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ENVIRONMENTAL PROTECTION  
THE COMMISSIONER

Proposed New and Amended Rules Concerning Water Quality Standards

DEP Docket No. 010-80-02

Jerry Fitzgerald English, Commissioner of Environmental Protection, pursuant to the authority of N.J.S.A. 13:1D-1 et seq., N.J.S.A. 58:10A-1 et seq., and N.J.S.A. 58-11A-1 et seq., proposes to adopt new, revised, and amended rules to be cited as N.J.A.C. 7:9-4.1 et seq., 7:9-5.1 et seq., and 7:9-6.1 et seq. concerning Surface Water Quality Standards, Treatment Requirements of Wastewaters Discharged Into Surface Waters of the State and Ground-Water Quality Standards. Pursuant to the same authority, the Commissioner proposes to repeal the existing subchapters 4, 8 and 14 of chapter 9 of Title 7 of the New Jersey Administrative Code. This proposal is known within the Department of Environmental Protection as Docket No. DEP 010-80-02

The provisions of Section 303 of the Federal Clean Water Act, as amended, 33 U.S.C.A. 1251 et seq. mandate that the State water pollution control agency adopt and, from time to time, review and, as appropriate, modify surface water quality standards. The Surface Water Quality Standards being proposed at this time contain a number of modifications to those standards adopted on November 18, 1974. The proposed rules are consistent with the purpose and intent of the Water Quality Planning Act, Federal Clean Water Act, and the Federal Regulations governing water quality standards (40 CFR 35.1550).

The proposed rules concerning Surface Water Quality Standards contain sections regarding definitions, policy statements, designated uses and water quality criteria, and surface water classifications. The major revisions and additions to the standards consist of technical revisions to various classifications, standards for certain toxic substances, heat dissipation areas, special water quality standards for tidal portions of Morses Creek, and clarification of the State's Antidegradation Policy.

The proposed rules concerning Treatment Requirements of Wastewaters Discharged Into Surface Waters of the State contain sections regarding definitions, policy statements, wasteload allocation objectives and procedures, minimum treatment requirements, procedures for modifying water quality based effluent limitations, and procedures for reclassifying specific segments for less restrictive uses. The major revisions and additions to the treatment requirements consist of a seasonal disinfection policy and designation of areas eligible for seasonal disinfection, procedures for establishing water quality based effluent limitations for individual dischargers, technical revisions to certain minimum treatment requirements, procedures for modifying water quality based effluent limitations, and procedures for reclassifying specific segments for less restrictive uses.

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The designated uses and special surface water quality criteria for the Central Pine Barrens adopted on January 23, 1978 are not subject to review at this time. Only minor and, in the opinion of the Department of Environmental Protection, inconsequential changes in language have been made to those standards. The Central Pine Barrens Standards are included in the proposed Surface Water Quality rules for the purpose of continuity and clarity.

The proposed rules concerning Ground-Water Quality Standards contain sections regarding definitions, statements of policy, ground water designated uses and quality criteria, ground water designated areas, effluent standards and discharger requirements, and procedures for modifying ground-water quality based effluent limitations. The sections of the proposed rules which apply Statewide are new. Only minor and, in the opinion of the Department of Environmental Protection, inconsequential revisions have been made to the Ground Water Quality Standards for the Central Pine Barrens adopted on January 23, 1978. The Central Pine Barrens Standards are included in the proposed Ground Water Quality rules for the purpose of continuity and clarity.

The Department of Environmental Protection has prepared Basis and Background documents explaining the proposed revisions to Surface Water Quality Standards, Treatment Requirements of Wastewaters Discharged Into Surface Waters of the State, and Ground-Water Quality Standards. Copies of the 136 pages of the full text of the proposed rules and the Basis and Background documents may be obtained 30 days prior to the first hearing date from:

Douglas M. Clark, Assistant Director  
Monitoring and Planning Element  
Division of Water Resources  
P.O. Box CN-029  
Trenton, New Jersey 08625

Copies of the full text of the proposed rules and the Basis and Background documents may also be reviewed 30 days prior to the first hearing date at the following depositories:

Government Documents  
Stockton State College Library  
On College Drive, near Rts. 561 & 575  
Pomona, New Jersey

N.J. Documents Depository  
Johnson Free Public Library  
274 Main Street  
Hackensack, New Jersey

N.J. Documents Depository  
Burlington County Library  
Woodland Road  
Mount Holly, New Jersey

Reference Department  
Cherry Hill Free Public Library  
1100 Kings Highway North  
Cherry Hill, New Jersey

Documents Department  
Cape May County Free Library  
Main Street  
Cape May Court House, New Jersey

N.J. Documents Depository  
Cumberland County Library  
800 East Commerce Street  
Bridgeton, New Jersey

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Gift Department  
5 Washington Street  
Newark, New Jersey

Woodbury Public Library  
33 Delaware Street  
Woodbury, New Jersey

Jersey City Public Library  
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472 Jersey Avenue  
Jersey City, New Jersey

Reference Department  
Hunterdon County Library  
Route 12  
Flemington, New Jersey

Reference Department  
New Brunswick Public Library  
60 Livingston Avenue  
New Brunswick, New Jersey

Morris County Library  
N.J. Documents Depository  
30 East Hanover Avenue  
Whippany, New Jersey

N.J. Documents Depository  
Free Public Library  
250 Broadway  
Paterson, New Jersey

Free Public Library  
200 Frost Avenue  
Phillipsburg, New Jersey

New Jersey Room  
Somerset County Library  
County Administration Building  
Somerville, New Jersey

Salem Free Public Library  
112 W. Broadway Street  
Salem, New Jersey

N.J. Documents Depository  
Sussex County Library  
R.D. 3, Box 76  
Newton, New Jersey

N.J. Documents Depository  
Elizabeth Public Library  
11 South Broad Street  
Elizabeth, New Jersey

Eastern Branch  
Monmouth County Library  
New Jersey Highway 35  
Shrewsbury, New Jersey

N.J. Documents Depository  
Ocean County Library  
15 Hooper Avenue  
Toms River, New Jersey

Reference Department  
N.J. State Library  
185 W. State Street  
Trenton, New Jersey

Basis and Background Documents have also been prepared explaining, in greater detail, the Disinfection Policy and Special Water Quality Standards for Tidal Portions of Morses Creek. These documents may be reviewed at the Division of Water Resources, 1474 Prospect Street, Trenton, New Jersey 08625..

The Department of Environmental Protection invites public comment on those rules which propose minor changes to the Central Pine Barrens Surface and Ground-Water Quality Standards and on all Surface and Ground-Water Quality Standards applicable to other areas of the State. Written and oral comments may be presented at public hearings to be held on May 12, 1980 in the Archives Exhibit Room, New Jersey State Library, 185 West State Street, Trenton, New Jersey; on May 13, 1980 at the Environmental Education Center, 190 Stirling Road, Basking Ridge, New Jersey; and on May 14, 1980 in Room 208, G Wing, Stockton State College, Jimmy Leeds Road, Pomona, New Jersey.

The public hearings will be held from 2:00 P.M. until 5:00 P.M. and from 7:00 P.M. until 10:00 P.M., or the end of testimony, at each location. Written comments relevant to the proposed action will also be accepted by Assistant Director Clark at the above address on or before May 29, 1980.

The Department of Environmental Protection may thereafter adopt these rules substantially as proposed without further notice.

DATE:

14 February 1980

JERRY FITZGERALD ENGLISH  
COMMISSIONER

DEPARTMENT OF ENVIRONMENTAL PROTECTION

NJAC 17:27-4.1 et

*NJAC 7:27-4.1 et seq*

BASIS AND BACKGROUND FOR THE  
PROPOSED REVISIONS TO SURFACE WATER QUALITY STANDARDS

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State of New Jersey  
Department of Environmental Protection  
February 1980

BASIS AND BACKGROUND FOR THE  
PROPOSED REVISIONS TO SURFACE WATER QUALITY STANDARDS

TABLE OF CONTENTS

SECTION I - INTRODUCTION	I-1 - I-7
SECTION II - BASIS AND BACKGROUND	II-1 - II-58
SURFACE WATER QUALITY STANDARDS	1 - 90

## SECTION I

### INTRODUCTION

- A. INTRODUCTION AND HISTORY OF WATER QUALITY STANDARDS
- B. WHAT ARE WATER QUALITY STANDARDS
- C. PURPOSE OF WATER QUALITY STANDARDS

## SECTION I - INTRODUCTION

### A. INTRODUCTION AND HISTORY OF WATER QUALITY STANDARDS

The proposed revisions were developed by the Bureau of Water Quality Planning and Management, Water Resources Planning and Management Element, Division of Water Resources, New Jersey Department of Environmental Protection. The development and periodic review of water quality standards has been performed by the State since 1948. The revisions discussed in section II are proposed pursuant to the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A et seq.), the New Jersey Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.), and the Federal Clean Water Act of 1977. These legislative actions and water quality standards are key elements in the State's ability to develop sound and adequate water quality management plans.

#### History of Water Quality Standards

Since 1948 the main federal legislation dealing with water pollution has been the Federal Water Pollution Control Act (FWPCA). A principal component of the FWPCA consisted of State developed ambient water quality standards. The concept of ambient water quality standards has remained an integral part of the Act ever since its adoption.

The original Act contained a conference procedure among representatives of the State and Federal authorities to establish standards where those set by a State were unacceptably low. The ambient standards in the FWPCA of 1948 were based on stated legitimate uses of water, including agricultural and industrial uses. Thus, in an industrialized area, standards would usually reflect only the lowest legitimate use -- the quality of water necessary for industrial purposes. Standards providing for higher than present water uses, or calculated to improve the situation, were the exception. Moreover, ambient standards specified only general conditions of purity of a given body of water, thus creating the problem of how to determine which discharger was responsible for causing the quality of a body of water to drop below its ambient standard.

The first major modification of the concept of water quality standards appeared in the Water Quality Act of 1965. This Act provided for specific water quality criteria for interstate waters. In order to establish



more definite criteria for determining federal violations, the 1965 Act required joint federal and State promulgation of water quality standards which were to apply to interstate waters, giving the federal government final approval of the standards. Using water quality criteria, appropriate officials could determine with more certainty when the FWPCA was violated, thus facilitating proof of violations.

Following the mandate of the 1965 Act, the State of New Jersey amended its water quality standards and issued criteria for each class of water. The basic thrust of the new regulations was the establishment of use classifications and criteria for State waters. The State has continued to use this basic format in subsequent modifications of water quality standards.

The 1972 Amendments to the FWPCA provided for a continuation of the old water quality standards applicable to interstate waters and incorporated State standards for intrastate waters into the Act as well. In addition to ambient water quality standards, the 1972 Amendments included the requirement for effluent limitations. Under § 302, the possibility of requiring effluent limitations was outlined. The most important part of the Amendments as regards water quality standards are the national goals of fishable/swimmable (§ 101) toward which water quality must strive.

The State subsequently modified its water quality regulations in 1974 to reflect the new goals and increased broadness of the 1972 Amendments. The State's Surface Water Quality Standards was expanded to include antidegradation and mixing zone policies. The document also established the use of bioassays and corresponding application factors to protect aquatic life. Furthermore, the number of water quality parameters having numerical standards was increased. Refinement of water quality standards for temperature and dissolved oxygen to protect a more detailed use classification scheme (i.e. trout production, trout maintenance, and non-trout) was also performed in 1974.

Since the 1974 revisions the Department has adopted four amendments to water quality standards. These amendments include the following:

#### Amendment #1

Adopted July 9, 1975.

This revision resulted in the downgrading of the tidal portion of Morses Creek from TW-3 to TW-4(a).

#### Amendment #2

Adopted November 5, 1976.

This revision resulted in distinguishing between petroleum hydrocarbons and other oils and greases.

### Amendment #3

Adopted December 15, 1977

This revision resulted in readopting existing regulations under the authority of the N.J. Water Pollution Control Act and the N.J. Water Quality Planning Act.

### Amendment #4

Adopted January 23, 1978.

This revision resulted in specific water quality standards for the FW-Central Pine Barrens and the Lower Mullica and Wading Rivers-Central Pine Barrens.

The 1977 amendments to the FWPCA, as they pertain to the development and revisions to water quality standards, remain unchanged.

The development of water quality standards is authorized by the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.). The classification of surface waters of the State and the determination of water quality standards for each such classification are developed in a manner that will carry out the intent of New Jersey's Water Pollution Control Act. It is stated in the Water Pollution Control Act:

"...that pollution of the ground and surface waters of this State continues to endanger public health; to threaten fish and aquatic life, scenic and ecological values; and to limit the domestic, municipal, recreational, industrial, agricultural and other uses of water..." "It is the policy of this State to restore, enhance and maintain the chemical, physical, and biological integrity of its waters, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, industrial and other uses of water."

