations for Phase 1 continuous point source discharges will be based upon the equal marginal percent reduction procedure which has been determined to be consistent with the requirements of Section 4.30.7.B.2.c.2). This procedure requires all dischargers, whether they are part of a multiple discharge wasteload allocation scenario or not, to provide treatment of their wastewater to achieve the applicable water quality standard; and in addition, requires some dischargers to provide additional treatment due to the cumulative impact of all discharges.
- a) Alternative wasteload allocation procedures may be considered by the Commission if they provide timely compliance with Section 4.30.7.B.2.c.2) and include the consent of all dischargers affected by the alternative procedure.
  - b) Discharges meeting any of the requirements of Section 4.30.7.B.2.c.3) will be assigned an initial loading based upon the following information in order of preference:
    - i) The average monthly limit obtained from effluent guideline limitations promulgated by the U.S. Environmental Protection Agency for the point source category applicable to the discharge,
    - ii) Any average monthly limitation for the parameter in the current discharge permit,
    - iii) Monitoring data of sufficient quantity and quality, as determined by the Executive Director, to characterize the concentration of the parameter in the discharge, or
    - iv) Minimum performance standards established by the Executive Director for industrial and municipal wastewater treatment plants discharging to the tidal Delaware River.

In assigning the initial loading, the average loading at the appropriate criteria duration will be calculated using the coefficient of variation (CV) calculated from monitoring data or a default value of 0.6 in the absence of data of sufficient quantity and quality, as determined by the Executive Director.

- c) Discharges contributing to an exceedence of a stream quality objective due to the cumulative effect of all discharges may not be required to provide additional treatment or loading reduction if the discharge does not represent a significant proportion of the marginal loading.
- 5) Allocations established by the Executive Director and reallocations required under Section 4.30.7.A.5.b.2) shall be published in a document containing the specific procedures, tools and assumptions used to derive the allocations.
- 6) Wasteload allocations established under Section 4.30.7.B.2.c. shall be referred to the appropriate agency of the signatory parties, respectively, for use, as appropriate, in developing effluent limitations, schedules of compliance, and other requirements in permits.
- d. **Adjustment for Pollutants in Intake Water.** Wasteload allocations established for an industrial discharge may be adjusted by the Executive Director, in consultation with the appropriate agency of the signatory parties, to account for pollutants present in water withdrawn for use by the facility from the receiving water provided that the following conditions are met:
  - 1) In the absence of pollutants in the water withdrawn, there would be no exceedence of the stream quality objectives for toxic pollutants;
  - 2) Pollutants in the discharge resulting from any other activity, operation or materials used or produced at the facility do not significantly contribute to an exceedence of the stream quality objectives for toxic pollutants contained in Section 3.30.;
  - 3) No statistically significant difference can be detected between the intake and effluent concentrations and loadings of a toxic pollutant based upon a rigorous analysis of data representative of operating and ambient conditions at the facility; and
  - 4) No practicable alternative source of intake water is available.

**C. Definitions.**

1. **Wasteload Allocation.** The portion of the Total Maximum Daily Load of a body of water or section thereof that is allocated to an existing or future point source of pollution. Or, any limitation on the loading and/or concentration of a pollutant discharged from a point source required to ensure that stream quality objectives are not exceeded.
2. **Total Maximum Daily Load (TMDL).** The maximum daily loading of a pollutant from all sources which still ensures that water quality objectives are met.
3. **Margin of Safety.** A factor that takes into account any uncertainty or lack of knowledge about the relationship between pollutant loadings and the quality of the receiving water.
4. **Marginal Load.** The portion of the loading of a pollutant that contributes to an exceedence of a stream quality objective when the cumulative loading from all point sources is considered.
5. **Effluent Limitations Guidelines.** Effluent limitations for pollutants for categories and classes of point sources promulgated by the U.S. Environmental Protection Agency under Section 301 of the Clean Water Act which reflect the best available treatment technology.
6. **Harmonic Mean Flow.** The flow value corresponding to the number of daily flow measurements divided by the sum of the reciprocals of the flows.
7. **Background Concentration.** The concentration of a toxic pollutant at any point in the Estuary that results from loadings from tributaries, sediments (if applicable), and any point or non-point sources not subject to control in the current allocation or reallocation.
8. **Phase 1 Continuous Point Source Discharge.** A discharge of wastewater other than non-contact cooling water, permitted under the National Pollutant Discharge Elimination System (NPDES) which occurs without interruption during the operating hours of a facility except for infrequent shutdowns, and is not primarily dependent on precipitation-induced flows.
9. **Long-term Average Concentration.** The mean concentration of a toxic pollutant in the effluent that represents the desired performance of a wastewater treatment plant.
10. **Minimum Performance Standards.** The long-term average concentration for a parameter for which stream quality objectives have been established under Section 3.10.3.C. or D.

