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Formerly Utilized Sites Remedial Action Program (FUSRAP)

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# ADMINISTRATIVE RECORD

for Maywood, New Jersey

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U.S. Department of Energy

**Bechtel**

## Interoffice Memorandum

To	Distribution	File No.	7440/118/137/138/144
Subject	New Jersey Groundwater Quality Standards	Date	March 5, 1993
		From	J. D. Mazzone <i>Jm</i>
		Of	ESH&WM
Copies to	G. R. Galen <i>GRG</i> T. E. Morris <i>TEM</i> E. A. Rudek	At	Oak Ridge Ext. 4-3643

Attached for your review and concurrence is an Environmental Regulation Notice (ERN) on the New Jersey Groundwater Quality Standards, New Jersey Administrative Code (N.J.A.C.) Title 7: Chapter 9-6.

This regulation establishes policy for the State of New Jersey to restore, enhance and maintain the chemical, physical and biological integrity of its waters and to protect human health, aquatic life, and scenic and ecological values.

This regulation is applicable to FUSRAP wherever groundwater samples are being analyzed for the chemical constituents listed in N.J.A.C. 7: 9-6.

Please sign the attached concurrence to verify that you have reviewed the ERN; the notice will then be distributed via the Project Document Control Center to FUSRAP Departments for their information.

If you have any questions, please contact me at 574-3643.

JDM:bk:IO\_0667

Attachments: (1) Concurrence page  
(2) ERN on New Jersey Groundwater Quality Standards

Distribution:

- S. D. Liedle
- M. E. Redmon
- N. C. Ring
- W. K. Barry
- K. Skinner
- J. C. McCague
- L. S. Curtis



### CONCURRENCE

Your signature is a verification that you have received the Environmental Regulation Notice on the New Jersey Groundwater Quality Standards and concur with its applicability to FUSRAP.

*John R. [Signature]*

EC Supervisor

*[Signature]*

ESH&WM Manager

*SD Siedle*

Project Manger - New Jersey

*[Signature] 3/11/93*

Program Manager



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# Environmental Regulation Notice

## NEW JERSEY GROUNDWATER QUALITY STANDARDS

FINAL RULE - N.J.A.C. Title 7: Chapter 9-6

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### INTRODUCTION

This regulation establishes groundwater quality standards for groundwater discharges that cause or may cause pollutants to enter the groundwaters of the State of New Jersey. This regulation also establishes three major classes of groundwater and their designated uses. The groundwater quality standards will establish the basis for cleanup standards in the State of New Jersey to ensure consistency for cleanup activities from site to site.

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#### EFFECTIVE DATE

FEBRUARY 1, 1993

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### REGULATION SUMMARY

The key provisions of this regulation are as follows:

#### Groundwater Classification System and Designated Uses

New Jersey groundwater shall be classified according to hydrogeological characteristics and uses. All classes of groundwater have both primary and

secondary designated uses. These classification are as follows:

#### **Class I: Groundwater of Special Ecological Significance**

The primary designated use of Class I groundwater shall be groundwater which supports special ecological resources. The secondary designated use is for potable water, agricultural water and industrial water. Class I groundwater must remain at natural concentration levels for any listed constituent. Class I groundwater is further classified as Class I-A, Exceptional Ecological Areas; Class I-PL, Pinelands; Class I-PL (Preservation Area); and Class I-PL (Protection Area). Designated uses of the above mentioned classes are defined in the attached regulation. The attached regulation also lists a number of Class I-A groundwater areas.

#### **Class II: Groundwater for Potable Water Supply**

The primary designated use of Class II groundwater shall be for potable water following conventional water supply treatment. This is the only classification to which chemical constituent standards were established. Class II groundwater is further classified as Class II-A which includes all groundwaters of the State of

New Jersey, except Classes I, II-B, or III. Class II groundwater also includes Class II-B groundwater which address potential supplies that have a history of contamination or do not provide the State with quantities needed for potable water supply.

### **Class III: Groundwater With Uses Other Than Potable Water Supply**

Class III groundwaters are not suitable for potable water because of their natural water quality (e.g., saline groundwater). This groundwater includes geologic formations or units that are aquitards or have a natural quality which is unsuitable for potable water. Class III groundwater is classified on a case-by-case basis. Class III groundwater is further classified as Class III-A and Class III-B and is described in detail in the attached regulation.

Exceptions to the classification system are obtained only with the approval of the New Jersey Department of Environmental Protection and Energy (NJDEPE). In Classification Exception Areas, it shall be the responsibility of the NJDEPE to define appropriate uses and water quality standards.

### Groundwater Quality Criteria

Groundwater quality criteria have been established for the classes of groundwater mentioned above. These criteria are included in the attached regulation. The criteria are based on whether the water is of the natural quality for each constituent, background water quality, the most stringent criteria for adjacent groundwaters, or on an area-by-area basis

in response to a case-by-case need. Groundwater quality criteria are described in detail in the attached regulation.

### Groundwater Quality Standards

Groundwater quality standards have been established for Class II groundwater criteria and consist of the chemical constituents listed in the attached regulation. When no specific standard exists for a synthetic organic chemical, the interim generic criteria listed in Table 2 of the attached regulation shall be used until an interim specific criterion has been established by the NJDEPE. The standards for radionuclides in groundwater have not changed, and can be found in NJDEPE's regulations of the federal Safe Drinking Water Act (N.J.A.C 7: 10-1 et seq.).

### Practical Quantitation Levels

Practical Quantitation Levels (PQLs) have been established as a new standard of measurement. The PQLs shall be used to monitor sites and to look for contaminants. There may be some cases where the water quality standard is lower than the PQL. If this is the case, compliance with the PQL is only required because detection below the PQL may not be possible.

### **IMPLICATIONS FOR FUSRAP**

This regulation is applicable to the Department of Energy (DOE) Formerly Utilized Sites Remedial Action Program (FUSRAP) sites where groundwater monitoring is being performed.

The following recommendations are made:

1. FUSRAP sites should be examined for classification under the groundwater classification system listed in section 9-6.5 of the attached regulation.
2. For FUSRAP sites where the groundwater is analyzed for chemical constituents, the State's groundwater quality standards are applicable requirements (ARARs) and future monitoring data should be evaluated against the new standards to determine whether FUSRAP sites are meeting the standards of this regulation.
3. Since the site is being remediated, exceeding a groundwater quality standard will not pose any regulatory violations at this time. However, since these standards will eventually be used to establish groundwater cleanup levels at contaminated sites, it is in the best interest of the project to begin considering corrective action alternatives for those constituents standards that are currently being exceeded.
4. The Site Environmental Reports should address the groundwater classification for each site and use the groundwater quality standards to evaluate collected data.

#### REFERENCES

New Jersey Register, Monday,  
February 1, 1993

*Author: J. D. Mazzoni      Date: 3/2/93*

Dimethyl phthalate, Indeno(1,2,3-cd)pyrene and Silver. The criteria for these parameters will be changed based on the recent toxicological references. The revised criteria for these parameters will be repropounded in a separate rulemaking.

43. The practical quantitation level for chloride was changed from 3000 to 2000 in Table 1. The listing of 3000 was a typographical error in the proposed Table 3, but it was correctly listed as 2000 in the Basis and Background Document which accompanied the proposal.

44. Corrosivity was removed from list of specific ground water quality criteria in Table 1 since the parameters by which corrosivity is measured, such as pH and hardness, are included elsewhere in Table 1.

45. The minimum level for hardness was eliminated from Table 1 since there is no need to regulate the minimum concentration of this parameter.

46. The footnote regarding the Chemical Abstracts Registration Number for chromium was found to be in error and has therefore been eliminated.

47. A footnote has been added to Table 1 to clarify the mean of (Total) as it is applied to metals parameters.

48. A footnote has been added to Table 1 to clarify the meaning of "prevailing safe Drinking Water Act Regulations (N.J.A.C. 7:10-1 et seq.)" as it is applied to microbiological criteria for ground water.

49. Language has been added to the explanatory note on Table 2 which clarifies the determination of carcinogenicity of various synthetic organic chemicals.

Full text of the adoption follows (additions to proposal indicated in boldface with asterisks \*thus\*; deletions from proposal indicated in brackets with asterisks \*[thus]\*):

## SUBCHAPTER 6. GROUND WATER QUALITY STANDARDS

### 7:9-6.1 Scope of subchapter

(a) Unless otherwise provided by statute, the following shall constitute the rules of the Department of Environmental Protection and Energy concerning ground water classification, designated uses of ground water, and ground water quality criteria and constituent standards, pursuant to the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and the Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.).

(b) This subchapter shall provide the basis for protection of ambient ground water quality, through the establishment of constituent standards for ground water pollutants. These constituent standards are applicable to the development of: ground water protection standards pursuant to the New Jersey Pollutant Discharge Elimination System (NJPDDES; N.J.A.C. 7:14A); ground water cleanup standards and compliance levels beyond the boundaries of a contaminated site pursuant to applicable regulatory programs; and other requirements and regulatory actions applicable to discharges that cause or may cause pollutants to enter the ground waters of the State, including nonpoint and diffuse sources regulated by the Department. Other relevant laws through which the Ground Water Quality Standards may be applied include, but are not limited to, the Spill Compensation and Control Act (N.J.S.A. 58:10-23.11 et seq.), the Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.), the Environmental Cleanup Responsibility Act (N.J.S.A. 13:1K-6 et seq.), the Storage of Hazardous Substances Act (N.J.S.A. 58:10A-21 et seq.), the Realty Improvement \*Sewerage and Facilities\* Act (N.J.S.A. 58:11-23 et seq.), and the Pesticide Control Act of 1971 (N.J.S.A. 13:1F-1 et seq.).

(c) This subchapter shall be the Department's primary basis for setting numerical criteria for limits on discharges to ground water and standards for ground water cleanups.\*

### 7:9-6.2 Policies

(a) 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.

(b) Discharges to ground water that subsequently discharges into surface waters shall not be permitted \*by the applicable regulatory program\* if such discharges would cause a contravention of surface

water quality standards applicable to those surface waters. That is, those discharges must \*[meet]\* \*achieve compliance with\* both these standards and the surface water quality standards (N.J.A.C. 7:9-4).

(c) When existing ground water quality does not meet the constituent standards determined pursuant to N.J.A.C. 7:9-6.7, 6.8 and 6.9(a) and (b), due to human activities, the Department shall, after a review of relevant and available scientific and technical data, determine in the context of the applicable regulatory programs the management actions necessary (including, but not limited to, the requirement of remedial actions) to restore or enhance ground water quality pursuant to the policies of this subchapter.

(d) The Department shall not approve discharges or activities posing a significant risk of discharges, within the jurisdiction of and subject to regulation by the Pinelands Commission, that would contravene the rules of the Pinelands Commission with regard to the protection of ground water or surface water quality.

### 7:9-6.3 Construction

This subchapter shall be liberally construed to permit the Department to implement its statutory functions.

### 7:9-6.4 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings:

"ACL" means alternative concentration limit.

"Agricultural water" means water used for crop production, livestock, horticulture and silviculture.

"Alternative concentration limit" (ACL) means a constituent standard or narrative description of actions, discharge controls and water quality requirements that is less stringent than the ground water quality requirements of N.J.A.C. 7:9-6.7, 6.8 and 6.9(a) and (b), due to a Departmental determination pursuant to NJPDDES \*regulations\* (N.J.A.C. 7:14A\*6.15(e)2). In order to approve an ACL, the Department must find that the relevant constituent standard(s) cannot be achieved through technologically practicable means.

"Antidegradation" means a policy to ensure that existing ground water quality (that currently is of higher quality than the water quality criteria in N.J.A.C. 7:9-6.7) is not degraded to the criteria by discharges, but rather remains at a better quality ranging from natural quality at the most stringent, to a limited allowance for degradation at the least stringent. "Nondegradation" is the most stringent case of the antidegradation policy. It prohibits any degradation of ground water quality below existing background water quality by a discharge.

"Antidegradation limit" is the numerical expression (in terms of a concentration or level of a constituent in ground water) of the antidegradation policy.

"Applicable regulatory program" means any of the Department's programs which implement the regulations issued pursuant to the statutes cited in N.J.A.C. 7:9-6.1(b) or in any other regulations that specifically cite this subchapter.\*

"Aquifer" means a saturated geologic formation(s) or unit(s) which is sufficiently permeable to transmit water to a pumping well in usable and economic quantities. The upper level of an unconfined aquifer may vary over time; "aquifer" applies to the full saturated zone at any time.

"Aquitard" means a hydrogeologic confining unit(s) that exhibits limited permeability, bounding one or more aquifers, that does not readily yield water to wells or springs, but may serve as a storage unit for ground water and may release this water to adjacent ground water units or surface waters. Such confining units are \*further\* defined and listed in N.J.A.C. 7:9-6.5(f)1 or may be established through reclassification under N.J.A.C. 7:9-6.10.

"Background water quality" means the \*[existing]\* concentration of constituents in ground water which is determined to exist directly upgradient of a discharge but not influenced by the discharge\*[ ], as determined using monitoring data as required by the Department]\* \*, or is otherwise representative of such concentration of constituents as determined using methods and analyses consistent with the requirements of N.J.A.C. 7:14A-6.15(b)7\*.

"Classification area" means the geographic extent (lateral and vertical) of a geologic formation(s) or unit(s) wherein ground water is classified for designated uses, as described in N.J.A.C. 7:9-6.5.

"Classification exception area" means an area within which one or more constituent standards and designated uses are suspended in accordance with N.J.A.C. 7:9-6.6.

"Constituent" means a specific chemical substance (that is, waste, element or compound) or water quality parameter (for example, temperature, odor, color).