The 1979 proposed revisions to New Jersey's Surface Water Quality Standards are also performed pursuant to section 303(c)(1) of the FWPCA Amendments of 1972 and 1977 which states:

"The Governor of a State or the State water pollution control agency of such State shall from time to time (but at least once each three year period beginning with the date of enactment of the FWPCA Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator."

The U.S. Environmental Protection Agency (USEPA) policy and the purpose of State water quality standards are established in 40 CFR Part 35.1550. This regulation requires that the State's water quality standards shall:

- Protect public health and welfare, enhance the quality of water and serve the purposes of the Act;
- Specify appropriate uses to be achieved and protected;
- Specify appropriate water quality criteria necessary to support designated uses.

These regulations also require the States to adhere to certain principles in revising their water quality standards:

1. Water quality standards shall be established which will result in the achievement of the national goals, wherever attainable, of the Act;
2. Water uses which are currently being attained shall be maintained;
3. The State may establish less restrictive uses, than those currently designated, when:
  - i. The existing designated use is not attainable because of natural background;
  - ii. The existing designated use is not attainable because of irretrievable man-induced conditions; or
  - iii. The existing designated use is not attainable because the imposition of controls above or in addition to the technology based requirements of best available technology economically achievable (BATEA) and Best Practicable Wastewater Treatment Technology (BPWTT) would be required and would result in a substantial and widespread adverse economic and social impact.
4. The State shall assure that the water quality standards provide for the attainment of the water quality standards of downstream waters.

5. The State shall develop and adopt a Statewide antidegradation policy and identify the methods for implementing such policy.

In response to these State and Federal laws and regulations the New Jersey Department of Environmental Protection proposes revisions to its Surface Water Quality Standards. These revisions are discussed in section II of this document and appear in section III.

## B. WHAT ARE WATER QUALITY STANDARDS

As the term implies, water quality standards represent desired levels of purity of water. The State of New Jersey is required by law to determine standards of purity for all waters of the State. The State's Standards\* are composed of the following elements:

### 1. Statements of Policy

These statements indicate the conditions under which standards apply, the relationship of standards to approval of sewage treatment facilities, the requirement that existing water quality shall be maintained, and other general rules used in administering the standards.

### 2. Designated Uses

Designated uses enumerate potential uses of surface waters. For example one such description of designated uses reads as follows:

"Fresh surface waters approved as sources of public water supply. These waters shall also be suitable for the maintenance, migration and propagation of the natural and established biota; and for primary contact recreation; industrial and agricultural uses and any other reasonable uses."

In other words, the waters falling in this class should be good for drinking (after treatment), fishing and swimming. Other classes pertain to tidal waters, protection of their natural biota and adequacy for swimming. Still other classes apply to ocean waters.

\*New Jersey Department of Environmental Protection, Division of Water Resources N.J.A.C. 7:9-4 et seq.  
Surface Water Quality Standards Docket No. DEP 012-74-11.

### 3. Criteria

Criteria are characteristics of water that can be measured or physically perceived. For example the dissolved oxygen in water can be measured in units of milligrams of oxygen per liter. Taste and odor of water can be perceived as either acceptable or unacceptable to humans. The criteria specify characteristics of water that should or should not be present if a particular use is to be maintained. Criteria may be expressed either as a number, narrative, or both. An example of a numerical criterion is the dissolved oxygen criterion. The dissolved oxygen criterion for fresh waters suitable for fishing and swimming is presently 5.0 mg/l as a 24 hour average, with no less than 4.0 mg/l at any time. (Higher levels of dissolved oxygen are specified for trout waters). An example of a narrative criterion is the criterion for taste and odor producing substances which presently states:

"None offensive to humans or which would produce offensive tastes and/or odors in water supplies and biota used for human consumption. None which would render the waters unsuitable for the designated uses."

### 4. Designated Area

Designated area specifies the geographic extent of waters where designated uses and criteria described above are to be met or protected.

### 5. Summary

All surface waters of the State have been assigned a use designation. Each use designation indicates how the water may be used and specifies in numerical and/or narrative terms what physical, chemical, and biological characteristics the water should have.

## C. PURPOSE OF WATER QUALITY STANDARDS

Water quality standards provide the yardstick for determining the need for, and effectiveness of, all water pollution control programs. The standards are used in making decisions regarding the levels of pollution control to be required of point sources (municipal sewage treatment works and industrial wastewaters) and nonpoint sources (e.g. urban runoff). For

example, if the Department determines that technology based effluent limitations are not sufficient to meet water quality standards, then the Department may require water quality based effluent limitations. One important mechanism for determining the relationship between sources of pollution and water quality standards is found in State and Federal legislation. The N.J. Water Quality Planning Act (N.J.S.A. 58:11A1 et seq.) and the FWPCA Amendments of 1972 and 1977 require the development of water quality management plans and the development of a continuing planning process. These plans specify technology or water quality based effluent limitations for point sources, and technology based best management practices for nonpoint sources, which are necessary to meet water quality standards.

While all surface waters have prescribed water purity levels, these levels are not necessarily being attained in all waters at present. Where waters do not meet the numerical criteria, the criteria provide a target or goal specifying the level of water purity desired in the stream. In other cases, actual stream quality may be better than the limit specified in the stream quality criteria. For high quality waters that are purer than the criteria required, the criteria provides an absolute level below which the stream water quality should not be allowed to fall. The statements of policy included in the standards also provide that where existing stream quality is better than applicable water quality criteria, such high quality waters will not be allowed to degrade "unless it can be demonstrated that change is justifiable as a result of necessary economic or social development". These statements of policy also provide that where water quality is worse than applicable water quality criteria, water quality will be improved (by upgrading wastewater treatment levels and more systematic control of nonpoint sources of pollution) to the level of purity specified in the water quality standards.

## SECTION II

BASIS AND BACKGROUND FOR RECOMMENDED REVISIONS TO NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER  
RESOURCES, N.J.A.C. 7:9-4 ET SEQ, SURFACE WATER QUALITY  
STANDARDS.

Introduction	II-1
Definitions	II-3
Statements of Policy	II-4
Fresh Surface Water Designated Uses and Quality Criteria	II-18
Surface Water Classifications	II-46

SECTION II- RECOMMENDED REVISIONS TO  
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION,  
DIVISION OF WATER RESOURCES,  
N.J.A.C. 7:9-4 ET SEQ, SURFACE WATER QUALITY STANDARDS

A-INTRODUCTION-In September of 1977 the Division of Water Resources established a committee to recommend revisions to the Department's Water Quality Standards. This committee consisted of representatives of:

United States Environmental Protection Agency

State Program on Environmental Cancer and Toxic Substances,  
Office of the Commissioner

Bureau of Fisheries, Division of Fish, Game and Shell-  
fisheries

Bureau of Potable Water,  
Division of Water Resources

Bureau of Water Quality Planning and Management,  
Division of Water Resources

Monitoring, Surveillance, and Enforcement Element,  
Division of Water Resources

Office of Areawide Planning,  
Division of Water Resources

Office of Environmental Assessment,  
Division of Water Resources

Office of Program Development,  
Division of Water Resources

Public Wastewater Facilities Element,  
Division of Water Resources

The committee considered the following factors in recommending revisions to water quality standards:

- Adequacy of Definitions
- Adequacy of the Statements of Policy
- Adequacy of Designated Uses
- Adequacy of Water Quality Criteria



- Adequacy of regulations in revising and implementing water quality standards.

The proposed revisions do not include upgrading surface waters classified as TW-2 and TW-3. Areawide water quality management plans demonstrated that:

- Bacterial quality will not significantly improve in the foreseeable future to allow swimming or shellfish harvesting in surface waters classified as TW-2 or TW-3; and
- Dissolved oxygen concentrations will not significantly improve in the foreseeable future to allow the propagation of fish populations in surface waters classified as TW-3.

The Department will review the possibility of upgrading surface waters classified as TW-2 and TW-3 at least once every three years.

The proposed revisions to water quality standards are recommended to ensure that they:

- Meet the intent of State law
- Meet the intent of Federal law and regulations
- Protect existing and potential water uses.

The principal revisions to the Department's Surface Water Quality Standards are:

- Expansion of Definitions
- Reorganization of the Statements of Policy for clarity and cohesiveness.
- Expansion of the Antidegradation Policy to include an interim implementation procedure and a list of categories of surface waters which will be considered under this policy.
- Deletion of policy statements 2, 3, 4, 11, and 13 from 7:9-4 et seq., Surface Water Quality Standards. These policy statements are closely associated with the development of effluent limitations and are now centralized in a new subchapter.
- Deletion of Class FW-3 classification to allow for potential potable water use in all fresh waters.

- Revisions to the designated uses of FW-2, TW-1, and TW-2 waters such that there is a distinction between fresh tidal waters and saline tidal waters.
- Expansion of numerical criteria to include certain toxic substances which were adopted by the USEPA on January 12, 1977 (42 FR 2613) and February 2, 1977 (42 FR 6555) and appear at 40 CFR 129.
- Expansion of numerical criteria to include total residual chlorine (TRC) so as to complete revisions to the disinfection policy (which will appear in the new subchapter with other policy statements related to effluent limitations); numerical criteria were also added for ammonia, chlorides, sulfates, and phosphorus (for streams).
- Revisions to numerical criteria for turbidity and total dissolved solids (FW and TW waters), suspended solids, heat dissipation areas, and fecal coliform (FW, TW, CW waters).
- Revisions to designated areas to reflect changes in FW and TW designated uses, such that trout production waters, trout maintenance waters, and sources of potable water supplies are adequately identified.
- Revisions to the temperature criteria for surface waters classified as TW-4(a).

These revisions are discussed in detail in the following sections.

B. DEFINITIONS - The Department is proposing extensive expansion of this section and minor word changes to certain definitions for clarity and technical purposes. This discussion will only identify those word definitions that have been added or revised (all definitions are found in section 7:9-4.5, pages 1 to 5). For certain definitions a short explanation of the revision will occur.

The Department recommends the following changes to section 7:9-4.5:

## Words Added

Acute Toxicity  
Application Factor  
Bioaccumulation  
Bioassay  
Calculated Changes  
Chronic Toxicity  
Conservative Substance  
Designated Area  
Disinfection  
Flow-Through Bioassay  
Fresh Tidal Water  
High Quality Waters  
Important Species  
Intermittent Streams  
Lake, Pond or Reservoir  
LC50  
Life-Cycle Toxicity Test  
Maximum Acceptable  
    Toxicant Concentration  
Measurable Changes  
Natural Flow  
Natural Water Quality  
NJDEP  
  
Nonconservative Substance  
Noncumulative Substance  
Nondegradation Waters  
Nonpersistent Substance  
NPDES  
Partial Life Cycle-Toxicity Test  
Persistent Substance  
Public Hearing  
Total Residual Chlorine  
Toxic Substances  
USEPA

## Definitions Revised

Agricultural Water Supply  
Ambient Temperature  
Epilimnion - Current  
definition implied that the  
"upper region" is always  
warmer than the hypolimnion.  
The definition was revised  
to delete the word "warm".  
Eutrophic Lake  
Heat Dissipation Area  
Hypolimnion - Current  
definition implied that  
the "lower region" is always  
cooler than the epilimnion.  
The definition was revised  
to delete the word "cold".

Industrial Water Supply  
Mixing Zones  
Thermocline

Wildlife

## C. STATEMENTS OF POLICY

1. Reorganization-The Statements of Policy are reorganized into four sections:

- General Policy
- Interstate Waters Policy
- Technical Policy
- Antidegradation Policy

Each of these sections are discussed below.

i. General Policy-This section establishes the general principals on which water quality standards are based. This section also identifies the Department's responsibility for revising and developing water quality standards pursuant to New Jersey's Water Pollution Control Act (N.J.S.A. 58:10A-et seq.) and Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.). The following general policy statements, are added to section 7:9-4.4(a)1:

- It is the policy of the department not to permit the introduction of substances into the waters of the State which are known or suspected to be carcinogenic, mutagenic, or teratogenic. The department, to the maximum extent possible, will direct its control efforts to require the removal of such substances from wastewater discharges where such substances are shown to already occur in the waters of the State.

- It is the policy of the department that any other toxic substances in waters of the State shall not be at levels which are toxic to humans or to aquatic life or which bioaccumulate in aquatic organisms so as to render them unfit for human consumption.