- a. For volatile and non-volatile organic chemicals, the standard is the maximum for a monthly average specified in the effluent guideline limitations for the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) industrial category, or the highest reported effluent value for activated sludge treatment specified in the U.S. EPA's Water Engineering Research Laboratory data base.
- b. For chlorinated pesticides and polychlorinated biphenyls, the standard is the Practical Quantitation Limit (PQL) for the compound.
- c. For metals and indicator parameters, the standard is the average concentration of the parameter in industrial or municipal treatment plant discharges to the Estuary.

11. **Initial Loading.** The concentration or mass of a pollutant that is initially assigned to a discharge that meets the criteria specified in Section 4.30.7.B.2.c.3) during the baseline analysis portion of a wasteload allocation exercise.

#### 4.30.8 Tests, Sampling and Analysis Procedures.

##### A. Records.

1. Adequate records shall be kept by the discharger of the operation of each facility which discharges waste effluents to Basin waters, as required by the member pollution control agencies, or as may be required by the Commission.
2. Such records shall be made available to the Commission upon request of the Executive Director.

**B. Sampling Facilities.** Facilities, subject to Commission approval, shall be provided for each discharge so that representative samples may be readily collected under safe conditions.

##### C. Sampling.

1. Samples shall be taken by the discharger in such manner and in such number as shall be determined by the Commission upon consideration of the volume, location, and characteristics of the wastes, sufficient to permit the Commission to determine the quality of waste treatment influents and effluents and evaluate in-plant reductions.
2. Samples may be composited, continuously or hourly, in proportion to flow over 24 hours, or over a working cycle, as appropriate.

**D. Bioassays.** The Commission may require bioassays to demonstrate that waste discharges are neither toxic nor harmful and will not taint fish or shellfish flesh beyond the mixing zone.

**E. Analysis Procedures.** Samples shall be analyzed and bioassays performed in accordance with the procedures in the latest edition of Standard Methods for the Examination of Water and Wastewater, or as prescribed by the Commission.

1. In the analysis of oil and grease samples from oil storage terminal runoff, the liquid-liquid extraction with trichlorotrifluoro-ethane gravimetric method shall be used.

**F. Access.** The Commission, its officers, agents, and employees shall have access to observe and inspect waste treatment and in-plant control facilities and to collect samples for analyses.

#### **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 4.30.9A.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 4.30.9A.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 4.30.9A.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 4.30.9A.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 4.30.9E.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 4.30.9A.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 4.30.9E 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 4.30.9A., 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 4.30.9D.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 4.30.9E. The Executive Director may commence an enforcement action and/or seek penalties in accordance with Section 14.17 of the

*Compact* and Section 4.30.9D.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 4.30.9D.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 4.30.9D.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 4.30.9E.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 4.30.9E.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 4.30.9E.13. In addition to biennial monitoring using methods listed in Section 4.30.9E.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 4.30.9E.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 4.30.9E.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 4.30.9E.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 4.30.9D.4 above, or such other date as may be specified in a NPDES permit issued in accordance with Section 4.30.9I, 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 4.30.9E.12.a., above; and
  4. describes progress toward achieving maximum practicable reduction of the pollutant, using measures identified in accordance with Section 4.30.9E.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 4.30.9D for a PMP for good cause and may waive any of the plan element requirements of Section 4.30.9E for a PMP, upon a showing that an element listed at Section 4.30.9E 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 4.30.9E.
- 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.