"Constituent standard" means the required \*[minimum or]\* maximum level or concentration \*or the required range of levels or concentrations\* (as applicable) for a constituent in a classification area, as established in N.J.A.C. 7:9-6.7, 6.8 and 6.9(a) and (b). The constituent standards shall be the basis for the Department's regulation of ground water quality effects of past, present or future discharges to ground water or the land surface, pursuant to applicable authorities as defined in N.J.A.C. 7:9-6.1.

\*"Conventional water supply treatment" means the chemical and physical treatment of ground water supplies for microbiological contaminants and undesirable naturally occurring substances resulting in treated water that meets all the primary and secondary standards for those constituents stipulated by the New Jersey Safe Drinking Water Act regulations (N.J.A.C. 7:10-12).\*

"Criteria" means \*ground\* water quality criteria.

"Department" means the New Jersey Department of Environmental Protection and Energy.

"Designated use" means a present or potential use of ground water which is to be maintained, restored and enhanced within a ground water classification area, as determined by N.J.A.C. 7:9-6.5. Designated uses may include any human withdrawal of ground water (for example, for potable, agricultural and industrial water), the discharge of ground water to surface waters of the State which support human use or ecological systems, or the direct support of ecological systems.

"Discharge" means an intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of a pollutant at any time into the waters of the State, onto land or into wells from which it might flow or drain into said waters, or into waters or onto lands outside the jurisdiction of the State, which pollutant enters the waters of the State. "Discharge" includes, without limitation, the release of any pollutant into a municipal treatment works. \*[The flow of pollutants to ground water includes, without limitation, flow through the unsaturated zone, and the movement of pollutants in ground water into new volumes of the saturated zone.]\*

"Discharger" means any person, corporation, municipality, government agency or authority or other legal entity, who causes\*[, induces]\* or allows a discharge, either through action or omission.

\*"Extensive exceedance", as used in N.J.A.C. 7:9-6.10, means a condition where ground water quality in an area exceeds the criteria of N.J.A.C. 7:9-6.7 for one or more contaminants over the vast majority of the subject area for such contaminant(s) and that such exceedances are not attributable to the past or present discharges of a single discharger or any group of active NJPDES permitted discharges.\*

"FW1" means those surface fresh waters defined as such in the Surface Water Quality Standards, N.J.A.C. 7:9-4, and shown on maps maintained by the Department.

"Ground water" means the portion of water beneath the land surface that is within the \*saturated\* zone \*[of saturation (below the water table) where the pore spaces are filled with water]\*.

"Hazardous pollutant" means:

1. Any toxic pollutant;
2. Any substance regulated as a pesticide under the Federal Insecticide, Fungicide and Rodenticide Act, Pub.L.92-516 (7 U.S.C. §136 et seq.);
3. Any substance the use or manufacture of which is prohibited under the Federal Toxic Substances Control Act, Pub.L.94-469 (15 U.S.C. §2601 et seq.);
4. Any substance identified as a known carcinogen by the International Agency for Research on Cancer;

5. Any hazardous waste as designated pursuant to section 3 of P.L. 1981, c.279 (N.J.S.A. 13:1E-51) or the "Resource Conservation and Recovery Act," Pub.L.94-580 (42 U.S.C. §5901 et seq.); or

6. Any hazardous substance as defined pursuant to section 3 of P.L. 1976, c.141 (N.J.S.A. 58:10-23.11b).

"Industrial water" means water used for processing, heating or cooling in a manufacturing process.

"Natural Area" means an area of land or water, designated by the Department under N.J.A.C. 7:2-11 and shown on maps maintained by the Office of Natural Lands Management, Division of Parks and Forestry, of the Department, which is owned in fee simple or in which a conservation easement is held by the Department.

"Natural quality" means the concentration or level of constituents which occurs in ground water of a hydrologic unit without the influence of human activity, other than the effects of regional precipitation of air pollutants (for example, acid precipitation). The natural quality for SOCs is established as zero (0.0) except where the SOCs are the result of air transport from outside the State, enter the State from ground water transport of pollutants having their origins in other states, or are created entirely by natural processes. Where natural quality for other constituents is not ascertainable from generally acceptable scientific studies, the lowest concentrations known to exist within the same or a similar hydrologic unit and setting (that is, depth) within the classification area shall be used to represent the natural quality, provided, however, that for pH, corrosivity and hardness, the most representative concentration shall be used.

"NJPDES" means the New Jersey Pollutant Discharge Elimination System (N.J.A.C. 7:14A).

"NJPDES permit action" means a draft or final NJPDES permit, a permit equivalent, or a decision that a discharge is not to be regulated by NJPDES, as determined pursuant to the NJPDES regulations.

\*"Organoleptic effect" means an offensive taste, foul odor or other adverse aesthetic consequence caused by pollutants in a water supply and rendering the water supply unfit for potable use.\*

\*"PQL" means practical quantitation level.\*

"Pollutant" means any dredged spoil, solid waste, incinerator residue, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, radioactive substance, thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal or agricultural or other residue discharged into the waters of the State. "Pollutant" includes both hazardous and nonhazardous pollutants. "Industrial, municipal or agricultural or other residue" specifically included, without limitation, constituents that are not considered wastes (that is, process chemicals) prior to discharge, but which are discharged and may or do degrade natural or existing ground water quality.

"Potable water" means water suitable for household consumption, primarily as drinking water, based upon human health, welfare and aesthetic considerations.

"Practical quantitation level" (PQL) means the lowest concentration of a constituent that can be reliably achieved among laboratories within specified limits of precision and accuracy during routine laboratory operating conditions. "Specified limits of precision and accuracy" are the criteria which have been included in applicable regulations \*including, but not limited to, those regulations listed at N.J.A.C. 7:9-6.9\* or are listed in the calibration specifications or quality control specifications of an analytical method.

\*"Saturated zone" means the zone in which all the subsurface voids in the rock or soil are filled with water.\*

"SOC" means Synthetic Organic Chemical.

"Soils" means any naturally occurring or man-made unconsolidated mineral and organic matter on the surface of the earth that has been subjected to and influenced by geologic and environmental factors. "Soils" also includes fill or overburden.

"Source water" means the supply source of water (for example, private wells, public water supply) to a discharger, where the source water becomes part of a discharge.

"Surface water" means water at or above the land's surface which is neither ground water nor contained within the unsaturated zone.

"Synthetic organic chemicals" (SOCs) means any compounds that contain at least one carbon atom and that result from purposeful chemical synthesis, whether as products, by-products, or waste, or from the purposeful refinement of naturally occurring substances. Where a chemical substance is sometimes found in nature and sometimes synthesized, it shall be considered an SOC only to the extent or in the proportion produced or isolated by human activity. Naturally occurring organic chemicals in their natural location are not considered a pollutant pursuant to the Ground Water Quality Standards. \*An SOC may be considered to be in its natural location, if, by background sampling and modeling, it is shown that such SOC has migrated to that point from the place it naturally occurred.\*

"Technologically practicable means" means the best available treatment or remedial technology, from an engineering perspective; "best" means that technology which achieves the most stringent numerical values attainable for a constituent at a contaminated site or for a NJPDES-regulated discharge; "available" means field-demonstrated technology although such technology need not be in common commercial use.\*

"Toxic pollutant" means any pollutant identified pursuant to the Federal Water Pollution Control Act Amendments of 1972 (Pub.L.92-500, 33 U.S.C. §1251 et seq.), or any pollutant or combination of pollutants, including disease causing agents, which after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly or indirectly by ingestion through \*[the]\* food chain\*s\*, will, on the basis of information available to the Department, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformation, in such organisms or their offspring.

"USEPA" means the United States Environmental Protection Agency.

"Unsaturated zone" (vadose zone) means the subsurface volume between the land's surface and the top of a saturated zone \*(water table), where moisture does not fill all the pore spaces in the formation or soil]\*.

"Water quality criteria" means the designated levels or concentrations of constituents that, when not exceeded, will not prohibit or significantly impair a designated use of water. Criteria may be "specific" (listed for each constituent in Table 1), "interim specific" (derived using a standard method, for constituents not listed in Table 1), or "interim generic" (as listed for carcinogenic and non-carcinogenic Synthetic Organic Compounds in Table 2).

"Waters of the State" means the ocean and its estuaries, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of this State or subject to its jurisdiction.

"Zone of Contribution" means the volume of a geologic formation or unit that directly contributes ground water to a pumping well over time, or a Well Head Protection Area as defined by the Department pursuant to the Federal Safe Drinking Water Act, Amendments of 1986.

#### 7:9-6.5 Ground water classification system and designated uses

(a) Ground water shall be classified according to the hydrogeologic characteristics of the ground water resource and the designated use(s) which are to be maintained, restored and enhanced within the classification area. Classifications shall be regional in nature and shall not reflect localized infringements on designated uses due to natural quality or pollution incidents. Ground water users should not assume that existing ground water quality everywhere meets the criteria for classification areas established herein, in view of the potential for variations in natural quality or for localized pollution caused by human activity. Additional uses may be made of ground water in any classification area, subject to applicable Department rules, but these uses are not directly protected through this subchapter.

(b) The Department shall preferentially protect the primary designated use for each classification area, and shall protect any second-

dary designated uses to the extent that such uses are viable using water of sufficient quality for the primary use and that the primary use is not impaired.

(c) There shall be three major classes of ground water, as defined in (d) through (f) below. They are:

<u>Class I</u>	Ground Water of Special Ecological Significance
<u>Class II</u>	Ground Water for Potable Water Supply
<u>Class III</u>	Ground Water With Uses Other Than Potable Water Supply

(d) The primary designated use for Class I ground water shall be the maintenance of special ecological resources supported by the ground water within the classification area. Secondary designated uses shall be potable water, agricultural water and industrial water to the extent that these uses are viable using water of natural quality and do not impair the primary use, such as by altering ground water quality.

1. Class I-A—Exceptional Ecological Areas: Class I-A ground water shall consist of all ground waters within those classification areas, \*listed at (d)liii below or\* designated by the Department through the reclassification procedure in N.J.A.C. 7:9-6.10, which satisfy either (d)li or ii below. In addition, ground waters within those areas listed in (d)liii below are classified as Class I-A ground waters, because the Department has determined that they satisfy the requirements of either (d)li or ii below. The Department may approve a Class I-A classification area if the ground water within that area:

i. Contributes to the transmittal of ground water to surface water in FW1 watersheds; and

(1) The area involved is under government ownership (fee simple or conservation easement); or

(2) Is owned by a private entity that petitions the Department for reclassification of the property to Class I-A pursuant to N.J.A.C. 7:9-6.10; or

ii. Contributes to the transmittal of ground water to the land surface or to surface water in areas of exceptional ecological value. Areas of exceptional ecological value satisfy the conditions described in (d)lii(1), (2) or (3) below, and also satisfy the conditions described in both (d)liii(4) and (5) below:

(1) Support threatened or endangered species as determined by the United States Department of the Interior pursuant to the Endangered Species Act\*, 16 U.S.C. 1531 et seq.,\* or by the Department pursuant to the Endangered and Nongame Species Conservation Act\*, N.J.S.A. 23:2A-1 et seq.\*

(2) Support biotic communities within Natural Areas.

(3) Serve other exceptional ecological values such as being a part of or supporting state, nationally or internationally rare, threatened or endangered habitats where there is a significant risk that ground water pollution would impair or imperil the ecological values.

(4) The quality and transmittal of ground water is essential to the survival or maintenance of the exceptional ecological resource contained within the classification area.

(5) The area involved is \*of sufficient size to provide meaningful control of ground water quality to protect the target resource, based upon the biotic resource and local hydrogeology and is\* under government ownership (fee simple or conservation easement), or is owned by a private entity that petitions the Department for reclassification of the property to Class I-A pursuant to N.J.A.C. 7:9-6.10.

iii. Ground water within the following areas are herein classified as Class I-A:

(1) Watersheds of FW1 surface waters;

(2) The following Natural Areas as designated by the Department pursuant to N.J.A.C. 7:2-11:

Absegami Natural Area

Allamuchy Natural Area

Batsto Natural Area

Bearfort Mountain Natural Area

Bear Swamp East Natural Area

Black River Natural Area

Cape May Point Natural Area

Cedar Swamp Natural Area  
 Cheesequake Natural Area  
 Cook Natural Area  
 Dryden Kuser Natural Area  
 Dunnfield Creek Natural Area  
 Farny Natural Area  
 Hacklebarney Natural Area  
 Island Beach Northern Natural Area  
 Island Beach Southern Natural Area  
 Ken Lockwood Gorge Natural Area  
 Manahawkin Natural Area  
 Oswego River Natural Area  
 Parvin Natural Area  
 Ramapo Lake Natural Area  
 Rancocas Natural Area  
 Sunfish Pond Natural Area  
 Swimming River Natural Area  
 Tillman Ravine Natural Area  
 Troy Meadows Natural Area  
 Washington Crossing Natural Area  
 Wawayanda Hemlock Ravine Natural Area  
 Wawayanda Swamp Natural Area  
 Whittingham Natural Area

2. Class I-PL—Pinelands: The classification area for Class I-PL consists of all ground water in the Cohansy and Kirkwood Formations located within the pinelands area as designated by the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq. (as indicated in figure 1 in the Appendix, incorporated herein by reference), other than those ground water areas classified as Class I-A.

i. Class I-PL (Preservation Area): The primary designated use is the support and preservation of unique and significant ecological resources of the Pinelands, through the restoration, maintenance and preservation of ground water quality in its natural state. Secondary designated uses include compatible\*, indigenous\* agricultural uses in conformance with N.J.A.C. 7:50-6 et seq.\* and potable water uses.

ii. Class I-PL (Protection Area): The primary designated use is the preservation of Pinelands plant and animal species and their habitats through the protection and maintenance of the essential characteristics of Pinelands ground water quality. Secondary designated uses include potable and agricultural water.