- Existing and intended uses of surface waters shall be maintained and protected. Where existing criteria are inadequate to support existing uses, such criteria shall be upgraded.

- The department shall define the designated uses which are to be protected and maintained, identify those waters to which each designated use applies, and establish numerical or descriptive criteria for water quality substances in a manner that is consistent with the designated uses and policies described herein.

- It is the objective of the department to restore tidal waters which are now at levels of quality below acceptable limits of quality for unrestricted shellfish harvesting.

ii. Interstate Waters Policy - This policy (currently designated as Statement of Policy five) was revised to include phrases (e.g. fresh tidal waters) which are consistent with the proposed revisions found in the designated uses section of the water quality standards. In addition this section now includes a reference to water quality standards developed by the Interstate Sanitation District.

The Department recommends that the Interstate Waters Policy be changed:

FROM: For the tidal tributaries (to head of tide) to the Delaware River, including the Delaware Bay, classification as to uses to be protected and water quality criteria for such waters shall be as established herein or in accordance with the current "Basin Regulations - Water Quality" adopted by the Delaware River Basin Commission as part of its Comprehensive Plan, whichever are more stringent.

To: Interstate Waters Policy

1. The designated uses and water quality criteria for the fresh and saline tidal tributaries (to head of tide) to the Delaware River, including the Delaware Bay, shall be as established at sections six and seven of this subchapter or in accordance with the prevailing "Basin Regulations - Water Quality" by the Delaware River Basin Commission as part of its Comprehensive Plan, whichever are more stringent.

2. The designated uses and water quality criteria for waters of the Interstate Sanitation District under the Jurisdiction of the Interstate Sanitation Commission in the New Jersey - New York Metropolitan area, shall be as established at section seven of this subchapter or in accordance with the prevailing Interstate Sanitation Commission's Water Quality Regulations, whichever are more stringent.

iii Technical Policy - This section describes the conditions under which the water quality standards will be applicable and references analytical testing and sampling procedures to determine if standards are being met. Current policy statements 10, 12, 15, 16, 17, and 19 are incorporated in this section of the Statements of Policy. Except for policy statement 16, all other policy statements incorporated in this section have been revised to reduce ambiguity and/or redundancy, and expand the application of the water quality standards to intermittent streams. Furthermore, policy statement 12 was revised to clarify that water quality criteria must be maintained when flows are at or greater than the minimum consecutive seven day, ten year recurrence interval period; including flows during storms. The Department, through the water quality management planning program, is developing voluntary and mandatory programs to control pollutants that are in stormwater runoff. The objective of these nonpoint source control programs is to control pollutants, by using

best management practices (BMP), so that water quality criteria and water uses are maintained in the State's surface waters. Sections 18i, 18ii, and 18iii are transferred to the water quality criteria section under toxic and hazardous substances. The existing policy statements which are incorporated in this section currently read:

10. The water quality criteria are not intended to be applicable in instances where water quality does not conform to specified values solely as a result of natural causes.

12. The levels of quality specified for various water uses, where applicable, are expected to be maintained under conditions comprising minimum consecutive seven day fresh water flows with ten year recurrence intervals.

15. The total area and/or volume of a body of water assigned to non-thermal mixing areas shall be limited to that which will not interfere with biological communities or populations of important species to a degree which is damaging to the eco-system; and not diminish other beneficial uses disproportionately. Water quality criteria are intended to apply outside of designated non-thermal mixing areas.

16. In river systems, reservoirs, lakes, estuaries and coastal waters, zones of passage are considered to be continuous water routes of the volume, area and quality necessary to allow passage of free-swimming and drifting organisms with no significant effects produced on their populations. These zones of passage must be provided wherever non-thermal mixing areas are allowed.

17. All laboratories whose analytical data are to be incorporated by the Department in its water quality monitoring or other activities shall routinely utilize and document inter and intra-laboratory analytical quality control procedures in a manner mutually agreed upon by the Department and the Regional Administrator, U.S. Environmental Protection Agency.

18. The following numerical values shall be used as guidelines in administering appropriate sections of the water quality criteria and are applicable to all surface waters of the State:

i. The concentration of a toxic substance in surface waters shall not exceed one-twentieth of the TL<sub>50</sub> value at 96 hours, as determined by appropriate bioassays in accordance with the current edition of "Standard Methods for Examination of Water and Wastewater"<sup>1</sup>, except in designated mixing areas. Criteria for combinations of toxic substances will be based on the same principle.

ii. In no case shall substances listed below exceed the specified limits.

	<u>mg/l</u>
(1) Arsenic	0.05
(2) Barium	1.0
(3) Cadmium	0.01
(4) Chromium (hexavalent)	0.05
(5) Lead	0.05
(6) Mercury	0.005
(7) Selenium	0.01
(8) Silver	0.05

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

19. The Department shall establish from time to time a list of specific organisms to be used for conducting bioassays in the surface waters of New Jersey. Such organisms shall be representative of prevailing biota for the class of waters under consideration.

The revisions to the organization and phrasing of these policy statements, as discussed earlier, are proposed as follows:

1. When existing water quality does not conform with the established minimum criteria solely as a result of natural causes, natural water quality characteristics shall prevail.

2. Except for intermittent streams, water quality criteria are expected to be maintained during periods when stream flows are at or greater than the minimum consecutive 7 day flow with a 10 year recurrence interval period.

<sup>1</sup>Prepared and published by American Public Health Association, American Water Works Association, Water Pollution Control Federation.

3. Water quality criteria are expected to be maintained in intermittent streams during all natural flow conditions.

4. The following are statements of policy concerning non-thermal mixing zones:

i. In non-thermal mixing zone, in an area contiguous to a discharge, receiving water quality may be allowed to fall below applicable water quality standards.

ii. The department will determine on a case-by-case basis the requirements for non-thermal mixing zones.

iii. The total area and volume of a body of water assigned to non-thermal mixing zones shall be limited to that which will not interfere with biological communities or populations of important species to a degree which is damaging to the ecosystem or which diminishes other beneficial uses disproportionately. Furthermore, mortality of aquatic life shall not occur within the non-thermal mixing zone.

iv. In streams reservoirs, lakes, estuaries, and coastal waters, zones of passage are considered to be continuous water routes of the volume, area and quality necessary to allow passage of free-swimming and drifting organisms with no significant effects produced on their populations. These zones of passage must be provided wherever non-thermal mixing zones are allowed.

5. All laboratories whose analytical data are to be incorporated by the department in its water quality monitoring or other activities shall routinely utilize and document inter and intra-laboratories analytical quality control procedures. These procedures shall be in accordance with USEPA approved methods as identified in 40 CFR 136, and as required by a written quality assurance program which is approved by the department.

6. The following are statements of policy concerning bioassay procedures:

i. Flow-through bioassays will be utilized when existing scientific information is insufficient for developing water quality criteria or determining the impact of a wastewater discharge which is presumed or suspected to be toxic to aquatic life.

ii. The department shall establish from time to time a list of specific organisms to be used for conducting bioassays. Such organisms will be representative of the biota for the class of waters under consideration.



iii. The department, utilizing judgmental prudence, may establish a safety factor (in terms of a factor to be applied to the 96 hour LC50 value) which is more restrictive than those established in subsections 6(e) 7(e), and 8(c) of this subchapter. Such an application factor may become necessary to ensure adequate protection of organisms and life stages not tested but which may be more sensitive to the test constituent(s).

7. As a guideline the substances listed below should not exceed the specified limits:

	<u>mg/l</u>
i. Arsenic	0.05
ii. Barium	1.0
iii. Cadmium	0.01
iv. Chromium (hexavalent)	0.05
v. Lead	0.05
vi. Mercury	0.005
vii. Selenium	0.01
viii. Silver	0.05

iv. Antidegradation Policy - The purpose of the antidegradation policy is to protect water quality at existing ambient levels, where such water quality is better than water quality standards. USEPA guidance has defined these high quality waters as "...those waters at or above the minimal levels necessary to achieve the national water quality goal uses" (fishable/swimmable uses). New Jersey's antidegradation policy currently reads:

Where existing water quality is better than the established criteria, the Department of Environmental Protection in the administration of these regulations shall maintain the quality of such waters unless it can be demonstrated that change is justifiable as a result of necessary economic or social development.

A number of questions regarding interpretation and implementation are identified with this policy statement.

Some of these questions are as follows:

1. Shall the antidegradation policy apply to all waters of the State?
2. What is the definition of "water quality"? Does this mean all natural constituents in the water? or should the definition of water quality be narrowed to a small number of natural constituents that are essential to the maintenance and continuation of a healthy aquatic biotic community or other designated uses?

Federal regulations (40 CFR 35.1550(e)) are quite explicit as to the content of the antidegradation policy. The Federal regulations, in part, state:

"Existing high quality waters which exceed those levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water shall be maintained and protected unless the State chooses, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, to allow lower water quality as a result of necessary and justifiable economic or social development. In no event, however, may degradation of water quality interfere with or become injurious to existing instream water uses. Additionally, no degradation shall be allowed in high quality water which constitute an outstanding National resource, such as waters of Nation and State parks and wildlife refuges and waters of exceptional recreational or ecological significance. Further the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and feasible management or regulatory programs pursuant to section 208 of the Act (FWPCA) for nonpoint sources, both existing and proposed."

The following discussion of these Federal regulations and the Federal guidelines (Guidelines For State and Areawide Water Quality Management Program Development, Chapter 5, Water Quality Standards), which are intended to be used by the states to develop implementable water quality standards consistent with USEPA regulations, will help clarify some of the questions identified with the existing antidegradation policy and explain the Department's proposed revisions to this policy.

-Shall the antidegradation policy apply to all waters of the State?

It is clear in the above quote that, initially, the antidegradation policy shall apply to all surface waters. However, some water quality degradation may occur in certain waters as a result of necessary and justifiable social and economic development. The waters in which no degradation will be allowed (surface waters classified as FW-1) have been identified in the State's Surface Water Quality Standards. High quality waters in which no calculated or measurable change will be allowed are classified as High Quality Waters-Category One and were initially identified in the State's Areawide Water Quality Management Plans. Similarly, high quality waters in

which some degradation (none which will interfere with or become injurious to existing instream water uses) of water quality will be allowed are classified as High Quality Waters-Category Two and were initially identified in the State's Areawide Water Quality Management Plans. Furthermore, the State's continuing Areawide Water Quality Management Planning Program is determining if specificity needs to be added to the description of Category One and Two waters. These planning activities require an extensive public participation process.

The Department considered two alternatives in identifying stream segments, other than outstanding National resource waters. The first alternative was to establish a list based on ambient water quality. The second alternative was to establish a list based on exceptional use. The data requirements for establishing a list based solely on ambient water quality does not make it possible to determine high quality waters for all surface waters in the State. In all instances, alternative two (exceptional use) proved to be the most feasible method of developing a list of Category One and Two surface waters to be protected under the antidegradation policy. For the purpose of these revisions, exceptional use is associated with waters of exceptional recreational or ecological significance. In addition to these surface waters, all FW-1 waters are considered to be outstanding State and National resources, and thereby subject to the anti-degradation policy.

The Department's efforts in trying to define "high quality waters" also resulted in the conclusion that the most feasible method in determining waters eligible for the antidegradation policy is the method described above. USEPA guidance defines high quality waters in the following manner:

"High quality waters consist of those waters at or above the minimum levels necessary to achieve the national water quality goal uses."

To define "minimum levels necessary to achieve the national water quality goal uses" would require knowledge about protection of aquatic life and protection of safe swimming areas and their relationship to instream levels of conventional water quality substances (e.g. dissolved oxygen, temperature, pH, total dissolved solids, etc.) and unconventional water quality substances (e.g. heavy metals, synthetic organic chemicals, etc.). Since the Department has not yet adopted numerical water quality criteria for unconventional water quality substances

and there is not a sufficient data base defining these levels in all surface waters, it is necessary that exceptional uses be the key criterion in defining antidegradation streams. Furthermore, the Department concluded that because there is geographical variation in natural water quality (e.g. the acid waters of southern New Jersey versus the alkaline waters of northwestern New Jersey), a case-by-case definition of high quality waters would be more equitable in the development of water quality based effluent limitations for new or existing (during the renewal process of NPDES permits) point source discharges.

-What is the definition of water quality? How will effluent limitations be developed under this policy?