#### **4.30.10 Other Considerations**

**A. Intrastate Tributaries.** In addition to the requirements of this Article, effluent quality requirements or intrastate tributaries shall include such regulations as the State in which the tributary is located may impose in order to comply with the water quality criteria provided by 4.20.4.

#### **B. Operations**

1. Waste treatment operations, except disinfection, shall not be curtailed at any time of the year.
2. The capability to resume disinfection, upon reasonable notice not to exceed 15 days, shall be maintained.

### **Section 4.40 Ground Water Quality Requirements**

**4.40.1 Prohibited Activities.** No person, firm, partnership, corporation, association, or other entity, including any of the signatory parties, any political subdivision, agency, department or instrumentality of any of them, shall cause or permit any pollution of ground waters or violate the ground water quality objectives or control requirements imposed by or determined pursuant to this Section or Section 3.40.

**4.40.2 Enforcement Procedures.** The enforcement procedure of Section 4.60 with respect to effluent quality requirements for discharges shall be deemed applicable to the enforcement of this Section and Section 3.40. For the purposes thereof, the word "discharger" as used in Section 4.60 includes any party affected by this Section.

### **Section 4.50 Wastewater from High Volume Hydraulic Fracturing and Related Activities.**

The provisions of 18 CFR 440.4 and the purpose and definitions applicable thereto, encompassing 18 CFR 440.1 and 18 CFR 440.2, are hereby incorporated into these Water Quality Regulations.

### **Section 4.60 Enforcement Procedures.**

**4.60.1 Scope.** The Standards will be enforced with respect to effluent quality requirements in accordance with this Section. It is intended that such enforcement procedures will be administered with due recognition of the laws and requirements of the signatory parties, and with the utilization to the maximum practical extent of the functions, powers and duties of water pollution control agencies of the signatory parties in accordance with administrative agreements which may be entered into by and between the Commission and such agencies.

**4.60.2 Abatement Schedules and Permits.**

- A. Abatement schedules approved by the Commission prior to October 1, 1973, shall be referred to the appropriate agency of the signatory parties, respectively, for all further proceedings.
- B. On and after October 1, 1973, each discharger shall comply with the requirements for an abatement schedule under the laws and regulations of the appropriate signatory parties.
- C. A copy of each abatement schedule and permit, and any revision or amendment thereof, shall be promptly filed with the Commission by the agency of the signatory party issuing it.
- D. Each agency of a signatory party which issues or approves an abatement schedule or a discharge permit relating to waters of the Basin shall provide for the use of the Commission an annual report of such actions including the progress of abatement measures thereunder, in such form as the Executive Director may request.

**4.60.3 Waste Load Allocations.** Waste load allocations will be made by the Executive Director in accordance with these Regulations. Every allocation shall be met:

- A. by an existing waste treatment facility;
- B. in accordance with an abatement schedule duly adopted and approved by a signatory party, with respect to an existing project;
- C. at all times with respect to a new project.

**4.60.4 Inspection and Surveillance.**

- A. The Commission, its officers, agents, and employees may inspect the operations of waste treatment and in-plant control facilities of any waste discharger and may install, operate, and maintain facilities for monitoring and surveillance of effluents as well as water quality objectives.
- B. Provision for such monitoring and surveillance shall be deemed to be part of every order, determination, or permit of the Commission approving an allocation or an abatement schedule for any waste discharger.

**4.60.5 Noncompliance; Notice.**

- A. Whenever the Executive Director determines that there is cause to conclude that a waste discharger may be in violation of these Regulations, the Director shall serve upon the waste discharger a notice of hearing, requiring the waste discharger to show cause within 20 days thereafter, at a hearing to be conducted by a hearing officer designated by the Director, why a citation for non-compliance should not be issued.