(e) Class II ground waters have a designated use of the provision of potable ground waters with conventional water supply treatment, either at their current water quality (Class II-A) or subsequent to enhancement or restoration of regional water quality so that the water will be of potable quality with conventional water supply treatment (Class II-B). Both existing and potential potable water uses are included in the designated use.

1. Class II-A shall consist of all ground water of the State, except for ground water designated in Classes I, II-B or III. The primary designated use for Class II-A ground water shall be potable water and conversion (through conventional water supply treatment, mixing or other similar technique) to potable water. Class II-A secondary designated uses include agricultural water and industrial water.

2. Specific Class II-B areas, designated uses and constituent standards will be established through rule or through reclassification pursuant to N.J.A.C. 7:9-6.10. The designated uses of Class II-B areas generally may include any reasonable use (other than potable use). Designated uses of Class II-B ground water shall not exacerbate existing ground water pollution or impede the ability to enhance or restore the quality of the ground water so that it will be potable or convertible to potable use with conventional water supply treatment, mixing or other similar techniques. Class II-B shall consist only of ground waters:

i. That exhibit extensive exceedance of one of more of the ground water quality criteria in N.J.A.C. 7:9-6.7(c) within the proposed Class II-B area, due to past discharges of ground water pollutants;

ii. Where restoration of the ground water, where polluted, [is technologically impracticable from an engineering perspective using

best available remedial technology]\* cannot be achieved using technologically practicable means\*;

iii. Where the conditions listed in (e)2(1) through (4) below exist within the proposed Class II-B area, and there is no indication in the projections of the Department, public water supply systems serving the area, or municipalities of the area that those conditions will cease to exist within the next 25 years:

(1) No public community water supply well or Zone of Contribution for such a well exists;

(2) Less than five percent of the potable water supply for the [overall]\* area [subject to the petition\* is derived from ground water from within the proposed Class II-B\* area;

(3) Less than five percent of the potable water supply for any municipality (or portion thereof)\* within the Class II-B area\*[)]\* is derived from ground water from within the proposed Class II-B\* area; and

(4) No significant concentration of domestic water supply wells exists;

iv. Where no significant risk of pollution migration into Class I or II-A areas exists; [and]\*

v. Where a reliance on natural attenuation processes [can be relied on over the vast majority of the area\* for the restoration of ground water quality [for criteria identified pursuant to (e)2i above and\* does not pose a significant risk to public health\*, safety\* [or]\* and\* welfare [or ecological systems.]\*\*; and\*

\*vi. Where the reclassification requirements of N.J.A.C. 7:9-6.10 are met.\*

### 3. Class II-B Classification Areas—(Reserved)

(f) The Class III ground waters are not suitable for potable water due to natural hydrogeologic characteristics or natural water quality. Class III includes geologic formations or units that are aquitards or have a natural quality that is unsuitable for conversion to potable water (for example, saline ground water).

1. Class III-A ground water consists of ground water in\* those aquitards that are described below. The primary designated use for Class III-A ground water is the release or transmittal of ground water to adjacent classification areas and surface water, as relevant. Secondary designated uses in Class III-A include any reasonable uses. Class III-A ground water includes portions of the saturated zones (that meet the criteria below) of the Woodbury Formation, Merchantville Formation, Marshalltown Formation, Navesink Formation, Hornerstown Formation, aquitard formations of the Potomac-Raritan-Magothy aquifer system and the Kirkwood aquifer system, [and]\* portions of the glacial moraine and glacial lake deposits, [and other geologic units having the characteristics of an aquitard,\* excepting Class I areas. These named\* aquitards (excluding glacial units) outcrop approximately in municipalities depicted in Figure 2 in the Appendix. [Aquitards included within Class III-A]\* Class III-A areas shall have the following characteristics\*:

i. Average at least 50 feet in thickness within the Class III-A area;

ii. Have a typical hydraulic conductivity of approximately 0.1 ft/day or less within the Class III-A area; and

iii. Have an areal extent within the Class III-A area of at least 100 acres.

\*2. Any interested party may provide evidence to the Department to demonstrate that an area meets the descriptive criteria of Class III-A. Upon review and verification of such evidence the Department may provide concurrence that the Class III-A classification applies to the area of interest.\*

\*[2.]\*3. Class III-B ground water consists of all geologic formations or units which contain ground water having natural concentrations\* or regional concentrations\* (through the action of salt-water intrusion) [concentrations]\* exceeding 3,000 mg/l Chloride or 5,000 mg/l Total Dissolved Solids, or where the natural quality of ground water is otherwise not suitable for conversion to potable uses. The designated uses for Class III-B ground water consist of any reasonable uses for such ground water other than potable water, using water of existing quality. The classification area includes ground water in parts of formations as indicated in Figures 3 through 5 in the Appendix.

\*4. Class III-B areas are subject to field verification wherever necessary. Areas not indicated on the maps may also qualify as Class III-B, subject to Department concurrence through an applicable regulatory program.\* The precise borders of Class III-B areas shall be confirmed using site specific data in the context of applicable regulatory programs. \*Any interested party may provide evidence to the Department to demonstrate that an area meets the descriptive criteria of Class III-B. Upon review and verification of such evidence the Department may provide concurrence that the Class III-B classification applies to the area of interest.\*

#### 7:9-6.6 Exceptions to the classification system

(a) The Department may establish a Classification Exception Area [where]\* \*only when\* the Department determines that constituent standards for a given classification are not being met or will not be met in a localized area due to: natural quality; localized effects of a discharge approved through a NJPDES permit action; pollution caused by human activity within a contaminated site as defined by the Department in the context of an applicable regulatory program \*(for example, Site Remediation Program Oversight Document)\*; or an ACL as approved by the Department pursuant to NJPDES. \*[The]\* \*In the context of an applicable regulatory program, the\* Department shall determine or describe appropriate boundaries for each Classification Exception Area \*and include the written description of the boundaries in the appropriate oversight document or permit action along with\*[, and]\* \*specifications as to which\* \*[the]\* constituents \*[to which]\* the exception applies. \*[Violations of constituent standards for which the above considerations do not apply shall not constitute a valid purpose for a Classification Exception.]\* \*Classification Exception Areas may only be established when constituent standards are not being met or will not be met due to the conditions set forth above and shall not be established for the purpose of sanctioning violations of constituent standards.\*

(b) Where natural quality for any constituent contravenes the criteria established in N.J.A.C. 7:9-6.7 such that the primary designated use is not viable within a limited area, the Department may establish a Classification Exception Area within which the Department shall define appropriate designated uses and constituent standards, based upon the natural quality. Such Classification Exception Areas shall remain in effect as long as the primary designated use of the original classification area is not viable using ground water at natural quality.

(c) Where the Department defines, through a NJPDES permit action, an area of temporary noncompliance with specific constituent standards related to the localized effects of a permitted discharge, the ground water within that area of noncompliance shall be a Classification Exception Area for those constituents only. \*All other constituent standards shall apply within the Classification Exception Area.\* All designated uses in these Classification Exception Areas will be suspended during the life of the Classification Exception Area. Constituent standards of the surrounding classification area shall apply at the perimeter of the Classification Exception Area for the specified constituents. \*[All other constituent standards shall apply within the Classification Exception Area.]\* The Classification Exception Area shall have the same life as the approved NJPDES permit action, after which the original classification, designated uses and constituent standards shall apply.

(d) Where a discharge has resulted or will result in localized ground water quality that contravenes one or more constituent standards, the Department may define that area as a Classification Exception Area for specified constituents pursuant to (or in accordance with) a NJPDES permit action or a Department-approved remedial action in the context of an applicable regulatory program. \*All other constituent standards shall apply within the Classification Exception Area.\* All designated uses in each Classification Exception Area will be suspended during the life of the Classification Exception Area. Constituent standards of the surrounding classification area shall apply at the perimeter of the Classification Exception Area for the specified constituents.

\*[All other constituent standards shall apply within the Classification Exception Area.]\* The Department shall restrict or require the restriction of potable ground water uses within any Classification

Exception Area where there is or will be an exceedance of the Primary Drinking Water Quality Standards (in N.J.A.C. 7:10). \*Where the Department defines the Classification Exception Area through a NJPDES permit action, the Classification Exception Area shall have the same life as the approved NJPDES permit action, after which the original classification, designated uses and constituent standards shall apply. Other\* \*[The]\* regulatory action\*s\* creating the Classification Exception Area shall specify the longevity of the exception, after which the original classification, designated uses and constituent standards shall be applicable.

#### 7:9-6.7 Ground water quality criteria

(a) Ground water quality criteria for Class I-A areas shall be the natural quality for each constituent. Class I-A is a nondegradation classification where natural quality shall be maintained or restored. The Department shall not approve any discharge to ground water nor approve any human activity which results in a degradation of natural quality within a Class I-A classification area.

(b) Ground water quality criteria for Class I-PL are as follows:

1. Within Class I-PL (Preservation Area), ground water quality criteria shall be the natural quality for each constituent. Class I-PL (Preservation Area) is a nondegradation classification in which natural quality shall be maintained or restored. The Department shall not approve any discharge or any other activity which would result in the degradation of natural quality within a Class I-PL (Preservation Area) classification area. However, the provisions of this paragraph (b)1 shall not apply to \*[indigenous agricultural]\* activities \*that are in conformance with N.J.A.C. 7:50-6 et seq\*.

2. Ground water quality criteria for Class I-PL (Protection Area) shall be the [existing]\* \*background\* water quality. The Department shall not approve any discharge or any other activity which would result in the degradation of background water quality in the Class I-PL (Protection Area) classification area. However, the provisions of this paragraph (b)2 shall not apply to \*activities that are in conformance with N.J.A.C. 7:50-6 et seq.\* \*[agricultural activities, nor shall they be deemed to prohibit to discharges or activities that would result in ground water having a concentration of nitrate (N-NO<sub>3</sub>) of 2.0 milligrams per liter (mg/l) or less, where those discharges or activities are otherwise consistent with the Class I-PL (Protection Area) criteria.]\*

3. The Department shall not approve any discharge to ground water within the Class I-PL classification area which results in a violation of the Surface Water Quality Standards applicable to the Pinelands National Reserve, as established in N.J.A.C. 7:9-4 or successor rules.

(c) Ground water quality criteria for Class II-A are as follows:

1. Specific criteria for ground water quality in Class II-A areas are listed in Table 1 in the Appendix.

2. Where a specific criterion is not listed for a constituent in Table 1, the Department may establish interim specific criteria for Class II-A ground water based upon the weight of evidence available regarding each constituent's carcinogenicity, toxicity, public welfare or organoleptic effects, as appropriate for the protection of the potable water use. Interim specific criteria may be established \*on a\* case by case \*basis\* using the methods listed in (c)3 below, which are the same methods applied to the development of the specific criteria in Table 1. Interim specific criteria shall be replaced with specific criteria as soon as reasonably possible by rule.

3. Interim specific criteria may be derived by the Department for any constituent, in accordance with the methodologies in (c)5 below, and using the risk assessment approach in (c)4 below. The Department shall maintain and make available to the public a listing of all interim specific criteria and the supplemental information used in their derivation.

i. The human health-based criteria are derived from the toxicity factor (carcinogenic potency slope or Reference Dose), the exposure assumptions for drinking water and a relative source contribution factor (for non-carcinogens) which is used to account for the contribution from other sources of exposure including air and food. The Department assumes a 20 per cent relative source contribution factor when sufficient quantitative data are not available on the contribu-

tion of each source of exposure. Data sources for carcinogenic potency slope or Reference Dose shall be used in the following \*hierarchy\* \*order of priority\*:

(1) Information which forms the basis for drinking water standards adopted by the Department pursuant to the Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq;

(2) The United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS) data base;

(3) The USEPA's Health Effects Assessment Summary Tables (HEAST);

(4) The Department may develop health-based criteria which differ from those based on the sources cited in (c)3i (1) through (3) above if warranted by convincing scientific evidence. For contaminants which are not addressed in the sources cited in (c)3i (1) through (3) above, the Department may develop health-based criteria based on review of pertinent scientific data.

ii. The final calculations are rounded to one significant figure for deriving the criteria for each chemical.

4. The risk assessment approach for derivation of the health-based criteria for each contaminant will be determined by its strength of evidence (see 50 FR 46880, 46884-86 (1985), National Primary Drinking Water Regulations, Volatile Synthetic Organic Chemicals, and any successor documents) for human carcinogenicity, the risk levels given below, and the exposure assumptions and models listed in (c)3 above.

i. For contaminants classified in Group A or Group B, the Class II-A criteria are calculated from the potency factor based on additional lifetime cancer risk of  $1 \times 10^{-6}$ .

ii. For contaminants classified in Group C, the Class II-A criteria are calculated by application of an additional uncertainty factor of 10 to the chronic reference dose. If no reference dose is available from the sources cited in (c)3i above, the Class II-A criteria are calculated from the potency factor or unit risk factor based on additional lifetime cancer risk of  $1 \times 10^{-5}$ .

iii. For contaminants classified in Group D or Group E, the Class II-A criteria are calculated from the chronic reference dose.

iv. For lead, the Department has determined that a Class II-A criterion of five ug/L is appropriate as a conservative application of the regulations of the United States Environmental Protection Agency seeking a maximum concentration of five ug/L in drinking water subsequent to treatment.