Water quality is the physical, chemical and biological characteristics of surface waters. Generally, only a few of these physical, chemical and biological characteristics have the capacity to effect significant impacts on water quality and uses (including a health ecosystem). Some of these characteristics are included in the State's water quality standards. Other characteristics (e.g., toxic substances) are known to have a significant impact on aquatic biological communities, however, in some instances there is not sufficient scientific evidence to establish numerical water quality standards. In describing water quality levels which must be maintained under the antidegradation policy, the Department, on a case-by-case basis, will require information regarding the nature of effluent of a new facility, or proposed modifications to an existing facility. This information is necessary to identify those characteristics of the effluent which may have a major impact on the physical, chemical, or biological characteristics of the surface water.

Thus the description of high quality water will be limited to water quality constituents which are essential to maintaining the physical, chemical, or biological characteristics of high quality waters. These constituents include, at a minimum, all substances listed in the surface water quality standards. Where a particular substance is not listed in the water quality standards, additional water quality constituents will be analyzed based on the nature of the proposed wastewater discharge. For example, nitrogen is generally considered a limiting factor to aquatic plant growth in the coastal waters. Excessive aquatic plant growth may have an impact on

water quality and water uses. Therefore, nitrogen will be considered in the description of high quality waters. In addition, when a toxic substance (which is not listed in the State's water quality standards) is proposed to be discharged into a surface water that is protected under the antidegradation policy, that toxic substance will be considered in the description of high quality waters. In summary, the water quality characteristics which will be used to describe high quality waters, will be those substances which appear in the State's water quality standards and substances (which are known or suspected to be in the effluent) which have a significant impact on water quality and water uses.

Implementation of the antidegradation policy will occur through the Department's permitting process and areawide or continuing planning programs. The Federal regulations are explicit in terms of the requirements for implementing the antidegradation policy by stating:

"...the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and feasible management of regulatory programs pursuant to section 208 of the Act for nonpoint sources, both existing and proposed."

In the interim the Department will, on a case-by-case basis, determine whether technology based or water quality based effluent limitations will be required for existing and new point sources. Such a determination will be in accordance with the procedures described in the proposed "Procedures for Establishing Water Quality Based Effluent Limitations" (found in Appendix A of subchapter 5 of this title). Additional requirements for point and nonpoint sources are being developed through the continuing planning program.

-What procedures are available for obtaining exemptions from this policy?

The proposed revisions to water quality standards identifies two methods of allowing some degradation of water quality:

1. The State may choose "...after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, to allow lower water quality as a result of necessary and justifiable economic or social development".

2. An applicant may demonstrate, at a public hearing which must be requested by the applicant, that there is no reasonable relationship between the economic and social costs of compliance with the antidegradation policy and the benefits to be obtained by this policy.

As noted earlier the Department has proposed such waters, under number one above, in the State's initial Areawide Water Quality Management Plans. In addition, the appeal procedures outlined in number two above, and which appears in the proposed "Procedures for the Modifying of Water Quality Based Effluent Limitations" found at section nine of subchapter 5 of this chapter - Proposed Treatment Requirements Discharged Into Surface Waters of the State will be utilized in considering the allowance of some degradation of surface waters currently proposed to be identified, or which will be subsequently proposed to be identified, under this antidegradation policy.

In consideration of the above discussion the Department proposes that the existing antidegradation policy, and related policy statements (6, 8, 9, 20, and 21), be revised as follows:

From:

6. The protection and enhancement of the State's waterways shall take precedence over such allowable minimal water quality levels as may be established.
7. Where existing water quality is better than the established criteria, the Department of Environmental Protection in the administration of these regulations shall maintain the quality of such waters unless it can be demonstrated that change is justifiable as a result of economic or social development.
8. In all situations where there may be an impingement of a lesser quality water upon that of a higher quality of water, the lesser quality of water shall be upgraded in order to protect or improve adjacent higher quality waters.
9. Waters which are designated to be retained in their natural state, and therefore not subject to any man-made wastewater discharges, shall be protected.

## 20. Nondegradation of Central Pine Barrens Water Quality

The Pine Barrens constitutes a unique and particularly fragile ecosystem compared with other coastal pine areas both within and outside this State. In light of the vulnerable character of the area, the Department shall not, in the performance of its statutory duties, approve any activity which, alone or in combination with other activities, will cause degradation in the existing surface water quality characteristics. The State encourages rational and ecologically sound agricultural practices and other appropriate uses. The fine recreational opportunities and the vast high quality ground water reservoir which exist in the area provide further reason for a special State water quality policy in regard to the Central Pine Barrens.

21. The State's Central Pine Barrens water quality policy is not intended to interfere with water control in the operation of cranberry bogs.

TO:

(d) The following are statements of policy concerning antidegradation:

1. Existing instream water uses shall be maintained and protected. No further water quality degradation which would interfere with or become injurious to existing water uses is allowable. Existing high quality waters which are better than those levels necessary to support propagation of fish, shellfish and wildlife and recreation in and on the water shall be maintained and protected unless the State chooses, after full satisfaction of the inter-governmental coordination and public participation provisions of the State's continuing planning process, to allow lower water quality as a result of necessary and justifiable economic or social development. In no event, however, may degradation of water quality interfere with or become injurious to existing instream water uses. Additionally, no degradation shall be allowed in high quality waters which constitute an outstanding National or State resource. This antidegradation policy shall be applied as follows:

i. Nondegradation Waters are those waters currently classified as FW-1 at section 10 of this subchapter and whose uses and quality criteria are described at section 6 of this subchapter.



ii. High Quality Waters-Category One are waters having biological, chemical, or physical characteristics which are better than water quality standards. The uses of these high quality waters are so sensitive to any change in chemical or physical characteristics that it is presumed that any measurable or calculated changes to the instream characteristics will lead to eventual change or harm to the uses in these surface waters. The existing biological, chemical, or physical characteristics of High Quality Waters-Category One will be protected from any measurable or calculated changes. Surface waters identified as High Quality Waters-Category One are:

- A. FW-2 Trout Production and their tributaries;
- B. Surface waters classified as FW-2 Trout Maintenance or FW-2 Nontrout which are upstream of surface waters classified as FW-2 Trout Production;
- C. Shellfish waters classified as approved in chapter 12 of this title; or
- D. Other high quality surface waters and their tributaries which flow through State and National Parks, Forests, and Fish and Wildlife lands.

iii. High Quality Waters-Category Two are waters having biological, chemical or physical characteristics which are better than water quality standards. The uses of these high quality waters are sensitive to changes in chemical or physical characteristics. However, these uses may be capable of being maintained within some range of change of instream chemical or physical characteristics, as may be demonstrated by studies relating biological and other use characteristics to chemical and physical characteristics of aquatic ecosystems. The High Quality Waters-Category Two are those waters having biological, chemical, or physical characteristics better than water quality standards and not identified as Nondegradation Waters or High Quality Waters-Category One.

2. In all situations where a lower classification of water may impinge upon a higher classification of water, the Department, in implementing these standards, shall ensure the quality and uses of the higher classification are protected.



3. The following are statements of policy concerning nondegradation of Central Pine Barrens water quality.<sup>1</sup>

(1) The Department shall not, in the performance of its statutory duties, approve any activity which alone or in combination with other activities, will cause degradation in the existing surface water quality characteristics of the Central Pine Barrens. The State encourages rational and ecologically sound agricultural practices and other appropriate uses.

(2) The Department's Central Pine Barrens water quality policy is not intended to interfere with water control in the operation of cranberry bogs or blueberry production.

D. FRESH SURFACE WATER DESIGNATED USES AND QUALITY CRITERIA

1. Introduction - A number of major changes are being proposed to this section. These changes include the following categories:

(a) Format

(b) Surface Water Classes

(c) Revisions to the designated use (currently phrased as "Class Definition") section for all surface waters.

(d) Revisions to the quality criteria section for all surface waters.

2. Revision Category (a) - Format - The proposed format for all surface water classes is organized in the following manner:

- At the beginning of each major surface water class (i.e. FW, TW, and CW) there is a description of the existing and intended designated uses and specific policy statements associated with all water quality criteria for a specific surface water class (e.g. FW-1, FW-Central Pine Barrens, FW-2 Trout Production, etc). The numerical and narrative water quality criteria are now presented in a table for all minor surface water classes within each major surface water class.

<sup>1</sup>The designated uses and special surface water quality criteria for the Central Pine Barrens may be found at sections 7:9-4.6(b), 7:9-4.6(c), and 7:9-4.6(e).

The current water quality standards presents the designated use, policy statements for a specific water class, and water quality criteria in one section for each and every surface water class.

The proposed format presents a number of significant advantages:

i. The criterion for a particular substance, in most cases, does not have to be repeated for each specific surface water class when the criterion is the same for all such water classes within a major surface water class.

ii. The criteria are presented in a more easily referenced form.

iii. The proposed format reduces the bulk of the water quality standards document.

### 3. Revision Category (b) - Surface Classes

The Department is proposing four major changes to its surface water classes for FW waters:

i. Class FW-2 is expanded to include FW-2 Trout Production.

ii. Class FW-2 is expanded to include FW-2 Trout Maintenance.

iii. Class FW-2 is expanded to include FW-2 Nontrout.

iv. Class FW-3 is deleted.

The Department is proposing to delete Class TW-4(a). The basis and background for this change is found at page II-57.

The Department is not recommending any revisions to CW Surface Water Classes.

### Rationale for Revisions to Surface Classes

The current surface water quality standards contains five major FW classes. These classes are FW-1, FW-Central Pine Barrens, FW-Lower Mullica and Wading Rivers-Central Pine Barrens, FW-2, and FW-3. Water quality criteria that are specifically related to trout production, trout maintenance, and nontrout waters are presented as subcategories under a particular water quality criterion (e.g. dissolved oxygen).

The proposed revisions to the FW classes clearly identifies the most sensitive designated use in terms of water quality criteria. That is, most of the criteria are established at levels to protect aquatic life, thereby protecting all other designated uses. There is a further distinction between water quality requirements for a coldwater fishery and a warmwater fishery. Since trout are commonly associated with a coldwater habitat, the Department is proposing that trout waters become a separate sub-class under Class FW-2. In addition the Department is recommending this revision at this time in anticipation of subsequent revisions to water quality criteria which may also differentiate between trout waters and nontrout waters.

The Department is also proposing that Class FW-3 be deleted. This class did not include safe drinking water supply as a designated use. In addition the only water quality criterion difference between FW-2 and FW-3 is the total dissolved solids (TDS) criterion. The TDS criterion for these two water classes is as follows:

#### Class FW-2

##### ix. Total Dissolved Solids

Not to exceed 500 mg/l or 133% of background. Notwithstanding this criterion, the Department, after notice and opportunity for hearing, may authorize increases exceeding these limits provided the discharger responsible for such increase can demonstrate to the satisfaction of the Department that such increases will not significantly affect the growth and propagation of indigenous aquatic biota or other designated uses.

Any authorization by the Department of such increases shall be conditioned upon utilization of the maximum practicable control technology.

#### Class FW-3

##### ix. Total Dissolved Solids

Not to exceed 133% of background. Notwithstanding this criterion, the Department, after notice and opportunity for hearing, may authorize increases exceeding this limit provided the discharger responsible for such increases can demonstrate to the satisfaction of the Department that such increases will not significantly affect the growth and propagation of indigenous aquatic biota or other designated uses.

Any authorization by the Department of such increases shall be conditioned upon utilization of the maximum practicable control technology.

The FW-2 criterion for total dissolved solids is equivalent to the combination of the FW-3 criterion for total dissolved solids and existing policy statement 10, which states:

"The water quality criteria are not intended to be applicable in instances where water quality does not conform to specified values solely as a result of natural causes."

The Department, in proposing the deletion of class FW-3, concluded that all fresh waters are intended for safe drinking and that the combination of policy statement 10 and the FW-3 criterion for total dissolved solids resulted in unnecessary redundancy.

#### 4. Revision Category (c) - Designated Uses

The Department is recommending revisions to the designated uses for Classes FW-Lower Mullica and Wading Rivers - Central Pine Barrens, FW-Central Pine Barrens, FW-2, TW-1, and TW-2. The recommended changes to the designated uses are as follows:

i. Class Lower Mullica and Wading Rivers-Central Pine Barrens:

These waters shall be suitable for cranberry bog water supply and other agricultural uses; the maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system; public potable water supply after such treatment as shall be required by law or regulation; swimming; and other reasonable uses.

ii. Class FW-Central Pine Barrens:

These waters shall be suitable for cranberry bog water supply and other agricultural uses; the maintenance, migration and propagation of the natural and established biota indigenous to this unique ecological system; public potable water supply after such treatment as shall be required by law or regulation; swimming and other reasonable uses.

iii. Class FW-2:

(i). Fresh surface waters including fresh tidal waters. These waters shall be suitable for public potable water supply after such treatment as shall be required by law or regulation.