- B. Following the hearing, the officer shall determine whether the waste discharger is in fact in violation of these Regulations and upon such finding shall recommend to the Executive Director an appropriate determination.
- C. If the Executive Director determines that the waste discharger is in violation, he shall cause to be issued and served upon the waste discharger a citation for noncompliance.
- D. A copy of the citation shall also be served and filed with the water pollution control agency of the signatory State in which the violation occurs.

**4.60.6 Order of Abatement; Sanctions.**

- A. **Order.** An order of abatement shall be issued by the Executive Director, following a citation for noncompliance, whenever:
  - 1. The state pollution control agency has not taken appropriate and timely action to obtain compliance, or
  - 2. There is a disagreement between two or more States regarding satisfactory compliance by a waste discharge, or
  - 3. A waste discharge involves a federally-owned or operated facility, or
  - 4. There is doubt or conflict of jurisdiction among the States.
- B. **Sanctions.** The Commission may invoke the sanctions of the Compact for violation of these Regulations following the issuance of an order of abatement by the Executive Director.

## INTERPRETIVE GUIDELINE NO. 1

On January 26, 1972 the Delaware River Basin Commission adopted Interpretive Guideline No. 1, as Resolution No. 72-1, directing that the following numerical definitions be used as guidelines by the Commission staff in administering Sections 3.10.3.A, 3.10.4.A, 3.10.4.C, and 3.10.4.D of the Water Quality Standards, and that they be administered in accordance with the procedures of the Basin Regulations - Water Quality.

### A. Stream Quality Objectives.

#### (1) Limits.

a. **Toxic Substances.** The following limits shall apply in Basin waters other than Zones 2, 3, 4 and 5.

- (i) The concentration of a toxic substance in Basin waters shall not exceed one-twentieth of the TL<sub>50</sub> value at 96 hours, as determined by appropriate bioassays, except in designated mixing areas. Criteria for combinations of toxic substances will be based upon the same principle.
- (ii) The substances listed below shall not exceed the specified limits or one-twentieth of the TL<sub>50</sub> value at 96 hours, whichever is lower.

	<u>Limit mg/l</u>
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium (hexavalent)	0.05
Lead	0.05
Mercury	0.005
Selenium	0.01
Silver	0.05

- (iii) The concentration of a persistent pesticide<sup>2</sup> in Basin waters shall not exceed one one-hundredth of the TL<sub>50</sub> value at 96 hours, as determined by appropriate bioassay.

b. **Oil.** No readily visible oil.

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<sup>2</sup> Persistent pesticides are defined as natural and synthetic materials having a half-life of greater than 96 hours, which are used to control unwanted or noxious animals or plants. They include fungicides, herbicides, insecticides, fumigants and rodenticides.

**B. Effluent Quality Requirements.**

**(1) Public Safety.**

**a. Temperature.** Maximum 110°F (43.3°C) where readily accessible to human contact.

**(2) Limits.**

**a. Debris, Scum, or Other Floating Materials.** None.

**b. Toxicity.** The following requirements shall apply in Basin waters other than Zones 2, 3, 4 and 5.

- (i) Not more than 50 percent mortality in 96 hours in an appropriate bioassay test with a 1:1 dilution. Wastes containing chlorine may be dechlorinated prior to the bioassay test.
- (ii) Notwithstanding the results of the tests prescribed in paragraph (I) above, the substances listed below being accumulative or conservative, shall not exceed the following specified limits in an effluent.

	<u>Limit mg/l</u>
Arsenic	0.1
Barium	2.0
Cadmium	0.02
Chromium (hexavalent)	0.10
Copper	0.20
Lead	0.10
Mercury	0.01
Selenium	0.02
Zinc	0.60

(iii) Persistent pesticides - not to exceed one one-hundredth of the TL<sub>50</sub> value at 96 hours as determined by appropriate bioassay.

**c. Odor.** Not to exceed a threshold number of 250.

**d. BOD.** In Zones 2, 3, 4 and 5 a waste shall receive not less than zone percent reduction in addition to meeting allocation requirements.