\*[v. For polycyclic aromatic hydrocarbons classified in Group A or Group B, the general risk assessment approach given in (c)4i above applies except that the potency factor used for benzo(a)pyrene and dibenz(a,h)anthracene will be that of benzo(a)pyrene, while other such polycyclic aromatic hydrocarbons will use a potency factor of one-tenth that of benzo(a)pyrene.]\*

5. The following equations shall be used for the derivation of interim specific criteria for each constituent:

i. For Carcinogens:

$$\text{Criterion} = \frac{(1 \times 10^{-6}) \times 70 \text{ kg} \times 1000 \text{ ug/mg}}{q_1^* (\text{mg/kg/day})^{-1} \times (2 \text{ L/day})}$$

Where:

- $1 \times 10^{-6}$  = upper bound lifetime excess cancer risk ( $1 \times 10^{-5}$  used for Group C chemicals lacking RfD)
- 70 kg = assumed weight of average adult
- $q_1^*$  = carcinogenic potency factor (mg/kg/day)<sup>-1</sup>
- 2 L/day = assumed daily water consumption
- $q_1^*$  = Risk/Dose

$$q_1^* (\text{mg/kg/day})^{-1} = \frac{1 \times 10^{-6}}{\text{animal dose (mg/kg/day)} \times (W_A/W_H)^{1/3}}$$

Where:

- $1 \times 10^{-6}$  = risk level
- animal dose = dose to experimental animals predicted to result in  $1 \times 10^{-6}$  risk
- $(W_A/W_H)^{1/3}$  = factor for extrapolating from animals to humans based on body surface area

$W_A$  = assumed weight of animal:  
for mice - 0.03 kg  
for rats - 0.35 kg

$W_H$  = assumed weight of human = 70 kg  
For mice  $(W_A/W_H)^{1/3} = 0.075$   
For rats  $(W_A/W_H)^{1/3} = 0.17$

ii. For non-carcinogens:

$$\text{Criterion} = \frac{\text{RfD (mg/kg/day)} \times 70 \text{ kg} \times 1000 \text{ ug/mg} \times \text{RSC}}{2 \text{ L/day}}$$

Where:

- RfD = Reference Dose
- 70 kg = assumed weight of average adult
- RSC = relative source contribution
- 2 L/day = assumed daily water consumption

6. Where no specific criterion exists for a Synthetic Organic Chemical, the interim generic criteria for Synthetic Organic Chemicals in Table 2 in the Appendix shall apply until an interim specific criterion has been established \*in accordance with (c)1, 2, 3, 4, and 5 above\*.

(d) The ground water quality criteria for Class II-B ground waters shall be the Class II-A criteria.

\*[(e) Ground water quality criteria for Class III areas are as follows:]\*

\*[1.]\*\*\*(e)\* The ground water quality criteria for Class III-A areas\* shall be the criteria of the most stringent classification for vertically or horizontally adjacent ground waters that are not Class III-A, unless the Department concludes (in the context of an applicable regulatory program) that there is no significant potential for the migration of ground water pollutants to that classification area. If there is significant potential for pollutant migration, the criteria shall be those of the classification area determined to be downgradient of the Class III-A area. [Otherwise]\* \*If there is no significant potential for pollutant migration\*, criteria shall be determined for such Class III-A areas on a case by case basis in the context of applicable regulatory programs. In each case \*where there is no significant potential for pollutant migration\*, the criteria shall be [the least]\* \*no more\* stringent [criteria that will]\* \*than necessary to\* ensure that there will be no:

- \*[i.]\*\*1.\* Impairment of existing uses of the ground water;
- \*[ii.]\*\*2.\* Resulting violation of Surface Water Quality Standards;
- \*[iii.]\*\*3.\* Release of pollutants to the ground surface, structures or air in concentrations that pose a threat to human health;
- \*[iv.]\*\*4.\* Reasonable potential for a change in hydraulic gradient that could cause pollutants to migrate from the Class III-A area to any classification area other than Class III.

\*[2.]\*\*\*(f)\* The ground water quality criteria for Class III-B areas\* shall be determined on an area by area basis in response to case by case needs, in the context of applicable regulatory programs. In each case, the criteria shall be [the least]\* \*no more\* stringent [criteria that will]\* \*than necessary to\* ensure that there will be no:

- \*[i.]\*\*1.\* Impairment of existing uses of ground water;
- \*[ii.]\*\*2.\* Resulting violation of Surface Water Quality Standards;
- \*[iii.]\*\*3.\* Release of pollutants to the ground surface, structures or air in concentrations that pose a threat to human health;
- \*[iv.]\*\*4.\* Violation of constituent standards for downgradient classification areas to which there is a significant potential for migration of ground water pollutants.

\*[(f)]\*\*\*(g)\* Where ground water that receives pollutants from a discharge(s) subsequently flows to surface waters, the Department shall regulate such discharges as necessary so as not to exceed the Surface Water Quality Standards applicable to that body of surface water. The discharger may request application of only the ground water quality standards by showing, to the satisfaction of the Department, and in the context of the applicable regulatory procedure, that the flow of ground water pollutants into the surface water will not cause a violation of the Surface Water Quality Standards.

\*[(g)]\*(h)\* For constituents for which specific or interim specific criteria have been derived, the Department may evaluate potential toxicological interactions between or among contaminants in ground water by the sum of the risk levels of contaminants with health-based criteria that are based on carcinogenic risk, and by utilizing the hazard index approach described in the USEPA Guidelines for the Health Risk Assessment of Chemical Mixtures (51 FR 34014 (1986), and any subsequent revisions) for noncarcinogens. Additional actions and more stringent criteria may be required when either of the following conditions exist:

1. The total risk level for all Group A or Group B contaminants present in ground water exceeds  $1 \times 10^{-6}$ ; or

2. There is a Hazard Index of greater than one for non-carcinogenic effects.

\*[(h)]\*(i)\* The Department shall regulate discharges for compliance with each specific, interim specific and generic criterion applicable to the discharge pursuant to this section.

#### 7:9-6.8 Antidegradation policy

(a) The Department shall protect from significant degradation ground water which is of better quality than the criteria in N.J.A.C. 7:9-6.7. Antidegradation limits shall be used as the basis for the development of constituent standards applicable to discharges, as modified by N.J.A.C. 7:9-6.9(a) and (b). Where the concentration of a constituent at background water quality currently contravenes the criteria in N.J.A.C. 7:9-6.7, no further degradation of ground water quality shall be allowed for that constituent.

(b) \*[Antidegradation]\* For constituents whose concentrations in background water quality are less than the ground water quality criteria in N.J.A.C. 7:9-6.7 (excluding those constituents whose criteria are expressed as a range of concentrations), the anti-degradation\* limits shall be determined\*[, for the regulation of a discharge, as the]\* \*by adding to\* background water quality concentration \*[plus a percentage of]\* the difference between the \*ground water quality\* criterion and the background water quality concentration \*times the following percentages for each of the corresponding classes of ground water as follows\*[, for each constituent. The following percentages shall be used]\*:

Class I-A	0%
Class I-PL	0%
*[Class II-A	50%
Class II-B	100% (See (c) below)
Class III	Not applicable]*

\*The calculation of antidegradation limits may be represented by the following formula:

Constituent Standard =  $BWQ + (GWQC - BWQ) \times \%$   
where BWQ is the background water quality for a given constituent, GWQC is the ground water quality criterion and % is the antidegradation factor given above.\*

(c) The antidegradation limit\*s\* for Class II-B \*[is]\* \*are\* equal to the Class II-B criteria stated in N.J.A.C. 7:9-6.7(d). \*Where the concentration of a constituent at background water quality currently contravenes the criteria, no further degradation of ground water quality shall be allowed for that constituent.

(d) The antidegradation limits for Class III-A are equal to the Class III-A criteria established pursuant to N.J.A.C. 7:9-6.7(e).

(e) The antidegradation limit for Class III-B is equal to the Class III-B criteria established pursuant to N.J.A.C. 7:9-6.7(f).\*

#### 7:9-6.9 Constituent standard modifications and practical quantitation levels

(a) When constituents at background water quality exceed the criteria in N.J.A.C. 7:9-6.7, the Department shall consider the following modifications in the development of constituent standards in the context of applicable regulatory programs:

1. For discharges that derive their source water from directly upgradient of the discharge, the constituent standards shall not be more stringent than the background water quality (that is, the source water quality);

2. For other discharges:

i. In areas where the criteria for the constituent are exceeded within the area due to natural quality, the constituent standards shall be established as the background water quality.

ii. In other areas, the constituent standards shall be established such that the volume and concentration of ground water exceeding the criteria are not increased by discharges.

(b) The Department may define Classification Exception Areas as provided for in N.J.A.C. 7:9-6.6 within which the provisions of N.J.A.C. 7:9-6.7, 6.8 and (a) above do not apply regarding specified constituents.

(c) Where a constituent standard (the criterion as adjusted by the antidegradation policy and applicable criteria exceptions); is of a lower concentration than the relevant PQL (Table \*[3]\*\*1\* in the Appendix), the Department shall not (in the context of an applicable regulatory program) consider the discharge to be causing a contravention of that constituent standard so long as the concentration of the constituent in the affected ground water is less than the relevant PQL.

1. Where interim specific criteria are derived by the Department, interim PQLs shall also be derived for those constituents as appropriate.

2. No PQLs other than those listed in Table \*[3]\*\*1\* in the Appendix are applicable to or shall be derived for interim generic criteria.

3. Selection and derivation of PQLs shall be as follows:

i. PQLs shall be rounded to one significant figure using standard methods.

ii. PQLs listed in Table \*[3]\*\*1\* were, and additional PQLs shall be, derived or selected for each constituent using the most sensitive analytical method providing positive constituent identification from (c)3ii (1) through (5) below, in that order of preference:

(1) PQLs for a specific constituent and analytical method using the USEPA 500 series methods, which PQLs were derived through scientific studies conducted by the Department in support of the Safe Drinking Water Program;

(2) PQLs for a specific constituent and analytical method using the USEPA 500 series or 600 series methods (in order of preference, and provided that the method is currently in use by Department-certified laboratories), which PQLs were adopted by the USEPA in support of the Safe Drinking Water Program;

(3) PQLs derived by multiplying times a factor of five, a median, Interlaboratory Method Detection Limit (MDL). The Interlaboratory MDL is derived from verified MDL data from Department-certified laboratories for the USEPA 500 series or 600 series methods (in order of preference);

(4) PQLs derived by multiplying times a factor of 10, the MDL published by EPA for a specific constituent and analytical method for the USEPA 500 series or 600 series methods (in order of preference);

(5) PQLs for aqueous matrices published by EPA in "Test Method for Evaluating Solid Waste," Publication SW846, Third Edition, November 1986, and successor publications, incorporated herein by reference.

iii. The Department may approve an alternative PQL. An alternative PQL shall be approved when the evidence (in the context of an applicable regulatory program) establishes that:

(1) Based upon site-specific, ground water matrix considerations, a PQL listed in Table \*[3]\*\*1\* for a constituent is not valid;

(2) An alternative PQL is more appropriate for that constituent with regard to compliance with this subchapter;

(3) The alternative PQL has been determined through rigorous laboratory analysis using methods appropriate to the site-specific ground water matrix and constituent(s), including, without limitation, the derivation of an MDL using the methodology specified by Appendix B of 40 CFR Part 136; and

(4) The alternative PQL does not result in nondetection of any target constituent due to masking effects of other target constituents, non-target constituents, or natural substances.

iv. The approval of an alternative PQL shall be applicable to the regulation of ground water quality affected by the discharge for

which it is derived, and its approval and utilization shall be subject to the same procedural requirements as any other aspect of the regulatory decision.

4. Where ground water pollutants affect surface water quality within the meaning of N.J.A.C. 7:9-6.7\*(f)\*\*(g)\*, more sensitive analytical techniques such as bioassays or bioaccumulation assays may be required by the Department.

#### 7:9-6.10 Procedures for reclassification of ground water

(a) Reclassification of ground water areas shall be accomplished through rulemaking in accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq.

(b) Any interested person may seek to have \*[a]\* \*any\* ground water area reclassified by filing a petition with the Department. For the purposes of this subsection, interested persons shall include, but not be limited to:

1. Any State, county or municipal governmental entity with jurisdiction over the area that is proposed for reclassification; and

2. Any person residing or discharging in the area that is proposed for reclassification.

(c) Petitions shall comply with and shall be reviewed in compliance with N.J.S.A. 52:14B-4 and N.J.A.C. 7:1-1.2.

(d) For purposes of this subsection, ground water areas subject to petition for reclassification shall constitute at least a significant portion of one or more geologic units or formations. In no event shall a reclassification area consist only of an area underlying property owned by a single person \*(except in the case of reclassification to and from Class I-A)\*, an area affected only by one discharge, or an area affected only by a set of discharges owned or controlled by a single person.

(e) In setting forth the reasons for its petition, the petitioner shall describe the proposed reclassification area (both lateral and vertical), and shall include appropriate ground water quality and hydrogeologic analyses, as well as statements regarding the environmental, economic and social impacts of the proposed reclassification.

(f) In \*[determining whether]\* \*order\* to grant a petition to propose a rule amendment to apply a more stringent classification to a ground water area, the Department \*[shall consider whether]\* \*must find that\* the petitioner has established that the subject area has the characteristics of the more stringent classification.