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

(ii). These waters shall also be suitable for the maintenance, migration and propagation of the natural and established biota; and for primary contact recreation; industrial and agricultural water supply and any other reasonable uses.

(iii). The FW-2 classification is subdivided into three categories as follows:

- (1) FW-2 Trout Production
- (2) FW-2 Trout Maintenance
- (3) FW-2 Nontrout

iv. Class TW-1

[i. Tidal waters approved as sources of public water supply. These waters shall be suitable for public potable water supply after such treatment as shall be required by law or regulation.]

[ii.] These waters shall be suitable for shellfish harvesting where permitted.

[iii.] These waters shall also be suitable for the maintenance, migration and propagation of the natural and established biota; primary contact recreation; industrial and agricultural water supply and any other reasonable uses.

(v) Class TW-2

[i. Tidal waters approved as sources of public water supply. These waters shall be suitable for public potable water supply after such treatment as shall be required by law or regulation.]

[ii.] i. These waters shall [also] be suitable for secondary contact recreation; the propagation and maintenance of fish populations; the migration of anadromous fish, the maintenance of wildlife and other reasonable uses.

Rationale for Revisions to Designated Uses

The national goals of the FWPCA explicitly state that, wherever attainable, surface waters shall be fishable and swimmable. Swimming is not stated explicitly in the designated uses sections of the Classes Lower Mullica and Wading Rivers - Central Pine Barrens and FW-Central Pine Barrens. The Department is proposing that swimming be stated explicitly for these two surface water classes.

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

The Department, during its review of surface water quality standards, concluded that the designated use sections of FW and TW waters did not accurately reflect actual uses. The Department has observed that the tidal water classification has the connotation of being associated with estuarine, or brackish waters. Since there are water supply diversions in tidal waters and the connotation associated with tidal waters is as described earlier, the Department is proposing that fresh and tidal water classes be based on chloride concentration (see definition "d. Fresh Tidal Water"). This proposed revision is evident in that potable water supply is not a designated use of Classes TW-1 and TW-2. This deletion is compensated for by the inclusion of "fresh tidal waters" in the designated uses section of FW-2 waters. This expanded definition of FW-2 will include potable water supply diversions formerly included in TW-1 and TW-2 definitions.

5. Revision Category (d) - Quality Criteria

(A) Introduction

The Department is proposing a number of revisions of the water quality criteria section of the Surface Water Quality Standards. The proposed revisions include numerical water quality standards for certain toxic substances. This represents the Department's initial efforts in developing numerical water quality standards for toxic substances. The Department will, on a continuous basis be proposing additional numerical water quality standards for toxic substances as soon as there is scientific evidence that establishes a relationship between the concentration of a toxic substance and toxicity to humans or aquatic life. The revisions to numerical criteria that are currently being proposed appear in table 1. Water quality criteria are also being revised for the tidal portion of Morses Creek (Morses Creek is currently classified as TW-4(a)). The basis and background for the proposed revision to water quality criteria for the tidal portion of Morses Creek may be found at page II-57.

(B) Discussion

The following discussion regarding the Department's proposed revisions to water quality criteria will include identification of the substance, identification of the surface water class affected by the proposed revision, identification of the existing criterion and proposed revision, and either a statement about the rationale for the proposed revision or reference to a document or regulation that contains a very detailed explanation of the proposed criterion.

TABLE 1. SUMMARY OF PROPOSED REVISIONS TO WATER  
QUALITY CRITERIA IN NEW JERSEY'S SURFACE WATER QUALITY STANDARDS

Substance	Revisions to Narrative Criteria	Revisions to Numerical Criteria	Water Classes Affected
Policy statements that are specific to a water class	x		Class FW-Central Pine Barrens and Lower Mullica and Wading Rivers Central Pine Barrens
Turbidity		x	All FW-2 and TW classes
Suspended Solids (Nonfilterable residue)		x	All FW-2 classes
Biochemical Oxygen Demand (BOD)	x		All FW-2 classes
Dissolved Oxygen		x	FW-2 Nontrout and Delaware tributaries which are in the TW-2 class
Temperature and Heat Dissipation Areas	x		All FW-2, TW, and CW classes
Bacteria Quality	x	x	Narrative-All FW-Central Pine Barrens, FW-2, TW, and CW classes. Numerical -All FW-2, TW-1, TW-2, TW-3, and CW-2 classes
Total Dissolved Solids (Filterable Residue)		x	All FW-2 classes
Chloride		x	All FW-2 classes
Sulfate		x	All FW-2 classes

TABLE 1. SUMMARY OF PROPOSED REVISIONS TO WATER  
QUALITY CRITERIA IN NEW JERSEY'S SURFACE WATER QUALITY STANDARDS

Substance	Revisions to Narrative Criteria	Revisions to Numerical Criteria	Water Classes Affected
Nitrate Nitrogen	x		All FW-2 classes
Total Phosphate Phosphorus		x	All FW-2 classes
Toxic or Hazardous Substances	x		All water classes
Ammonia (un-ionized)		x	All water classes
Aldrin/Dieldrin		x	All water classes
Benzidine		x	All water classes
DDT and Metabolites		x	All water classes
Endrin		x	All water classes
Polychlorinated Biphenyls (PCB)		x	All water classes
Total Residual Chlorine (TRC)		x	All water classes
Toxaphene		x	All water classes



i. Substance: Policy statement regarding the application of water quality criteria.

-Surface Water Class Affected: Class FW-Central Pine Barrens and Lower Mullica and Wading Rivers-Central Pine Barrens.

-Existing Criterion and/or Proposed Revisions:

Class Lower Mullica and Wading Rivers-Central Pine Barrens:

[7:9-4.6(j)2.(ii) The above mentioned criteria shall not apply to:]

7:9-4.6(b)2(i) Quality criteria for FW-Lower Mullica and Wading River-Central Pine Barrens may be found at subsection (e) of this section and shall not apply to:

(1) Discharges which emanate from individual on-site sewage disposal systems which systems were in existence or for which a building permit [has] had been issued prior to [the effective date of these regulations] January 23, 1978, provided that such existing systems were installed and are operating in conformance with [Chapter 199, 59:11-23] N.J.S.A. 58:11-23 et seq. and all regulations adopted thereunder; and all other Federal, State and local laws. Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978 shall remain in effect for [these] previously existing individual on-site sewage disposal systems.

(2) Discharges from agricultural operations that were in existence prior to [the effective date of these regulations] January 23, 1978, provided that such discharges are in compliance with existing best management practices, [effluent limitations,] or other existing Federal, State, or local laws. Nothing in this subsection shall be construed to limit the ability of the USEPA or the NJDEP to require additional [effluent] control measures in conformance with future regulations regarding soil conservation, pesticides, best management practices, or other future Federal, State, or local laws. Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978, shall remain in effect for [these] previously existing agricultural discharges.

(3) All point source discharges permitted prior to [the effective date of these regulations] January 23, 1978, by the USEPA through the issuance of a NPDES permit or by the NJDEP through the issuance of [an NJPDES permit] State water pollution control permits,

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

provided that such discharges are in compliance with all terms and conditions of the appropriate permit. Nothing in this subsection shall be construed to limit the ability of the USEPA or the NJDEP to require:

- (a) Technology based effluent control measures for classes of point sources, other than publicly owned treatment works, as may be required by Federal or State law;
- (b) Alternative effluent control strategies for publicly owned treatment works and other classes of point sources.

Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978, shall remain in effect for these existing point source discharges.

Class FW-Central Pine Barrens

[7:9-4.6(i)2.(ii) The above mentioned criteria shall not apply to:]

7:9-4.6(c)2. (i) Quality criteria for FW-Central Pine Barrens may be found at subsection (e) of this section and shall not apply to:

(1) Discharges which emanate from individual on-site sewage disposal systems which systems were in existence or for which a building permit [has] had been issued prior to [the effective date of these regulations] January 23, 1978, provided that such existing systems were installed and are operating in conformance with [Chapter 199,] N.J.S.A. [59:11-23] 58:11-23 et seq., and all regulations adopted thereunder; and all other appropriate Federal, State and local laws. Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978, shall remain in effect for [these] previously existing individual on-site sewage disposal systems.

(2) Discharges from agricultural operations that were in existence prior to [the effective date of these regulations] January 23, 1978, provided that such discharges are in compliance with existing best management practices or other existing Federal, State, or local laws. Nothing in this subsection shall be construed to limit the ability of the USEPA or the NJDEP to require additional effluent control measures in conformance with future regulations regarding soil conservation, pesticides, best management practices, or other future Federal, State, or local laws. Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978, shall remain in effect for [these] previously existing agricultural discharges.

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

(3) All point source discharges permitted prior to [the effective date of these regulations] January 23, 1978, by the USEPA through the issuance of a NPDES permit, or by the NJDEP through the issuance of [an NJPDES permit] State water pollution control permits, provided that such discharges are in compliance with all terms and conditions of the appropriate permit. Nothing in this subsection shall be construed to limit the ability of the USEPA or the NJDEP to require:

- (a) Technology based effluent control measures for classes of point sources, other than publicly owned treatment works, as may be required by Federal or State law;
- (b) Alternative effluent control strategies for publicly owned treatment works and other classes of point sources.

Furthermore, any water quality standards in existence prior to [the effective date of these regulations] January 23, 1978, shall remain in effect for these existing point source discharges.

Rationale-The exemptions to the Central Pine Barrens water quality standards coincided with the original adoption of these water quality standards. Water quality standards for the Central Pine Barrens were first adopted on January 23, 1978. Thus to avoid any confusion as to the date of the exemptions, the Department is proposing the revisions described above.

(ii)-Substance: Turbidity

-Surface Water Class Affected: All class FW-2 and TW waters.

-Existing Criterion and/or Proposed Revisions:

(a) For all FW-2 classes

Maximum 30-day average of [20]<sup>1</sup> 15<sup>2</sup> Jackson Turbidity Units (JTU), a maximum of [110] 50 JTU at anytime, unless exceeded due to natural conditions.

(b) TW-1 and TW-2 classes

Maximum 30-day average of [25] 10<sup>2</sup> Jackson Turbidity Units (JTU) a maximum of [130] 30<sup>2</sup> JTU at anytime, unless exceeded due to natural conditions.

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

(c) TW-3 and TW-4 classes

Maximum 30-day average of [50] <sup>15</sup><sub>2</sub> Jackson Turbidity Units (JTU), a maximum of [150] <sup>50</sup><sub>2</sub> JTU an anytime, unless exceeded due to natural conditions.

-Rationale: The Department considered the relationship between the existing turbidity criteria, protection of designated uses, and ambient water quality. Ambient water quality data showed that the turbidity criteria, if not revised, would permit significant degradation of water quality. It was generally assumed that designated uses were not impaired by these ambient turbidity levels. Thus, it would seem reasonable that basing water quality criteria on ambient levels would protect the designated uses. The methodology the Department used in revising the turbidity criteria is outlined below:

-Assumptions- 2.5 percent of the turbidity data represents polluted conditions.

-Statistical Evaluation-

- (1) Average turbidity levels for FW and TW classes were determined.
- (2) A statistically based estimation of the value at which 97.5 percent of the observed values did not exceed was calculated as follows:

(a) Equation and definition of terms

$X = \bar{x} + zs$  where,

$X$  = The estimated turbidity level at which 97.5 percent of the observed turbidity values are not exceeded.

$\bar{x}$  = Average turbidity concentration

$s$  = Standard deviation, which is a measure of dispersion of the data.

$z$  = Is the distance, in standard deviation units, from the average. This value is dependent on the area (in percent) of the normal distribution curve that is of interest. In this instance we are interested in 97.5 percent of the area (turbidity values).

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

(b) Calculations

(i) For FW-2 classes

$X_1 = \bar{x} + z s$ , was first calculated. Any values greater than  $X_1$ , were assumed to represent polluted conditions. All values greater than  $X_1$ , were discarded and  $X_2$  was calculated:

$$X_2 = \bar{x}_2 + z s_2$$

Thus  $X_2$  = the maximum criterion in the water quality standards and  $\bar{x}_2$  = the average criterion in the water quality standards.

(ii) For TW classes-

The same procedures were used as described in (i) above except:

$X_1$  = the maximum criterion for TW-3 and TW-4 waters.

$X_2$  = the maximum criterion for TW-1 and TW-2 waters.