(g) In \*[determining whether]\* \*order\* to grant a petition to propose a rule amendment to apply a less stringent classification to a ground water area, the Department \*[shall consider whether]\* \*must find that\* the petitioner has established that:

1. The designated use cannot be maintained in the subject area \*[because of the widespread exceedance of one or more of the criteria set forth in N.J.A.C. 7:9-6.7 within the subject area]\*;

\*[2. The exceedances cannot be remedied using the best available demonstrated technology];\*

\*[3.]\*2. Based upon an analysis of background water quality of constituent standards in downgradient areas and of ground water flow vectors and gradients, contaminant attenuation, flow barriers and potential for induced movement, the \*[The]\* reclassification will not result in significant risk \*[or]\* \*of the following\*:

\*i.\* \*[impairment]\* \*Impairment\* to existing uses of ground water\*[, to]\* \*or significant potential for pollutant migration to\* downgradient classification areas\*;

\*ii. Degradation of\* \*[to]\* downgradient surface water\*[s]\* \*quality in violation of the surface water quality standards\*;

\*iii. Degradation of\* \*[to]\* the \*quality of\* source water for public water supply wells \*in violation of the provisions of N.J.A.C. 7:9-6.7, 6.8 and 6.9\*;

\*iv. Significant threats\* to public health, safety and welfare; and

\*[4.]\*3. The subject area has the characteristics of the less stringent classification.

(h) The petitioner shall provide public notice of the petition by mailing a copy of a summary of the petition, including all subsequent amendments, to:

1. All owners of residences or facilities identified by local health officials or by the petitioner during the preparation of the petition as operators of wells in the subject area;

2. The mayor or governing body, and the planning board and environmental commission of all municipalities in which any part of the subject area is located;

3. All public water systems utilizing ground or surface water from the subject area;

4. All local or county health agencies with jurisdiction over any part of the subject area; and

5. Any other interested party who requests a copy of the petition summary in writing to either the Department or the petitioner.

(i) The petitioner shall cause public newspaper notice of the petition to be published, in two daily, and one weekly, newspapers (if available) that are distributed in the municipalities of the subject area, which notice shall include a brief summary of the petition.\*

#### 7:9-6.11 Severability

If any provision of this subchapter or any application of any such provision is held to be invalid, such invalidity shall not affect any other provision or application, and to this end, the provisions of this subchapter are declared to be severable.

\*TABLE 1  
SPECIFIC GROUND WATER QUALITY CRITERIA: CLASS II-A

Constituent	CASRN	Criteria (ug/L)*
Acenaphthene	83-32-9	400
Acetone	67-64-1	700
Acrylamide	79-06-1	0.008
Acrylonitrile	107-13-1	0.06
Adipates (Di(ethylhexyl)adipate)	103-23-1	5,000
Alachlor	15972-60-8	0.43
Aldicarb sulfone	1646-88-4	2
Aldrin	309-00-2	0.002
Aluminum	7429-90-5	50 to 200
Ammonia		500
Anthracene	120-12-7	2000
Antimony	7440-36-0	2
Arsenic (Total)	7440-38-2	0.02
Asbestos	1332-21-4	7x10 <sup>-6</sup> /L > 10um*
Atrazine	1912-24-9	3
Barium	7440-39-3	2,000
Benz(a)anthracene	56-55-3	0.03
Benzene	71-43-2	0.2
Benzidine	92-87-5	0.0002
Benzyl Alcohol	100-51-6	2000
Benzo(a)pyrene (BaP)	50-32-8	0.003
3,4-Benzofluoranthene		
(Benzo(b)fluoranthene)	205-99-2	0.03
Benzo(k)fluoranthene	207-08-9	0.03
Beryllium	7440-41-7	0.008
alpha-BHC (alpha-HCH)	319-84-6	0.006
beta-BHC (beta-HCH)	319-85-7	0.2
gamma-BHC (gamma-HCH/Lindane)	58-89-9	0.2
Bis(2-chloroethyl) ether	111-44-4	0.03
Bis(2-chloroisopropyl) ether	39638-32-9	300
Bis(2-ethylhexyl) phthalate	117-81-7	3
Bromodichloromethane		
(Dichlorobromomethane)	75-27-4	0.3
Bromoform	75-25-2	4
Butylbenzyl phthalate	85-68-7	100
Cadmium	7440-43-9	4
Carbofuran	1563-66-2	40
Carbon tetrachloride	56-23-5	0.4
Chlordane	57-74-9	0.01
Chloride	16887-00-6	250,000
Chlorobenzene	108-90-7	5

ENVIRONMENTAL PROTECTION

101620

ADOPTIONS

Chloroform	67-66-3	6	Iron	7439-89-6	300
2-Chlorophenol	95-57-8	40	Isophorone	78-59-1	100
Chlorpyrifos	2921-88-2	20	Lead (Total)	7439-92-1	5
Chromium (Total)	7440-47-3A	100	Malathion	121-75-5	200
Chrysene	218-01-9	0.03	Manganese	7439-96-5	50
Color		10 color units	Mercury (Total)	7439-97-6	2
Copper	7440-50-8	1,000	Methoxychlor	72-43-5	40
Corrosivity		Non-corrosive	Methyl bromide (bromomethane)	74-83-9	10
Cyanide	57-12-5	200	Methyl chloride (chloromethane)	74-87-3	30
2,4-D	94-75-7	70	Methyl ethyl ketone	78-93-3	300
Dalapon	75-99-0	200	Methylene chloride	75-09-2	2
4,4'-DDD (p,p'-TDE)	72-54-8	0.1	4-Methyl-2-pentanone	108-10-1	400
4,4'-DDE	72-55-9	0.1	Mirex	2385-85-5	0.01
4,4'-DDT	50-29-3	0.1	Nickel (Soluble salts)	7440-02-0	100
Demeton	8065-48-3	0.3	Nitrate (as N)	14797-55-8	10,000
Dibenz(a,h)anthracene	53-70-3	0.003	Nitrate and Nitrite (as N)		10,000
Dibromochloromethane (Chlorodibromomethane)	124-48-1	10	Nitrite (as N)	14797-65-0	1,000
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.002	Nitrobenzene	98-95-3	3
Di-n-butyl phthalate	84-74-2	900	N-Nitrosodimethylamine	62-75-9	0.0007
1,2-Dichlorobenzene	95-50-1	600	N-Nitrosodiphenylamine	86-30-6	7
1,3-Dichlorobenzene	541-73-1	600	N-Nitrosodi-n-propylamine	621-64-7	0.005
1,4-Dichlorobenzene	106-46-7	75	Odor		3 <sup>b</sup>
3,3'-Dichlorobenzidine	91-94-1	0.08	Oil & Grease and Petroleum Hydrocarbons (PHC)		None Noticeable
1,1-Dichloroethane	75-34-3	70	Oxamyl	23135-22-0	200
1,2-Dichloroethane	107-06-2	0.3	PCBs (Polychlorinated biphenyls)	1336-36-3	0.02
1,1-Dichloroethylene	75-35-4	1	Pentachlorophenol	87-86-5	0.3
cis-1,2-Dichloroethylene	156-59-2	10	pH		6.5-8.5
trans-1,2-Dichloroethylene	156-60-5	100	Phenol	108-95-2	4000
2,4-Dichlorophenol	120-83-2	20	Picloram	1918-02-1	500
1,2-Dichloropropane	78-87-5	0.5	Pyrene	129-00-0	200
1,3-Dichloropropene (cis and trans)	542-75-6	0.2	Selenium (Total)	7782-49-2	50
Dieldrin	60-57-1	0.002	Silver	7440-22-4	20
Diethyl phthalate	84-66-2	5,000	Simazine	122-34-9	1
2,4-Dimethylphenol	105-67-9	100	Sodium	7440-23-5	50,000
Dimethyl phthalate	131-11-3	7,000	Styrene	100-42-5	100
2,4-Dinitrophenol	51-28-5	10	Sulfate	14808-79-8	250,000
2,4-Dinitrotoluene/2,6-Dinitrotoluene mixture	121-14-2	0.05	Taste		None Noticeable
Di-n-octyl phthalate	117-84-0	100	TCDD (2,3,7,8-Tetrachlorodibenzo-p- dioxin)	1746-01-6	0.0000002
Dinoseb	88-85-7	7	1,1,1,2-Tetrachloroethane	630-20-6	10
1,2-Diphenylhydrazine	122-66-7	0.04	1,1,2,2-Tetrachloroethane	79-34-5	2
Diquat	85-00-7	20	Tetrachloroethylene	127-18-4	0.4
Endosulfan	115-29-7	0.4	Thallium	7440-28-0	0.5
alpha-Endosulfan (Endosulfan I)	959-98-8	0.4	Toluene	108-88-3	1,000
beta-Endosulfan (Endosulfan II)	33213-65-9	0.4	Total dissolved solids (TDS)		500,000
Endosulfan sulfate	1031-07-8	0.4	Toxaphene	8001-35-2	0.03
Endothall	145-73-3	100	2,4,5-TP	93-72-1	50
Endrin	72-20-8	2	1,2,4-Trichlorobenzene	120-82-1	9
Epichlorohydrin	106-89-8	4	1,1,1-Trichloroethane	71-55-6	30
Ethylbenzene	100-41-4	700	1,1,2-Trichloroethane	79-00-5	3
Ethylene dibromide	106-93-4	0.0004	Trichloroethylene	79-01-6	1
Fluoranthene	206-44-0	300	2,4,5-Trichlorophenol	95-95-4	700
Fluorene	86-73-7	300	2,5,6-Trichlorophenol	88-06-2	3
Fluoride	16984-48-8	2000	Vinyl chloride	75-01-4	0.08
Foaming agents (ABS/LAS)		500	Xylenes (Total)	1330-20-7	40
Glyphosate	1071-83-6	700	Zinc	7440-66-6	5,000
Hardness (as CaCO <sub>3</sub> )		50 < H < 250mg/L	Microbiological criteria, * <u>Radionuclides &amp;</u> * <u>Turbidity</u>		<u>prevailing Safe Drinking Water Act Regulations (N.J.A.C. 7:10-1 et seq.)</u>
Heptachlor	76-44-8	0.008			
Heptachlor epoxide	1024-57-3	0.004			
Hexachlorobenzene	118-74-1	0.02			
Hexachlorobutadiene	87-68-3	1			
Hexachlorocyclopentadiene	77-47-4	50			
Hexachloroethane	67-72-1	0.7			
Hydrogen sulfide	7783-06-4	20			
Indeno(1,2,3-cd)pyrene	193-39-5	0.03			

Explanation of Terms

- a = Asbestos criterion is measured in terms of fibers/L longer than 10 micrometers ( $f/L > 10 \mu m$ )
- b = Odor Threshold Number
- \* = Criteria are expressed as ug/L unless otherwise noted.

- ug = micrograms
- mg = milligrams
- L = liter
- f = fibers
- ^ = CASRN of chromium VI
- H = Hardness]\*

**\*TABLE 1**  
**SPECIFIC GROUND WATER QUALITY CRITERIA--CLASS II-A AND PRACTICAL QUANTITATION LEVELS**

Constituent	CASRN	Ground Water Quality Criteria*	Practical Quantitation Levels (PQLs)*	Higher of PQLs and Ground Water Quality Criteria (ug/L)*
Acenaphthene	83-32-9	400	10	400
Acenaphthylene	208-96-8	NA	10	NA
Acetone	67-64-1	700	NA	700
Acrolein	107-02-8	NA	50	NA
Acrylamide	79-06-1	0.008	NA	0.008
Acrylonitrile	107-13-1	0.06	50	50
Adipates (Di(ethylhexyl)adipate)	103-23-1	[5,000]	6	[5,000]
Alachlor	15972-60-8	0.43	2	2
Aldicarb sulfone	1646-88-4	2	3	3
Aldrin	309-00-2	0.002	0.04	0.04
Aluminum	7429-90-5	[50 to] 200	200	200
Ammonia		500	200	500
Anthracene	120-12-7	2000	10	2000
Antimony	7440-36-0	2	20	20
Arsenic (Total)	7440-38-2	0.02	8	8
Asbestos	1332-21-4	$7 \times 10^6/f/L > 10 \mu m^*$	$10^5/f/L > 10 \mu m^*$	$7 \times 10^6/f/L > 10 \mu m^*$
Atrazine	1912-24-9	3	1	3
Barium	7440-39-3	2,000	200	2000
Benz(a)anthracene	56-55-3	[0.03]	10	[10]
Benzene	71-43-2	0.2	1	1
Benzidine	92-87-5	0.0002	50	50
Benzyl Alcohol	100-51-6	2000	NA	2000
Benzo(a)pyrene (BaP)	50-32-8	[0.003]	20	[20]
3,4-Benzofluoranthene (Benzo(b)fluoranthene)	205-99-2	[0.03]	10	[10]
Benzo(ghi)perylene	191-24-2	NA	20	NA
Benzo(k)fluoranthene	207-08-9	[0.03]	2	[2]
Beryllium	7440-41-7	0.008	20	20
alpha-BHC (alpha-HCH)	319-84-6	0.006	0.02	0.02
beta-BHC (beta-HCH)	319-85-7	0.2	0.04	0.2
gamma-BHC (gamma-HCH/Lindane)	58-89-9	0.2	0.2	0.2
Bis(2-chloroethyl) ether	111-44-4	0.03	10	10
Bis(2-chloroisopropyl) ether	39638-32-9	300	10	300
Bis(2-ethylhexyl) phthalate	117-81-7	3	30	30
Bromodichloromethane (Dichlorobromomethane)	75-27-4	0.3	1	1
Bromoform	75-25-2	4	0.8	4
Butylbenzyl phthalate	85-68-7	100	20	100
Cadmium	7440-43-9	4	2	4
Carbofuran	1563-66-2	40	7	40
Carbon tetrachloride	56-23-5	0.4	2	2
Chlorobenzene	108-90-7	[5]4	2	[5]4
Chlordane	57-74-9	0.01	0.5	0.5
Chloride	16887-00-6	250,000	[3000]2000	250,000
Chloroform	67-66-3	6	1	6
4-Chloro-3-methyl (o-chloro-m-cresol)	59-50-7	NA	20	NA
2-Chlorophenol	95-57-8	40	20	40
Chlorpyrifos	2921-88-2	20	0.2	20
Chromium (Total)	7440-47-3[^]	100	10	100
Chrysene	218-01-9	[0.03]	20	[20]
Color		10 CU	20 CU	20 CU
Copper	7440-50-8	1,000	1,000	1,000
[Corrosivity		Non-corrosive	NA	Non-corrosive]
Cyanide	57-12-5	200	40	200