$\bar{x}$  = The average criterion for TW 3 and TW-4 waters.

$\bar{x}_2$  = The average criterion for TW-1 and TW-2 waters.

In consideration of the above discussion the Department is proposing revisions to the turbidity criterion for all FW-2 and TW classes.

(iii) Substance: Suspended Solids

-Surface Water Class

Affected: All FW- classes

-Existing Criterion and/or Proposed Revisions:

From:

- (1) None noticeable in the water or deposited along the shore or on the aquatic substrata in quantities detrimental to the natural biota. None which would render the waters unsuitable for the designated uses.

<sup>1</sup>Bracket indicates deletion from existing water quality standards.

<sup>2</sup>Underscore indicates addition to existing water quality standards.

To:

FW-Trout Production

Maximum of 25 mg/l at anytime unless exceeded due to natural conditions.

FW-2 Trout Maintenance

Maximum of 25 mg/l at anytime unless exceeded due to natural conditions.

FW-2 Nontrout

Maximum of 40 mg/l at anytime unless exceeded due to natural conditions.

-Rationale: These criteria represent a high and moderate level of protection of aquatic communities. For further discussion refer to National Academy of Sciences, National Academy of Engineering 1974. Water Quality Criteria 1972. U.S. Government Printing Office, Washington, D.C.

(iv) Substance: Biochemical Oxygen Demand

-Surface Water Class Affected: All FW-2 classes.

-Existing Criterion and/or Proposed Revision:

The Department proposes that a narrative criterion for BOD be added as follows:

"Allowing for natural conditions none which would render the waters unsuitable for the designated uses".

-Rationale: A BOD criterion had been established for the two Central Pine Barrens classes. The Department was concerned that omission of this criterion in the FW-2 classes would imply that no criterion existed for BOD. Even though policy statements establish this general criterion for all substances, the Department concluded that such a criterion had to be explicitly established for BOD.

(v)- Substance: Dissolved Oxygen

- Surface Water Class Affected: Class FW-2 Nontrout

- Existing Criterion and/or Proposed Revisions:

From: 24 hour average not less than 5.0 mg/l.  
Not less than 4.0 mg/l at anytime.

- 10: 1. 24 hour average not less than 5.0 mg/l, but not less than 4.0 mg/l at anytime, except as noted in paragraph two below.
2. Not less than 4.0 mg/l at anytime in the freshwater tidal portions of tributaries to the Delaware River, between Rancocas Creek and Big Timber Creek inclusive.

-Rationale: Since fresh tidal waters are being proposed to be included in the FW-2 class it is necessary to include any specific criterion which may differ from the class-wide criterion. Thus the Department is proposing the addition of the dissolved oxygen criterion for certain Delaware tributaries within the FW-2 nontrout class.

(vi) - Substance: Temperature and Heat Dissipation Areas.

- Surface Water Class Affected: All FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisions:

The revisions to this category of water quality substances is summarized below:

- (1) The primary emphasis for the unit of measurement for temperature, in all surface water classes, is now centigrade (°C) instead of fahrenheit (°F).
- (2) The current temperature criteria provide for a maximum change in stream temperature above the ambient stream temperature. The proposed revisions to the temperature criteria include maximum changes in stream temperature either above or below ambient stream temperature.
- (3) Two paragraphs in water classes FW-2, TW-1, TW-2, and TW-3 of the existing water quality standards state that ambient water temperature may be exceeded in heat dissipation areas. One of these paragraphs (titles "Heat Dissipation Areas"), which appears in each of these water classes, is proposed to be deleted from the water quality standards.
- (4) The limits for heat dissipation areas are upgraded from guidelines to a formal water quality criterion. The specific limits for heat dissipation areas will apply to streams and estuaries. The criteria state that heat dissipation areas will be developed on a

case-by-case basis of lakes, ponds, reservoirs, bays, and ocean. Finally, the standards provide for an appeal procedure so that an applicant may demonstrate that a large heat dissipation area is allowable without impairing the designated uses.

- (5) Temperature requirements for fresh water fish are deleted from the TW classification. These temperature requirements are retained in Class FW-2, since this stream classification now includes fresh tidal waters. However, if trout or other "fresh water" fish inhabit estuaries, provisions are made to use the FW-2 criteria in TW classification. This proposed revision is consistent with the Department's desire to distinguish between fresh tidal water and saline tidal water.

- Rationale: The proposed editorial revisions were made for clarity and emphasis on the actual measured units (centigrade - °C). The maximum allowable change from ambient stream temperature is being proposed to minimize the impacts on aquatic life from excessive artificial increases or decreases in stream temperature. Finally, the Department is proposing that the maximum heat dissipation area guidelines be established as criteria. In practice the Department has found this to be a reasonable delineation of maximum mixing zone areas for thermal discharges. The proposed revision will simplify and expedite the processing of permit applications. The revision will also allow existing and new thermal dischargers to determine whether they will be required to demonstrate that a larger heat dissipation area will meet these water quality standards. Under the existing guidelines each thermal discharge applicant is reviewed on a case-by-case basis. The Department, giving full consideration to the enforcibility and reasonableness of the heat dissipation area guideline, recommends that the maximum allowable heat dissipation area be established as a criterion.

(vii) - Substance: Bacterial Quality

- Surface Water Class Affected: All surface water classes.



- Existing Criterion and/or Proposed Revisions:

- (a) Narrative Criterion - The Department proposes that the following revision be added to all surface water classes:

As a guideline and for the purpose of these regulations, a minimum of five samples over a 30-day period should be collected; however, the number of samples, frequencies and locations shall be determined by the department in each particular case.

- (b) Numerical Criterion - The Department is proposing revisions to the numerical criterion for all FW-2 classes, TW-1, and CW-2 class.

- (1) For FW-2 waters, the Department proposes the following revision:

From: Fecal coliform levels shall not exceed a geometric average of 200/100 ml.

To: (i) Except as noted in paragraph two below, fecal coliform levels shall not exceed a geometric average of 200/100 ml, nor should more than 10 percent of the total samples taken during any 30-day period exceed 400/100 ml.

(ii) Fecal coliform levels shall not exceed a geometric average of 770/100 ml in the freshwater tidal portion of tributaries to the Delaware River, between Rancocas Creek and Big Timber Creek inclusive.

- (2) For TW-1 and CW-2 waters the Department proposes the following revision:

From: Fecal coliform levels shall not exceed a geometric average of 200/100 ml.

To: Fecal coliform levels shall not exceed a geometric average of 200/100/ml, nor should more than 10 percent of the total samples taken during any 30-day period exceed 400/100 ml.

- Rationale: The Department considered the need for additional specification of monitoring requirements for sanitary surveys. The Department concluded that such requirements were needed. However, since the design of sanitary surveys are highly dependent on the geographical area of concern it is desirable to have flexibility in being able to design such surveys so that they adequately consider unique geographical characteristics. Therefore, the Department is proposing, as a guideline, a minimum level of sampling frequency.

The Department also considered the adequacy of the criterion for primary contact waters. The Department concluded that additional criteria was necessary so that suspect problem areas could be identified and appropriate action would be initiated (e.g. sanitary surveys or enforcement action). A detailed description of the rationale for the proposed criteria in primary contact waters (other than CW-1), is available in Water Quality Criteria, 1972 (National Academy of Sciences, National Academy of Engineering 1974. U.S. Government Printing Office, Washington D.C.) and Quality Criteria For Water July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington D.C.).

Since fresh tidal waters are being proposed to be included in FW-2 class it is necessary to include any specific criterion which may differ from the class-wide criterion. Thus the Department is proposing the addition of the bacterial quality criterion for certain Delaware tributaries within the FW-2 nontrout class.

- (viii) - Substance: Total Dissolved Solids (TDS)
- Surface Water Class Affected: All FW-2 classes.
- Existing Criterion and/or Proposed Revisions:

The department proposes that the TDS criterion be revised as shown (that phrase which is underscored):

1. Not to exceed 500 mg/l or 133% of background whichever is less. Notwithstanding this criterion, the department, after notice and opportunity for hearing, may authorize increases exceeding these limits provided the discharger responsible for such increases can demonstrate to the satisfaction of the department that such increases will not significantly affect the growth and propagation of indigenous aquatic biota or other designated uses, including public water supplies.
2. Any authorization by the department of such increases shall be conditioned upon utilization of the maximum practicable control technology.

- Rationale: The proposed revision clarifies which criterion will be used to determine compliance with water quality standards and the development of water quality based effluent limitations.

(ix) - Substance: Chloride

- Surface Water Class Affected: All FW-2 classes.

- Existing Criterion and/or Proposed Revisions:

The Department proposes that the chloride concentration (mg/l) have a:

Maximum of 250.0 at anytime.

- Rationale: The Department considered the adequacy of the total dissolved solids (TDS) criterion in FW-2 waters in protecting public water supplies. The Department determined that additional specificity was necessary. It was concluded that chloride is one of the principal inorganic constituents of TDS, and one that has a low taste threshold in water. Therefore, to ensure adequate protection of public water supplies the Department is proposing a water quality criterion for chloride. A detailed description of the rationale for the proposed criterion is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington D.C.).

(x) - Substance: Sulfate

- Surface Water Class Affected: All FW-2 Classes.

- Existing Criterion and/or Proposed Revisions:

The Department proposes that the sulfate concentration (mg/l) be at a:

Maximum of 250.0 at anytime.

- Rationale: The Department considered the adequacy of the total dissolved solids (TDS) criterion in FW-2 waters in protecting public water supplies. The Department determined that additional specificity was necessary. It was concluded that sulfate is one of the principal inorganic constituents of TDS, and one that has been related to laxative effects. Therefore, to ensure adequate protection of public water supplies the Department is proposing a water quality criterion for sulfate. A detailed description of the rationale for the proposed criteria is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency, U.S. Government Printing Office, Washington D.C.).

(xi) - Substance: Nitrate Nitrogen

- Surface Water Class Affected: All FW-2 classes.

- Existing Criterion and/or Proposed Revisions:

The Department proposes that a narrative criterion for nitrate nitrogen be added as follows:

Allowing for natural conditions none which would render the waters unsuitable for the designated uses.

- Rationale: A nitrate nitrogen criterion had been established for the two FW Central Pine Barrens classes. The Department was concerned that omission of this criterion in the FW-2 classes would imply that no criterion existed for nitrate nitrogen. Even though policy statements establish this general criterion for all substances, the Department concluded that such a criterion had to be explicitly established for nitrate nitrogen.

(xii) - Substance: Total Phosphate Phosphorus

- Surface Water Class Affected: All FW-2 classes.

- Existing Criterion and/or Proposed Revisions:

The Department proposes that the total phosphate phosphorus criterion (mg/l) be revised as follows:

Phosphorus as total P shall not exceed 0.1 in any stream, except in paragraph one above, (this is a reference to the existing criterion for phosphorus) where total P is determined to have a detrimental effect on stream use or to be a limiting factor considering the morphological, physical, chemical, and other characteristics of the water body.

- Rationale: The Department considered the adequacy of the current phosphorus criteria in protecting other water bodies besides lakes. The Department concluded that additional phosphorus criterion is necessary for the FW-2 waters so as to minimize nuisance plant growths and possible interference with coagulation processes in water treatment plants. A detailed description of the rationale for the proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington D.C.).

(xiii) - Substance: Toxic or Hazardous Substances

- Surface Water Class Affected: All FW-Central Pine Barrens, FW-2, TW and CW classes.

- Existing Criterion and/or Proposed Revision:

(a) FW classes

From: (1) For FW-Lower Mullica and Wading Rivers - Central Pine Barrens and FW-Central Pine Barrens - Toxic and Hazardous Substances:

None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses.

(2) For FW-2 waters - Toxic or Deleterious Substances Including But Not Limited to Mineral Acids, Caustic Alkali, Cyanides, Heavy Metals, Carbon Dioxide, Ammonia or Ammonium Compounds, Chlorine, Phenols, Pesticides, Etc.

None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses. Where tidal waters are approved as sources of public water supply, none which would cause standards for drinking water to be exceeded after appropriate treatment.

To: For all FW-Central Pine Barrens and FW-2 classes.

Toxic or Hazardous Substances.

1. Allowing for natural conditions, none, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses. None which would cause standards for drinking water to be exceeded after appropriate treatment.
  - i. The concentration of a nonpersistent and/or noncumulative toxic or hazardous substance in the State's waters shall not exceed one-twentieth (0.05) of the 96 hour LC50 value, as determined by appropriate bioassays.

ii. The concentration of a persistent and/or cumulative toxic or hazardous substance in the State's waters shall not exceed one one-hundredth (0.01) of the 96 hour LC50 value, as determined by appropriate bioassays.

2. QUALITY CRITERIA FOR WATER (United States Environmental Protection Agency, 1976), WATER QUALITY CRITERIA 1972 (National Academy of Sciences, National Academy of Engineering, March 1973, EPA-R 3-73-033), other water quality criteria information published pursuant to section 304(a) of the Clean Water Act of 1977, or other scientific information shall be used for recommending toxicity levels of pollutants which may affect designated uses.

(b) For all TW and CW waters:

From: (1) TW-1 and TW-2 waters:

Toxic or Deleterious Substances, Including But Not Limited to Mineral Acids, Caustic Alkali, Cyanides, Heavy Metals, Carbon Dioxide, Ammonia or Ammonium Compounds, Chloride, Phenols, Pesticides, Etc.:

None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses. Where tidal waters are approved

as sources of public water supply, none which would cause standards for drinking water to be exceeded after appropriate treatment.

- (2) TW-3, TW-4, CW-1 and CW-2 waters:

Toxic or Deleterious Substances, Including But Not Limited to Mineral Acids, Caustic Alkali, Cyanides, Heavy Metals, Carbon Dioxide, Ammonia or Ammonium Compounds, Chloride, Phenols, Pesticides, Etc.:

None, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses.

To: For all TW and CW waters: Toxic or Hazardous Substances

1. Allowing for natural conditions none, either alone or in combination with other substances, in such concentrations as to affect humans or be detrimental to the natural aquatic biota, produce undesirable aquatic life, or which would render the waters unsuitable for the designated uses.
  - i. The concentration of a nonpersistent and/or noncumulative toxic or hazardous substance in the State's waters shall not exceed one-twentieth (0.05) of the 96 hour LC50 value, as determined by appropriate bioassays.



ii. The concentration of a persistent and/or cumulative toxic or hazardous substance in the State's waters shall not exceed one-one hundredth (0.01) of the 96 hour LC50 value, as determined by appropriate bioassays.

2. QUALITY CRITERIA FOR WATER (United States Environmental Protection Agency, 1976), WATER QUALITY CRITERIA 1972 (National Academy of Sciences, National Academy of Engineering, March 1973, EPA-R3-73-033), other water quality criteria information published pursuant to Section 304(a) of the Clean Water Act of 1977, or other scientific information, shall be used for recommending toxicity levels of pollutants which may affect designated uses.

- Rationale: The revision to paragraph 1 for TW-1 and TW-2 waters is based on the Department's desire to define tidal waters as brackish waters (which are usually unsuitable for public water supplies). As was mentioned in the discussion on the proposed revisions to Statements of Policy, paragraph 1i and 1ii are the result of the proposed reorganization of the water quality standards.

The purpose of paragraph two is to establish a methodology by which the Department may propose additional numerical criteria for toxic or hazardous substances. These references may be used by themselves, or to supplement bioassay information generated by the Department, to propose numerical criteria for water quality standards or effluent limitations.

- (xiv) - Substance: Aldrin/Dieldrin
- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.

- Existing Criterion and/or Proposed Revisions:

For all surface waters:  
Maximum of 0.003 micrograms per liter at  
anytime.

- Rationale: The Department considered the need for proposing numerical criteria for certain toxic substances that would provide additional protection of the designated uses. The Department concluded that this was necessary for aldrin/dieldrin. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington, D.C.) and the Federal Register dated January 12, 1977.

(xv) - Substance: Benzidine

- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.

- Existing Criterion and/or Proposed Revisions:

For all surface waters:  
Maximum of 0.1 micrograms per liter at anytime.

- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for benzidine to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria for Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington, D.C.) and in the Federal Register dated January 12, 1977.

(xvi) - Substance: DDT and metabolites

- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.

- Existing Criterion and/or Proposed Revision:

For all surface waters:  
Maximum of 0.001 micrograms per liter at  
anytime.

- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for DDT and metabolites to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency, U.S. Government Printing Office, Washington D.C.) and in the Federal Register dated January 12, 1977.
  
- (xvii) - Substance: Endrin
- Surface Water Classes Affected: All FW-Central Pine Barrens FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisions:
  - For all surface waters:  
Maximum of 0.004 micrograms per liter at anytime.
- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for endrin to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington, D.C.) and in the Federal Register dated January 12, 1977.
  
- (xviii) - Substance: Polychlorinated Biphenyls (PCB)
- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisionss:
  - For all surface waters:  
Maximum of 0.001 micrograms per liter at anytime.
- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for PCB to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington, D.C.) and in the Federal Register dated February 2, 1977.

- (xix) - Substance: Total Residual Chlorine (TRC)
- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisions:
- |  |   |
|--|---|
| <u>All FW-Central Pine Barrens and FW-2 classes:</u> | <u>All TW and CW classes:</u>                   |
| Maximum of 3.0 micrograms per liter at anytime       | Maximum of 10.0 micrograms per liter at anytime |
- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for TRC to provide additional protection of the designated uses. A detailed discussion of the TRC rationale is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington, D.C.) and Effects of Wastewater and Cooling Water Chlorination on Aquatic Life (Ecological Research Series, U.S. Environmental Protection Agency - 600/3-76-098. U.S. Environmental Protection Agency, Duluth, Minn.).
- (xx) - Substance: Toxaphene
- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisions:
- For all surface waters: Maximum of 0.005 micrograms per liter at anytime.
- Rationale: The Department considered, and concluded that it is necessary to propose specific numerical criteria for toxaphene to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington D.C.) and the Federal Register dated January 12, 1977.
- (xxi) - Substance: Ammonia (un-ionized)

- Surface Water Classes Affected: All FW-Central Pine Barrens, FW-2, TW, and CW classes.
- Existing Criterion and/or Proposed Revisions:

<u>All FW-Central Pine Barrens and FW-2 Classes:</u>  Maximum of 0.02 mg/l at anytime.	<u>All TW and CW classes:</u>  Maximum of 0.1 of the 96 hr LC 50
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- Rationale: The Department considered and concluded that it is necessary to propose specific numerical criteria for un-ionized ammonia to provide additional protection of the designated uses. A detailed discussion of the rationale for this proposed revision is available in Quality Criteria For Water, July 1976 (U.S. Environmental Protection Agency. U.S. Government Printing Office, Washington D.C.).

## 2. SURFACE WATER CLASSIFICATIONS

### 1. Introduction

This section will generally identify only those sections of the Surface Water Classifications which are affected by the proposed revisions to the water quality standards. These revisions have been discussed in Section D, beginning on page II-17.

Revisions to the Stream Water Classifications are categorized as follows:

- i. Revisions to the FW-1 classifications.
- ii. Classification of FW-2 Trout Production Waters that are currently classified as FW-2.
- iii. Classification of FW-2 Trout Maintenance Waters that are currently classified as FW-2.
- iv. Reclassify FW-3 surface waters to FW-2 Nontrout.
- v. Reclassify certain TW-1 and TW-2 surface waters to FW-2 Nontrout.
- vi. Reclassify TW-4(a) (tidal portion of Moses Creek) to TW-3.
- vii. Miscellaneous revisions to FW-2 waters.

In addition to the above revisions, the surface waters, and their tributaries, which are currently used as a water supply source are indicated with an asterisk.

2. Discussion

(A) Revisions to the FW-1 Classification -

The following revisions are being proposed:

i. Additions: Delaware River Basin Classifications

- (i) Dunfield Creek Watershed - Worthington Tract - Sunfish pond, its outlet stream to the Delaware River, and all unnamed waters situated wholly within the Worthington Tract Boundaries.
- (ii) Peguest River Watershed - Allamuchy State Park - Those tributaries located wholly within the Allamuchy State Park which flow into Allamuchy Pond.
- (iii) Musconetcong Watershed - Allamuchy State Park - All those tributaries to Deer Park and to its outlet stream located wholly within Allamuchy State Park.
- (iv) Steele Run Watershed - Washington Crossing State Park - That portion of Steele Run in Washington Crossing State Park located upstream of New Jersey Route 29.
- (v) Maurice River Watershed - Peaslee Fish and Game Tract - Those portions of tributaries to Slab Branch situated wholly within the Peaslee Fish and Game Tract.
- (vi) West Creek Watershed - Belleplain State Forest - Those tributaries to West Creek and portions thereof originating about 0.5 miles upstream of Hoffman's Mill and situated wholly within the Belleplain State Forest Boundaries.

ii. Deletions: Delaware Water Gap National Recreational Area (DWGNRA)

- (i) The headwaters of Jacksonburg Creek situated wholly within the proposed DWGNRA boundaries.

1. Bracket indicates deletion to existing water quality standards.
2. Underscore indicates addition from existing water quality standards.

(ii) Sunfish Pond, its outlet stream to the Delaware River, and all unnamed waters situated wholly within the former Worthington Tract boundaries. (Note: This classification was transferred to the Dunfield Creek Watershed, as identified earlier).

(iii) Dunfield Creek to Route [46]<sup>1</sup> I-80<sup>2</sup>.

iii. Miscellaneous Changes:

(i) All boundaries of State lands, referred to in the Surface Water Classifications, shall be as exists upon adoption of these proposed revisions to the Surface Water Quality Standards.

(ii) Atlantic Coastal Plain Classification  
[Manahawkin] Bass River

(a) Bass River State Forest

This proposed revision corrects an error in the identification of the drainage basin.

(b) Wharton Tract - Mullica River Watershed

Brook and tributaries to the Batsto River<sup>2</sup> between and immediately to the west of Tylertown and Crowleytown from its headwaters downstream to the head of tide at mean high tide.

The proposed revision is to add specificity to the classification.

(iii) Delaware River Basin Classification

(a) High Point State Park - Clove Brook Watershed

(1) The second and third northerly tributaries to Clove Brook, [and] tributaries [downstream of]<sup>1</sup> to <sup>2</sup> Steenykill Lake and tributaries downstream of Steenykill Lake to their confluence with Clove Brook or the High Point State Park boundaries[.] which originate in High Point State Park

1. Bracket indicates deletion to existing water quality standards.
2. Underscore indicates addition from existing water quality standards.

(b) High Point State Park and Stokes State Forest - Flatbrook Watershed

All surface waters of the Flatbrook Drainage within the boundaries of High Point State Park and Stokes State Forest except [the following which are classified FW-2 and designated thus [ ]]. A-I below which are classified elsewhere. (A-I is a reference to a list of streams that appear at page ).

This revision is proposed to accomodate the expanded FW-2 classification categories.

(iv) Wallkill River Basin -

Lake Lookout Brook Watershed -

- (a) Newark City Holdings, [Sussex Woodlands, Inc.]<sup>1</sup> and Wawayanda Tract - Lake Lookout Branch and tributaries from its headwaters in the Newark City Holdings downstream through [the property of Sussex Woodlands, Inc. into]<sup>1</sup> the State-owned Wawayanda Tract to its confluence with the outlet stream from Lake Wawayanda.
- (b) Clove [Brook]<sup>1</sup> River<sup>2</sup> Watershed - Those portions of the two (2)<sup>2</sup> northernmost tributaries to Clove [Brook]<sup>1</sup> River<sup>2</sup> situated wholly within the High Point State Park boundaries immediately east of Steenykill Lake.

- (B) Addition of FW-2 Trout Production Classifications - These are clearly identified in the proposed water quality standards and therefore not repeated in this section.
- (C) Addition of FW-2 Trout Maintenance Classifications - These are clearly identified in the proposed water quality standards and therefore not repeated in this section.
- (D) Reclassify FW-3 Surface Waters to FW-2 Nontrout - The following surface waters are being proposed to be reclassified from FW-3 to FW-2 Nontrout:

- 1. Bracket indicates deletion from existing water quality standards.
- 2. Underscore indicates addition to existing water quality standards.



i. Atlantic Basin

- (a) [Class FW-3 - All other fresh water basins or portions thereof in the Coastal Plain upstream of head of tide except those designated FW-1, FW-Central Pine Barrens, FW-Lower Mullica and Wading Rivers - Central Pine Barrens, or FW-2].

Class FW-2 Nontrout - All other fresh nontidal and fresh tidal water basins or portions thereof in the Coastal Plain except those designated as FW-1, FW-Central Pine Barrens, FW-Lower Mullica and Wading Rivers - Central Pine Barrens, or FW-2 Trout Maintenance<sup>2</sup>.

ii. Delaware River Basin Classifications -

Certain classifications in Class FW-2, in addition to deletion of Class FW-3, were revised as follows:

From:

Class FW-2

- i. All tributaries to main stem, Delaware River, upstream from Trenton Water Works intake except those designated as FW-1.
- ii. Upstream from head of tide of all fresh water basins tributary to main stem, Delaware River, from Assunpink Creek south to and including Big Timber Creek.