## ENVIRONMENTAL PROTECTION

2,4-D	94-75-7	70	5	70
Dalapon	75-99-0	200	10	200
4,4'-DDD (p,p'-TDE)	72-54-8	0.1	0.04	0.1
4,4'-DDE	72-55-9	0.1	0.04	0.1
4,4'-DDT	50-29-3	0.1	0.06	0.1
Demeton	8065-48-3	0.3	NA	0.3
Dibenz(a,h)anthracene	53-70-3	[0.003]	20	[20]
Dibromochloromethane (Chlorodibromomethane)	124-48-1	10	1	10
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	[0.002]	2	[2]
Di-n-butyl phthalate	84-74-2	900	20	900
1,2-Dichlorobenzene	95-50-1	600	5	600
1,3-Dichlorobenzene	541-73-1	600	5	600
1,4-Dichlorobenzene	106-46-7	75	5	75
3,3'-Dichlorobenzidine	91-94-1	0.08	60	60
1,1-Dichloroethane	75-34-3	70	NA	70
1,2-Dichloroethane	107-06-2	0.3	2	2
1,1-Dichloroethylene	75-35-4	1	2	2
cis-1,2-Dichloroethylene	156-59-2	10	2	10
trans-1,2-Dichloroethylene	156-60-5	100	2	100
2,4-Dichlorophenol	120-83-2	20	10	20
1,2-Dichloropropane	78-87-5	0.5	1	1
cis-1,3-Dichloropropene	10061-01-5	NA	5	NA
trans-1,3-Dichloropropene	10061-02-6	NA	7	NA
1,3-Dichloropropene (cis and trans)	542-75-6	0.2	NA	.02
Dieldrin	60-57-1	0.002	0.03	0.03
Diethyl phthalate	84-66-2	5,000	10	5,000
2,4-Dimethylphenol	105-67-9	100	20	100
Dimethyl phthalate	131-11-3	[7,000]	10	[7000]
4,6-Dinitro-o-cresol	534-52-1	NA	60	NA
2,4-Dinitrophenol	51-28-5	10	40	40
2,4-Dinitrotoluene/2,6-Dinitrotoluene mixture	121-14-2	0.05	10	10
2,6-Dinitrotoluene	606-20-2	NA	10	NA
Di-n-octyl phthalate	117-84-0	100	NA	100
Dinoseb	88-85-7	7	2	7
1,2-Diphenylhydrazine	122-66-7	0.04	NA	0.04
Diquat	85-00-7	20	NA	20
Endosulfan	115-29-7	0.4	NA	0.4
alpha-Endosulfan (Endosulfan I)	959-98-8	0.4	0.02	0.4
beta-Endosulfan (Endosulfan II)	33213-65-9	0.4	0.04	0.4
Endosulfan sulfate	1031-07-8	0.4	0.08	0.4
Endothall	145-73-3	100	NA	100
Endrin	72-20-8	2	0.04	2
Epichlorohydrin	106-89-8	4	NA	4
Ethylbenzene	100-41-4	700	5	700
Ethylene dibromide	106-93-4	0.0004	0.05	0.05
Fluoranthene	206-44-0	300	10	300
Fluorene	86-73-7	300	10	300
Fluoride	16984-48-8	2000	500	2000
Foaming agents (ABS/LAS)		500	0.5	500
Glyphosate	1071-83-6	700	NA	700
Hardness (as CaCO <sub>3</sub> )		[50<H<]250mg/L	10 mg/L	250 mg/L
Heptachlor	76-44-8	0.008	0.4	0.4
Heptachlor epoxide	1024-57-3	0.004	0.2	0.2
Hexachlorobenzene	118-74-1	0.02	10	10
Hexachlorobutadiene	87-68-3	1	1	1
Hexachlorocyclopentadiene	77-47-4	50	10	50
Hexachloroethane	67-72-1	0.7	10	10
Hydrogen sulfide	7783-06-4	20	NA	20
Indeno(1,2,3-cd)pyrene	193-39-5	[0.03]	20	[20]
Iron	7439-89-6	300	100	300
Isophorone	78-59-1	100	10	100
Lead (Total)	7439-92-1	5	10	10
Malathion	121-75-5	200	5	200
Manganese	7439-96-5	50	6	50
Mercury (Total)	7439-97-6	2	0.5	2

ADOPTIONS

ENVIRONMENTAL PROTECTION

Methoxychlor	72-43-5	40	10	40
Methyl bromide (bromomethane)	74-83-9	10	2	10
Methyl chloride (chloromethane)	74-87-3	30	2	30
Methyl ethyl ketone	78-93-3	300	NA	300
3-Methyl-4-chlorophenol	59-50-7	NA	20	NA
Methylene chloride	75-09-2	2	2	2
4-Methyl-2-pentanone	108-10-1	400	NA	400
Mirex	2385-85-5	0.01	NA	0.01
Nickel (Soluble salts)	7440-02-0	100	10	100
Nitrate (as N)	14797-55-8	10,000	400	10,000
Nitrate and Nitrite (as N)		10,000	NA	10,000
Nitrite (as N)	14797-65-0	1,000	400	1,000
Nitrobenzene	98-95-3	3	10	10
N-Nitrosodimethylamine	62-75-9	0.0007	20	20
N-Nitrosodiphenylamine	86-30-6	7	20	20
N-Nitrosodi-n-propylamine	621-64-7	0.005	20	20
Odor		3 <sup>b</sup>	NA	3 <sup>b</sup>
Oil & Grease and Petroleum Hydrocarbons (PHC)		None Noticeable	NA	None Noticeable
Oxamyl	23135-22-0	200	20	200
PCBs (Polychlorinated biphenyls)	1336-36-3	0.02	0.5	0.5
Pentachlorophenol	87-86-5	0.3	1	1
pH		6.5-8.5	NA	6.5-8.5
Phenanthrene	85-01-8	NA	10	NA
Phenol	108-95-2	4000	10	4000
Picloram	1918-02-1	500	1	500
Pyrene	129-00-0	200	20	200
Selenium (Total)	7782-49-2	50	10	50
Silver	7440-22-4	[20]	2	[20]
Simazine	122-34-9	1	0.8	1
Sodium	7440-23-5	50,000	400	50,000
Styrene	100-42-5	100	5	100
Sulfate	14808-79-8	250,000	5000	250,000
Taste		None Objectionable [Noticeable]	NA	None Objectionable [Noticeable]
TCDD (2,3,7,8-Tetrachlorodibenzo-p-dioxin)	1746-01-6	0.0000002	0.01	0.01
1,1,1,2-Tetrachloroethane	630-20-6	10	NA	10
1,1,2,2-Tetrachloroethane	79-34-5	2	1	2
Tetrachloroethylene	127-18-4	0.4	1	1
2,3,4,6-Tetrachlorophenol	58-90-2	NA	10	NA
Thallium	7440-28-0	0.5	10	10
Toluene	108-88-3	1,000	5	1,000
Total dissolved solids (TDS)		500,000	10,000	500,000
Toxaphene	8001-35-2	0.03	3	3
2,4,5-TP	93-72-1	50	5	50
1,2,4-Trichlorobenzene	120-82-1	9	1	9
1,1,1-Trichloroethane	71-55-6	30	1	30
1,1,2-Trichloroethane	79-00-5	3	2	3
Trichloroethylene	79-01-6	1	1	1
2,4,5-Trichlorophenol	95-95-4	700	10	700
2,5,6-Trichlorophenol	88-06-2	3	20	20
Vinylchloride	75-01-4	0.08	5	5
Xylenes (Total)	1330-20-7	40	2	40
m&p-Xylenes	NA	NA	2	NA
o-Xylene	NA	NA	1	NA
Zinc	7440-66-6	5,000	30	5,000

\* Microbiological criteria\*,  
Radionuclides &  
Turbidity

Prevailing Safe Drinking  
Water Act Regulations  
(N.J.A.C. 7:10-1 et seq.)

Explanation of Terms:

\* = Ground Water Quality Criteria and PQLs are expressed as ug/L unless otherwise noted. Table 1 criteria are all maximum values unless clearly indicated as a range for which the minimum value is to the left and the maximum value is to the right.

PQL—Practical Quantitation Level as defined in N.J.A.C. 7:9-6.4

CASRN—Chemical Abstracts System Registration Number

NA = not available for this constituent

a = Asbestos criterion is measured in terms of fibers/L longer than 10 micrometers (fL > 10 um)

ug = micrograms, L = liter, f = fibers, CU = Standard Cobalt Units

b = Odor Threshold Number, mg = milligrams, H = Hardness

(Total) means the concentration of metal in an unfiltered sample following treatment with hot dilute mineral acid (as defined in "Methods for Chemical Analysis of Water & Wastes", EPA-600/4-79-020, March 1979) or other digestion defined by the analytical method. However samples that contain less than 1 nephelometric turbidity unit (NTU) and are properly preserved, may be directly analyzed without digestion.

m = Pursuant to prevailing Safe Drinking Water Act Regulations any positive result for fecal coliform is in violation of the MCL and is therefore an exceedance of the ground water quality criteria.\*

TABLE 2  
INTERIM GENERIC GROUND WATER QUALITY CRITERIA

Interim Generic Criteria--Synthetic Organic Chemicals (SOC)\*

Constituent	Water Quality Criteria
SOCs with evidence of carcinogenicity lacking specific or interim specific criteria	5 ug/l each 25 ug/l total
SOCs lacking evidence of carcinogenicity lacking specific or interim specific criteria	100 ug/l each 500 ug/l total

\*SOCs are identified as having "evidence of carcinogenicity" or "lacking evidence of carcinogenicity" based upon available scientific evidence. \*Chemicals are classified as carcinogens or noncarcinogens for the purposes of risk assessment according to the weight of evidence utilized by USEPA in the National Primary Drinking Water Regulations (50 FR 46880-46901 (1985)).\*

TABLE 3  
PRACTICAL QUANTITATION LEVELS  
FOR SELECTED CONSTITUENTS

Constituent	CASRN	PQL (ug/L)*
Acenaphthene	83-32-9	10
Acenaphthylene	208-96-8	10
Acrolein	107-02-8	50
Acrylamide	79-06-1	NA
Acrylonitrile	107-13-1	50
Adipates (Di(ethylhexyl)adipate)	103-23-1	6
Alachlor	15972-60-8	2
Aldicarb sulfone	1646-88-4	3
Aldrin	309-00-2	0.04
Aluminum	7429-90-5	200
Ammonia	7764-41-7	200
Anthracene	120-12-7	10
Antimony	7440-36-0	20
Arsenic (Total)	7440-38-2	8
Asbestos	1332-21-4	100,000/L < 10um
Atrazine	1912-24-9	1
Barium	7440-39-3	200
Benz(a)anthracene	56-55-3	10
Benzene	71-43-2	1
Benzidine	92-87-5	50
Benzo(a)pyrene (BaP)	50-32-8	20
3,4-Benzofluoranthene (Benzo(b)fluoranthene)	205-99-2	10
Benzo(ghi)perylene	191-24-2	20
Benzo(k)fluoranthene	207-08-9	20
Beryllium	7440-41-7	20
alpha-BHC (alpha-HCH)	319-84-6	0.02
beta-BHC (beta-HCH)	319-85-7	0.04
gamma-BHC (gamma-HCH/Lindane)	58-89-9	0.2
Bis(2-chloroethyl) ether	111-44-4	10
Bis(2-chloroisopropyl) ether	39638-32-9	10
Bis(2-ethylhexyl) phthalate	117-81-7	30
Bromodichloromethane (Dichlorobromomethane)	75-27-4	1

Bromoform	75-25-2	8.0
Butylbenzyl phthalate	85-68-7	20
Cadmium (total)	7440-43-9	2
Carbofuran	1563-66-2	7
Carbon tetrachloride	56-23-5	2
Chlordane	57-74-9	0.5
Chloride	16887-00-6	3000
Chlorobenzene	108-90-7	2
Chloroform	67-66-3	1
4-Chloro-3-methyl (o-chloro-m-cresol)	59-50-7	20
2-Chlorophenol	95-57-8	20
Chlorpyrifos	2921-88-2	0.2
Chromium (Total)	7440-47-3A	10
Chrysene	218-01-9	20
Color (Platinum-Cobalt Units)	NA	20
Copper	7440-50-8	10
Corrosivity	NA	NA
Cyanide	57-12-5	40
2,4-D	94-75-7	5
Dalapon	75-99-0	10
4,4'-DDD (p,p'-TDE)	72-54-8	0.04
4,4'-DDE	72-55-9	0.04
4,4'-DDT	50-29-3	0.06
Demeton	8065-48-3	NA
Dibenz(a,h)anthracene	53-70-3	20
Dibromochloromethane (Chlorodibromomethane)	124-48-1	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	2
Di-n-butyl phthalate	84-74-2	20
1,2-Dichlorobenzene	95-50-1	5
1,3-Dichlorobenzene	541-73-1	5
1,4-Dichlorobenzene	106-46-7	5
3,3'-Dichlorobenzidine	91-94-1	60
1,2-Dichloroethane	107-06-2	2
1,1-Dichloroethylene	75-35-4	2
cis-1,2-Dichloroethylene	156-59-2	2
trans-1,2-Dichloroethylene	156-60-5	2
2,4-Dichlorophenol	120-83-2	10
1,2-Dichloropropane	78-87-5	1
1,3-Dichloropropene (cis and trans)	542-75-6	NA
cis-1,3-Dichloropropene	10061-01-5	5
trans-1,3-Dichloropropene	10061-02-6	7
Dieldrin	60-57-1	0.03
Diethyl phthalate	84-66-2	10
2,4-Dimethyl phenol	105-67-9	20
Dimethyl phthalate	131-11-3	10
4,6-Dinitro-o-cresol	534-52-1	60
2,4-Dinitrophenol	51-28-5	40
2,4-Dinitrotoluene	121-14-2	10
2,6-Dinitrotoluene	606-20-2	10
Dinoseb	88-85-7	2
1,2-Diphenylhydrazine	122-66-7	NA
Diquat	85-00-7	NA
Endosulfan	115-29-7	NA
alpha-Endosulfan (Endosulfan I)	959-98-8	0.02
beta-Endosulfan (Endosulfan II)	33213-65-9	0.04
Endosulfan sulfate	1031-07-8	0.08