Class FW-3

- i. Upstream from head of tide to all fresh water basins tributary to main stem, Delaware River, from Woodbury Creek south to and including Salem Creek.
- ii. Upstream from head of tide of all fresh water basins tributary to main stem, Delaware River, south of Alloways Creek to and including Maurice River.
- iii. Alloways Creek and tributaries except those designated as FW-2.

- 1. Bracket indicates deletion from existing water quality standards.
- 2. Underscore indicates addition to existing water quality standards.

To: Class FW-2 Nontrout -

- (i) All tributaries to main stem, Delaware River, upstream from and including Big Timber Creek, except those designated FW-1, FW-Central Pine Barrens, FW-2 Trout Production, and FW-2 Trout Maintenance.
- (ii) All fresh nontidal and fresh tidal tributaries to mainstem, Delaware River, south of Big Timber Creek to Cape May County, except those mentioned in iii<sup>1</sup> above.

iii. Hackensack River Basin Classification -

The following classification was transferred from Class FW-3 to Class FW-2 Nontrout:

Overpeck Creek and tributaries to tide dam and fresh nontidal and fresh tidal portions of tributaries to Hackensack River downstream from Oradell Dam.

iv. Hudson River, Kill Van Kull, Arthur Kill Basin Classification:

From:

Class FW-2

- i. Rahway River and tributaries above Rahway Water Department intake downstream from the Rahway-Clark municipal boundaries;
- ii. Robinson's Branch and tributaries above Middlesex Water Company intake at the reservoir dam.

and

Class FW-3

- i. Elizabeth River and tributaries above Broad Street Bridge, Elizabeth.
- ii. Nontidal tributaries to Morses Creek.
- iii. Nontidal tributaries to Piles Creek.
- iv. Rahway River below Rahway Water Department intake to head of tide (West Grand Avenue, Rahway).

1. This refers to a specific section in the proposed Surface Water Quality Standards (see page 75).

- v. South Branch Rahway River to head of tide (Hazelwood Avenue, Rahway).
- vi. Robinson's Branch below Middlesex Water Company intake to head of tide (Hamilton Street, Rahway).
- vii. Nontidal tributaries to Smith Creek.
- viii. Nontidal tributaries to Woodbridge Creek.
- ix. All other fresh, nontidal waters not mentioned above.

To: Class FW-2 Nontrout -

- i. Rahway River and tributaries above the Penn Central Railroad bridge
- ii. Elizabeth River and tributaries above Broad Street bridge, Elizabeth.
- iii. Morse Creek and tributaries.
- iv. Piles Creek and tributaries.
- v. South Branch Rahway River to Hazelwood Avenue, Rahway.
- vi. Smith Creek and tributaries.
- vii. Woodbridge Creek and tributaries.
- viii. All other fresh nontidal and fresh tidal waters not mentioned in this subsection.

v. Passaic River Basin including Newark Bay Classifications -

From:

Class FW-2

- i. Main stem and all tributaries to the Passaic River above Passaic Valley Water Commission intake at Little Falls, except those waters designated as FW-1.
- ii. Saddle River and tributaries and Ho-Ho-Kus Brook and tributaries upstream from the confluence of Saddle River and Ho-Ho-Kus Brook in the vicinity of the intake of the Hackensack Water Company.

1. Bracket indicates deletion from existing water quality standards.
2. Underscore indicates addition to existing water quality standards.

iii. Haledon Reservoir and tributaries thereto.

Class FW-3

- i. Saddle River and tributaries upstream from head of tide to its confluence with Ho-Ho-Kus Brook.
- ii. Main stem and tributaries of Passaic River between Dundee Lake Dam and Passaic Valley Water Commission intake at the Little Falls.
- iii. Nontidal tributaries to the Passaic River, below Dundee Lake Dam.
- iv. Bound Creek upstream from head of tide and nontidal tributaries.

To: FW-2 Nontrout

- i. Main stem and all tributaries to the Passaic River above Passaic Valley Water Commission intake at Little Falls, except those waters designated as FW-1, FW-2 Trout Production, and FW-2 Trout Maintenance.
- ii. Saddle River and tributaries and Ho-Ho-Kus Brook and tributaries upstream from the confluence of Saddle River and Ho-Ho-Kus Brook in the vicinity of the intake of the Hackensack Water Company, except those designated FW-2 Trout Production and FW-2 Trout Maintenance.
- iii. Saddle River from its confluence with Ho-Ho-Kus Brook downstream of head of tide, except those designated as FW-2 Trout Production and FW-2 Trout Maintenance.
- iv. Haledon Reservoir and tributaries thereto.
- v. Main stem and tributaries of Passaic River between Dundee Lake Dam and Passaic Valley Water Commission intake at the Little Falls.
- vi. Fresh nontidal and fresh tidal tributaries to the Passaic River, below Dundee Lake Dam.
- vii. Fresh nontidal and fresh tidal portions of Bound Creek and its tributaries.

- 1. Bracket indicates deletion from existing water quality standards.
- 2. Underscore indicates addition to existing water quality standards.

vi. Raritan River Basin Including Raritan Bay - Sandy Hook Bay Classification

From:

Class FW-3

- i. The main stem of the Raritan River and all tributaries below the intake of the Elizabethtown Water Company to the Fieldsville Dam.
- ii. All other nontidal portions of tributaries to the Raritan River below Fieldsville Dam and to Raritan Bay - Sandy Hook Bay.

To: Class FW-2 Nontrout

- i. The Delaware and Raritan Canal to the Deep Lock at New Brunswick.
- ii. The Raritan River and Millstone River and all tributaries above the intake of the Elizabethtown Water Company at their confluence except those designated FW-2 Trout Production and FW-2 Trout Maintenance.
- iii. The Middle Brook and tributaries above the intake of the Bound Brook Water Company downstream from the confluence of the West Branch Middle Brook and East Branch Middle Brook.
- iv. The South River and tributaries above the intake of the Sayreville Water Department.
- v. Lawrence Brook and tributaries above the intake of the New Brunswick Water Department at Weston's Mill Dam.
- vi. The Swimming River and tributaries above the intake of the Monmouth Consolidated Water Company at the Swimming River Reservoir Dam.
- vii. The main stem of the Raritan River and all tributaries below the intake of the Elizabethtown Water Company to the Fieldsville Dam.

viii. Tennett Brook and tributaries above the Tennett Pond Dam.

ix. All other fresh nontidal and fresh tidal portions of tributaries to the Raritan River below Fieldsville Dam and to Raritan Bay - Sandy Hook Bay.

vii. Wallkill River Basin Classification -

From: Class FW-3 - The Wallkill River and all tributaries except those designated as FW-1 or FW-2.

To: Class FW-2 Nontrout -

i. Wallkill River and tributaries upstream from intake of Borough of Franklin Water Works at Franklin Pond.

ii. Branch of Pochuck Creek, supply of the Highland Lakes Improvement Company.

iii. All other segments of the Wallkill River Basin except those designated as FW-1, FW-2 Trout Production, and FW-2 Trout Maintenance.

(E) Reclassify Certain TW-1 and TW-2 Surface Waters to FW-2 Nontrout -

This proposed revision is based on actual water use, instead of hydraulic fluctuations in water height in response to tidal action. The following waters are being proposed for reclassification:

i. Delaware River Basin Classifications - The proposed revisions to the tidal waters are as follows:

Class TW-1 -

[i. Tidal tributaries to main stem, Delaware River, between Trenton Water Works intake to and including Rancocas Creek.]

[ii.] Tidal tributaries to main stem, Delaware River and Delaware Bay south from and including Oldman's Creek.

1. Bracket indicates deletion from existing water quality standards.
2. Underscore indicates addition to existing water quality standards.

Class TW-2 -

Tidal tributaries to main stem, Delaware River, south of [Rancocas Creek] Big Timber Creek and north of Oldman's Creek.

ii. Hudson River, Kill Van Kull, Arthur Kill Basin Classifications -

The proposed revisions to the tidal waters are as follows:

Class TW-1

None

Class TW-2

- i. Hudson River and its New Jersey tidal tributaries from a north-south line connecting Constable Hook (Bayonne, New Jersey) to St. George (Staten Island, New York) to the Bergen County (New Jersey) - Rockland County (New York) line.
- ii. Arthur Kill and its New Jersey tidal tributaries between Outerbridge Crossing and a line connecting Ferry Point (Perth Amboy, New Jersey) to Wards Point (Staten Island, New York).
- iii. [Tidal portion of]<sup>2</sup> Rahway River and tidal portions of its tributaries, from Route 1-9 crossing [to head of tide (West Grand Avenue, Rahway).] upstream to the Pennsylvania Railroad bridge.
- iv. Tidal portion of South Branch Rahway River to head of tide (Hazelwood Avenue, Rahway).
- [v. Tidal portion of Robinson's Branch to head of tide (Hamilton Street, Rahway).]
- v<sup>1</sup>[i]<sup>2</sup>. All other tidal waters not mentioned herein.

iii. Raritan River Basin Including Raritan Bay - Sandy Hook Bay Classification -

- 1. Bracket indicates deletion from existing water quality standards.
- 2. Underscore indicates addition to existing water quality standards.

The proposed revisions to the tidal waters are as follows:

Class TW-1

- i. The mainstem of the Raritan River and tidal tributaries from Fieldsville Dam to the mouth of the Raritan River, except those portions classified FW-2 Nontrout.

(F) Miscellaneous Revisions to FW Waters

- i. Atlantic Coastal Plain Classifications

Class FW-2 -

- (a) Shark River and tributaries upstream from [Remson's Mill Road] Route 33.
- (b) Main stem of Manasquan River and tributaries upstream from [Garden State Parkway] Route 9.

G. RECLASSIFY TW-4(a) (tidal portion of Morses Creek) TO TW-3 AND INCLUDE SPECIAL TEMPERATURE CRITERIA FOR MORSES CREEK

The Department compared the water quality criteria for waters classified as TW-3 and TW-4(a). The only difference between water quality criteria for TW-3 and TW-4(a) waters is the temperature and heat dissipation criterion.

The Department has analyzed water temperature and biological data collected immediately upstream of the number 1 dam and in the tidal portion of Morses Creek. The water temperature data was collected between July 1977 and September 1979 on an hourly basis. The data shows that approximately 18% and 9% of the samples were higher than 32.2°C (90°F) and 35°C (95°F) respectively during 1978. The 1979 water quality data shows that 29% and 16% of the samples were greater than 32.2°C and 35°C respectively. The biological community in the tidal portion of Morses Creek is reflective of these elevated temperatures. Biological data, for the tidal portion of Morses Creek, was collected during the summer and fall of 1979. The biological community was dominated by mummichog and grass shrimp, with the tidewater silverside present.

The Department reviewed information regarding maximum acceptable temperatures for aquatic life exposed to elevated temperatures (WATER QUALITY CRITERIA 1972, National Academy of Sciences, National Academy of Engineering, March 1973, EPA-R 3-73-033). It is the Department's opinion, after

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2. Bracket indicates deletion from existing water quality standards.



reviewing this information, that aquatic life will be protected where the water temperature does not exceed 32.2°C (90°F). It is apparent from the literature, and from water temperature and biological data collected from Morses Creek, that a very limited aquatic community can survive where water temperature is generally greater than 35°C (95°F).

Based upon:

1. The comparison of water quality criteria for TW-3 and TW-4(a) waters;
2. Water temperature data in Morses Creek;
3. Biological data in the tidal portion of Morses Creek; and
4. Information regarding the maximum allowable temperature which provides for the survival of aquatic life

the Department recommends revising the present water quality standards for the TW-4(a) classification of Morses Creek. The Department proposes that Morses Creek be classified as TW-3 and that the following water temperature criteria shall apply:

- The only temperature criterion which will apply to Morses Creek (Linden) is that water temperature shall not be greater than 32.2°C (90°F) at anytime.
- For Morses Creek (Linden) the temperature standard shall be measured at the number one dam (where Kohler Way crosses Morses Creek).

#### H. RECOMMENDATION

The Department recommends the above proposed revision to the Surface Water Quality Standards to be adopted. Since this proposal includes extensive revisions to the format of the existing Surface Water Quality Standards, N.J.A.C. 7:9-4 et seq. is deleted and reissued.