**ADOPTIONS**

101620

Endothall	145-73-3	NA
Endrin	72-20-8	0.04
Epichlorohydrin	106-89-8	NA
Ethylbenzene	100-41-4	5
Ethylene dibromide	106-93-4	0.05
Fluoranthene	206-44-0	10
Fluorene	86-73-7	10
Fluoride	16984-48-8	500
Foaming agents (ABS/LAS)		0.5
Glyphosate	1071-83-6	NA
Hardness (as CaCO <sub>3</sub> )		10
Heptachlor	76-44-8	0.4
Heptachlor epoxide	1024-57-3	0.2
Hexachlorobenzene	118-74-1	10
Hexachlorobutadiene	87-68-3	1
Hexachlorocyclopentadiene	77-47-4	10
Hexachloroethane	67-72-1	10
Hydrogen sulfide	7783-06-4	NA
Indeno(1,2,3-cd)pyrene	193-39-5	20
Iron	7439-89-6	100
Isophorone	78-59-1	10
Lead (Total)	7439-92-1	10
Malathion	121-75-5	5
Manganese	7439-96-5	6
Mercury (Total)	7439-97-6	0.5
Methoxychlor	72-43-5	10
Methyl bromide (bromomethane)	74-83-9	2
Methyl chloride (chloromethane)	74-87-3	2
3-Methyl-4-chlorophenol	59-50-7	20
Methylene chloride	75-09-2	2
Mirex	2385-85-5	NA
Nickel (Soluble salts)	7440-02-0	10
Nitrate (as N)	14797-55-8	400
Nitrite (as N)	14797-65-0	400
Nitrobenzene	98-95-3	10
N-Nitrosodimethylamine	62-75-9	20
N-Nitrosodiphenylamine	86-30-6	20
N-Nitrosodi-n-propylamine	621-64-7	20
Odor		NA
Oil & Grease		20000
Petroleum Hydrocarbons (PHC)		2000
Oxamyl	23135-22-0	20
PAHs (Polynuclear aromatic hydrocarbons)		NA
PCBs (Polychlorinated biphenyls)	1336-36-3	0.5
Pentachlorophenol	87-86-5	1

pH		NA
Phenanthrene	85-01-8	10
Phenol	108-95-2	10
Phosphorus	7723-14-0	80
Picloram	1918-02-1	1
Pyrene	129-00-0	20
Selenium (Total)	7782-49-2	10
Silver	7440-22-4	2
Simazine	122-34-9	0.8
Sodium	7440-23-5	400
Styrene	100-42-5	5
Sulfate	14808-79-8	5000
Taste		NA
TCDD (2,3,7,8-Tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01
1,1,2,2-Tetrachloroethane	79-34-5	1
Tetrachloroethylene	127-18-4	1
2,3,4,6-Tetrachlorophenol	58-90-2	10
Thallium	7440-28-0	10
Toluene	108-88-3	5
Total dissolved solids (TDS)		10000
Toxaphene	8001-35-2	3
2,4,5-TP	93-72-1	5
1,2,4-Trichlorobenzene	120-82-1	1
1,1,1-Trichloroethane	71-55-6	1
1,1,2-Trichloroethane	79-00-5	2
Trichloroethylene	79-01-6	1
2,4,5-Trichlorophenol	95-95-4	10
2,4,6-Trichlorophenol	88-06-2	20
Vinyl chloride	75-01-4	5
Xylenes (Total)	1330-20-7	2
m&p-Xylenes	NA	2
o-Xylene	NA	1
Zinc	7440-66-6	30
Microbiological criteria,		NA
Radionuclides &		NA
Turbidity		NA

**Explanation of Terms**

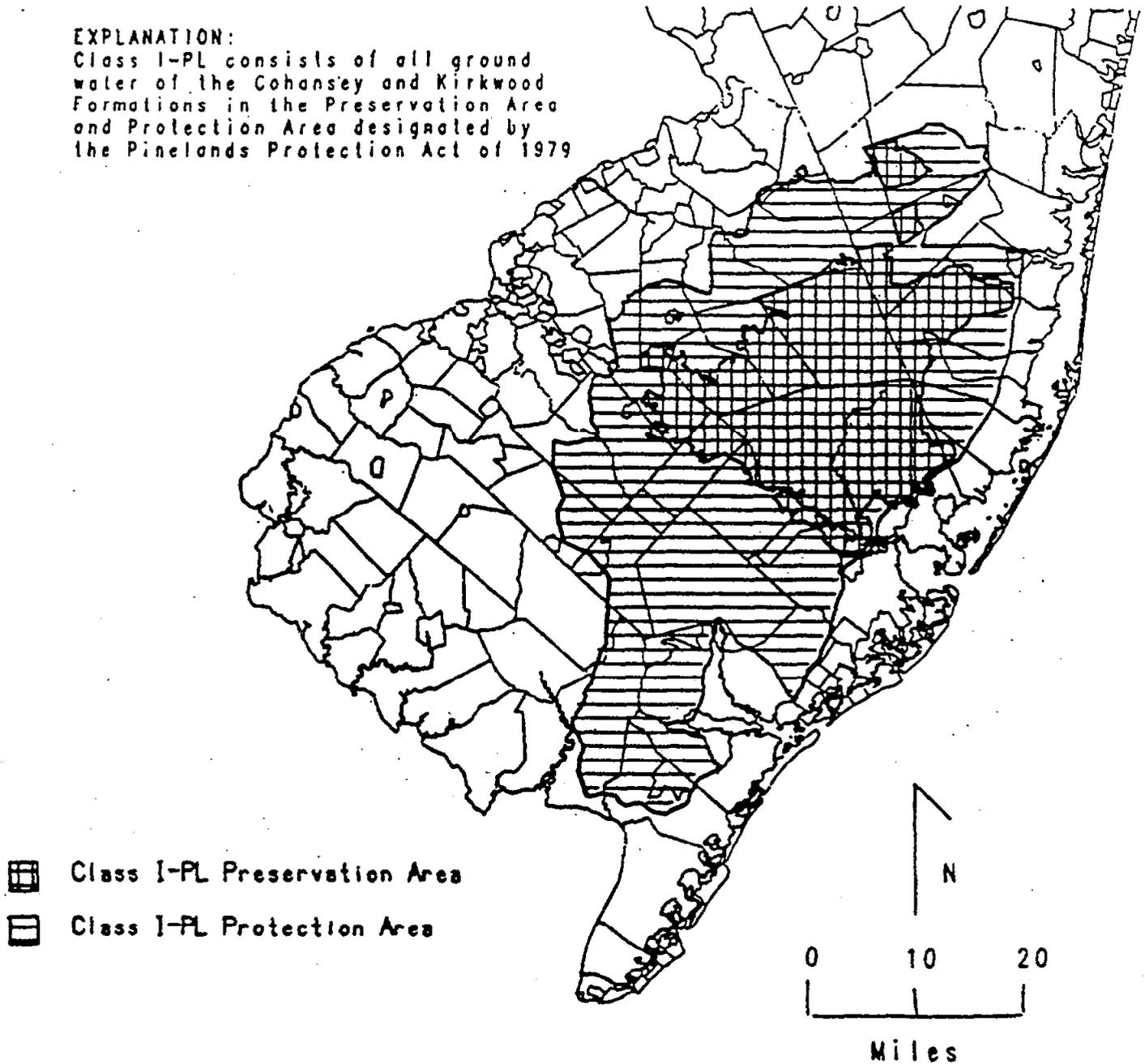
- \* PQL—Practical Quantitation Level as defined in N.J.A.C. 7:9-6.3.
- ug = micrograms
- L = liter
- f = fibers
- ^ = CASRN of chromium VI
- NA = Practical Quantitation Level not available for this constituent.\*

Editor's Note: Appendix "New Jersey Groundwater Classification System—Classification of Surgical Ground Water Units" has been deleted from the adoption.

APPENDIX  
Figure 1

New Jersey Ground Water Classification System  
Class I-PL - New Jersey Pinelands

EXPLANATION:  
Class I-PL consists of all ground water of the Cohansey and Kirkwood Formations in the Preservation Area and Protection Area designated by the Pinelands Protection Act of 1979



New Jersey Department of Environmental Protection  
1990

## FIGURE 2

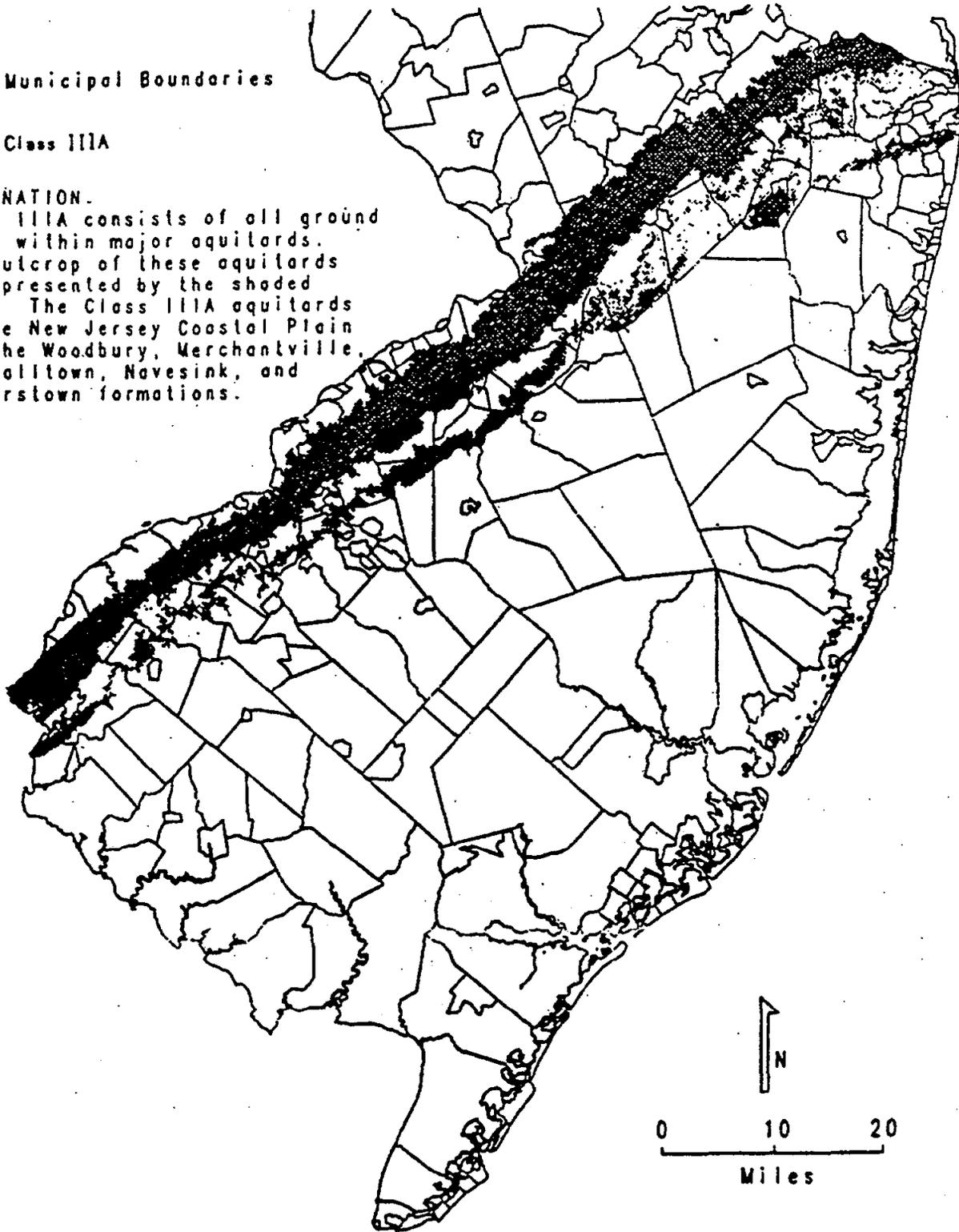
New Jersey Ground Water Classification System  
 Class IIIA - Aquitards of the New Jersey Coastal Plain

 Municipal Boundaries

 Class IIIA

## EXPLANATION.

Class IIIA consists of all ground water within major aquitards. The outcrop of these aquitards is represented by the shaded areas. The Class IIIA aquitards in the New Jersey Coastal Plain are the Woodbury, Merchantville, Marshalltown, Navesink, and Hornerstown formations.



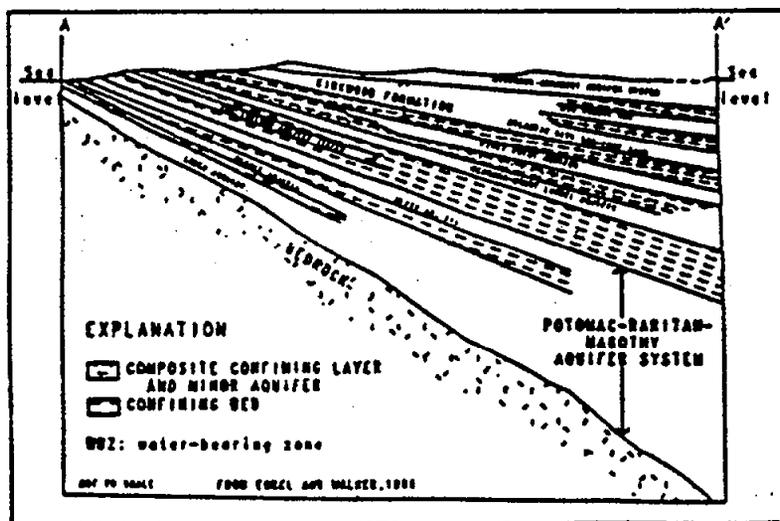
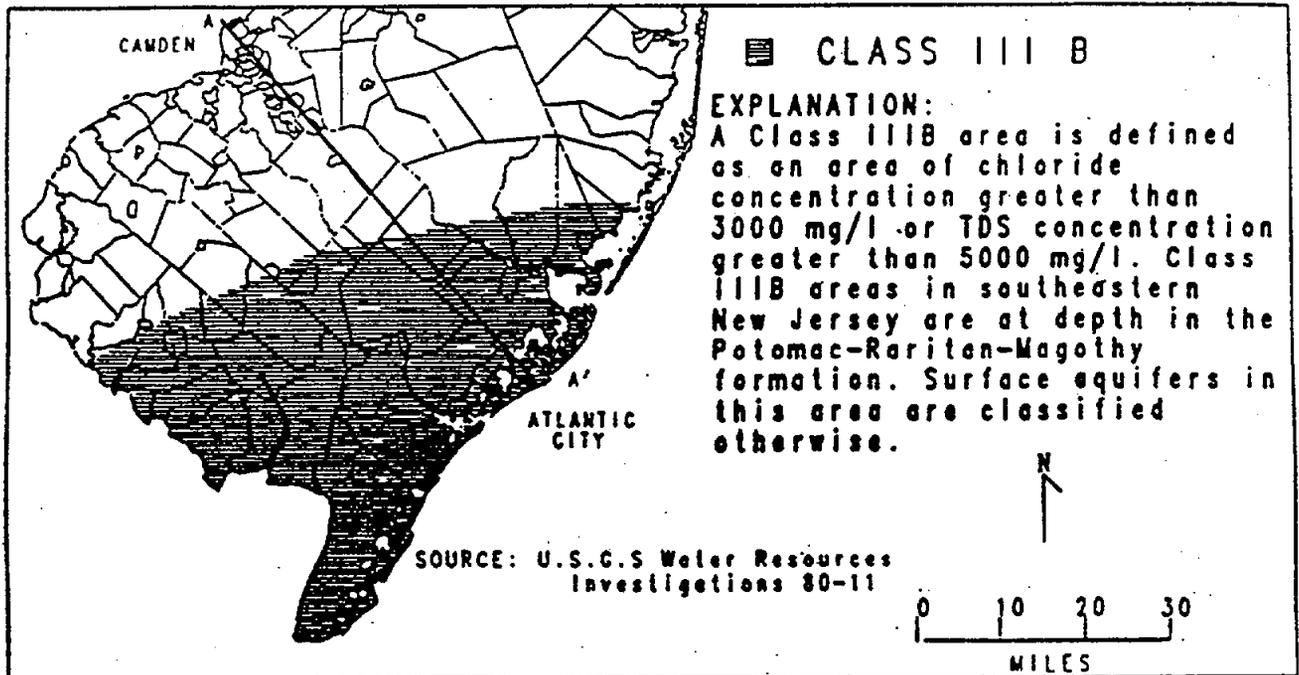
New Jersey Department of Environmental Protection  
 1990

# FIGURE 3

## NEW JERSEY GROUND WATER CLASSIFICATION SYSTEM

# CLASS III B

## CRETACEOUS POTOMAC-RARITAN-MAGOTHY FORMATION



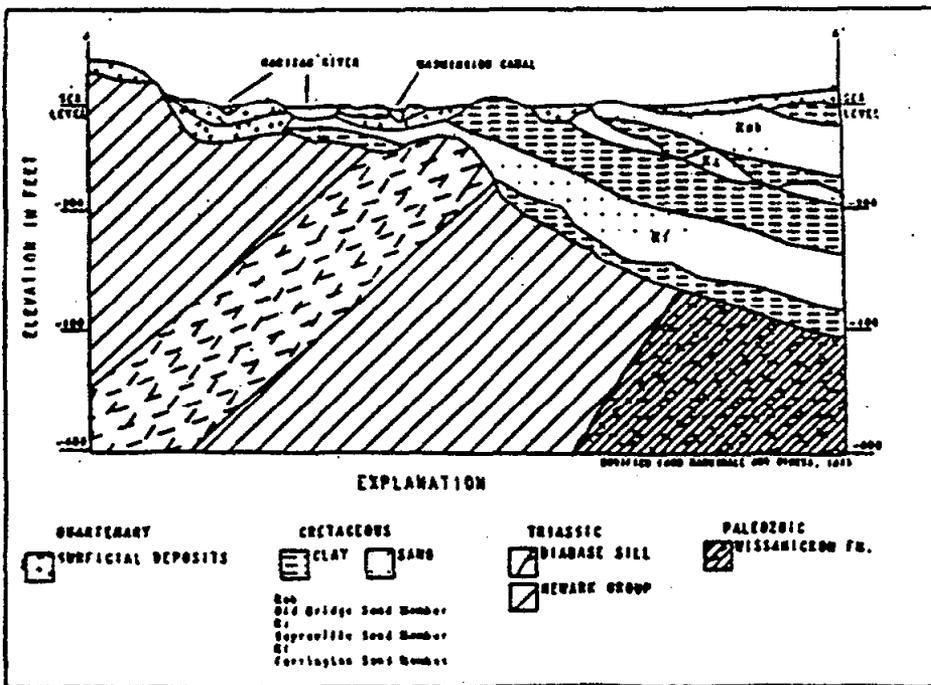
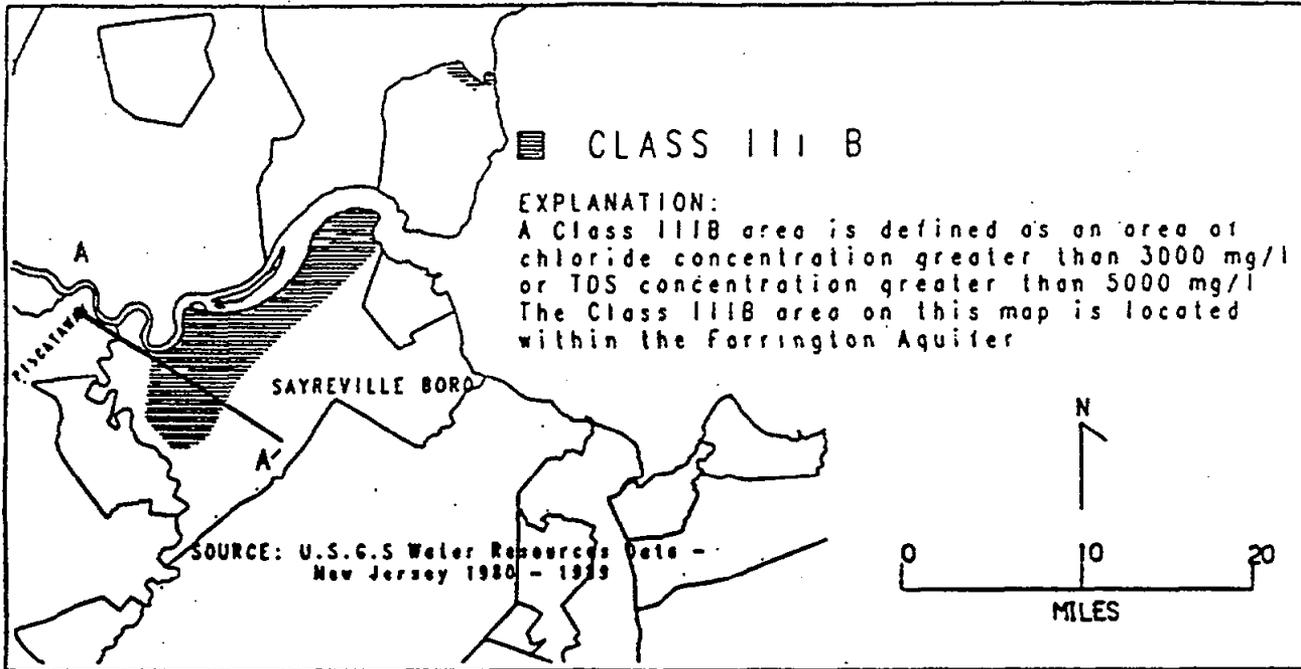
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1990

# FIGURE 4

## NEW JERSEY GROUND WATER CLASSIFICATION SYSTEM

### CLASS III B

### FARRINGTON AQUIFER

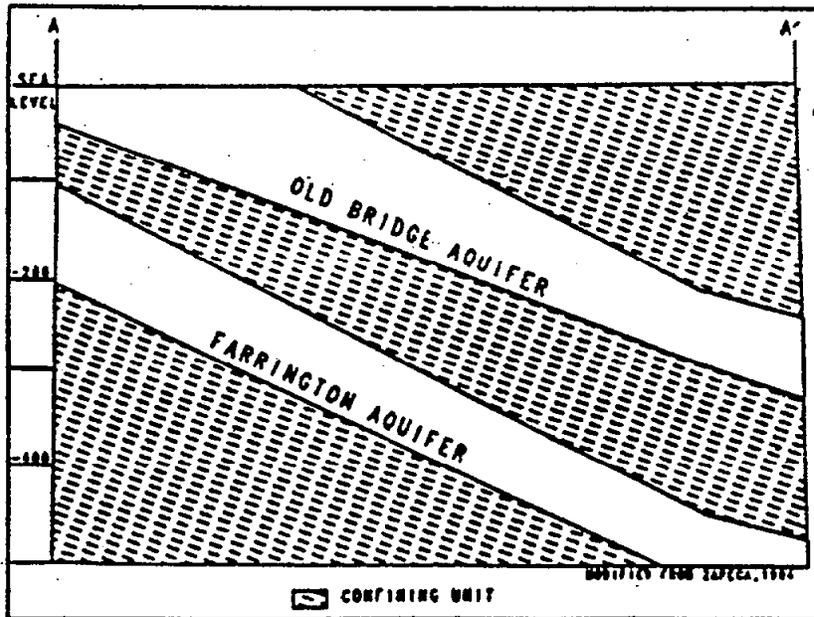
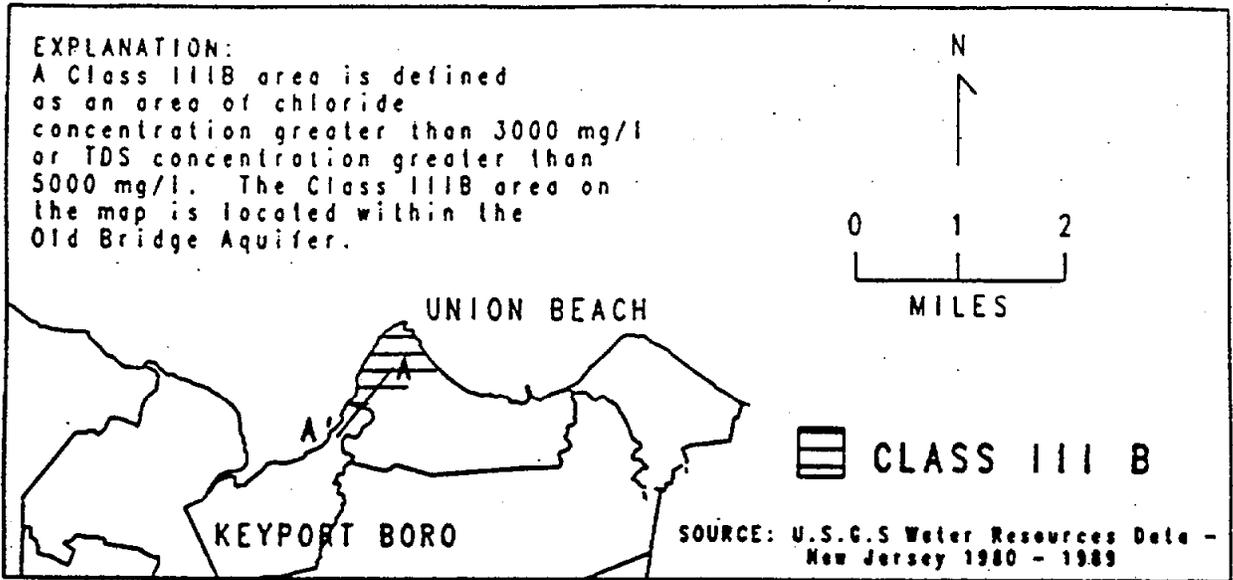


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# FIGURE 5

## NEW JERSEY GROUND WATER CLASSIFICATION SYSTEM

### CLASS III B OLD BRIDGE AQUIFER



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