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**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**LAND USE MANAGEMENT**

**WATER MONITORING AND STANDARDS**

**Surface Water Quality Standards**

**Adopted Amendments: N.J.A.C. 7:9B-1.4, 1.5, 1.6, 1.14, 1.15**

Proposed:	September 19, 2005
Adopted:	September 8, 2006
Filed:	September 19, 2006
Authority:	N.J.S.A. 58:10A-1 <i>et seq.</i> , 58:11A-1 <i>et seq.</i> , N.J.S.A. 13:1D-1 <i>et seq.</i>
DEP Docket Number:	30-05-08/545
Effective Date:	October 16, 2006
Expiration Date:	March 19, 2008

The Department of Environmental Protection (Department) is adopting amendments to the Surface Water Quality Standards (SWQS) at N.J.A.C. 7:9B, proposed on September 19, 2005, at 37 N.J.R. 3480(a). The adopted amendments amend the SWQS at N.J.A.C. 7:9B-1.4, 1.5, 1.6, 1.14, and 1.15.

The Department proposed to readopt the SWQS with amendments. The proposed amendments included revisions to the antidegradation policies, new monitoring provisions for mercury and PCBs, new and revised criteria to protect aquatic life and human health, revised criteria and implementation provisions for pathogens, new temperature criteria for trout production waters, and upgraded antidegradation and stream classifications based on trout sampling. The Department decided to not move forward with the proposed amendments to the antidegradation policies and published a notice to that effect in the New Jersey Register on November 21, 2005 (37 N.J.R. 4368(a)).

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The Department received comments on the proposed amendments, as well as provisions of the rule, specifically the numeric phosphorus criteria and related nutrient policies, proposed to be readopted without change. The Department decided to adopt proposed amendments while it continues to review the comments received on other sections of the rule. As a result, the Department has not responded to comments received on the phosphorus criteria and related nutrient policies, variance procedures, and any issues unrelated to the proposed amendments. As the Department is not readopting the chapter, the Department has obtained a further extension of N.J.A.C. 7:9B rule until March 18, 2008. See 38 N.J.R XXX. The comments received on the portions of this rulemaking not being adopted will be reviewed as part of future revisions to the SWQS and appropriate amendments will be incorporated as needed at that time. The Department is adopting amendments to N.J.A.C. 7:9B as listed below:

N.J.A.C. 7:9B-1.4 Definitions

"Best management practices" or "BMPs"

"Carcinogen"

"Non-carcinogen"

"Water effect ratio" or "WER"

N.J.A.C. 7:9B-1.5 Statement of Policy

(a)5 - Carcinogen policy;

(b)1 & 2 - Interstate waters policies;

(c)2 - Design flows;

(c)7 - Implementation policies for bacterial quality indicators;

(c)8 - Implementation policies for temperature criteria;

(e)7 - Characterization monitoring for mercury and PCBs;

(h)2i - Heat dissipation areas;

N.J.A.C. 7:9B-1.6 Establishment of water quality-based effluent limitations;

(c) - Chlorine produced oxidants;

N.J.A.C. 7:9B-1.14 Surface water quality criteria; and

N.J.A.C. 7:9B-1.15 Surface water classifications for the waters of the State of New Jersey.

**Summary** of Hearing Officer's Recommendations:

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After reviewing the Summary of the public comments and Agency responses, Debra Hammond, Chief of the Bureau of Water Quality Standards and Assessment concurs with the recommendations of the Department to adopt the amendments to the SWQS.

The public hearing originally scheduled for October 24, 2005 was rescheduled to November 9, 2005 (See 37 N.J.R. 4121(a)), and was held at the Department of Environmental Protection, Trenton, New Jersey. Debra Hammond, Chief of the Bureau of Water Quality Standards and Assessment served as the hearing officer. The comment period for this proposal closed on November 18, 2005.

The record of the public hearing is available for inspection in accordance with applicable law by contacting:

Office of Legal Affairs  
Attn. DEP Docket Number 30-05-08/545  
New Jersey Department of Environmental Protection  
P.O. Box 402  
Trenton, NJ 08625-0402

Summary of Public Comments and Agency Responses:

The following people submitted written and/or oral comments on the Surface Water Quality Standards, N.J.A.C. 7:9B. The number(s) in parenthesis after each comment corresponds to the number identifying the commenters below:

- |    |                         |  |
|----|-------------------------|--|
| 1. | Alexander, Diane        | Maraziti Falcon & Healey LLC                       |
| 2. | Bongiovanni, Robert N.  | Two Bridges Sewerage Authority                     |
| 3. | Brogan, David           | New Jersey Business and Industry Association       |
| 4. | Carey, Kelly Mack       | Post, Polak, Goodsell, MacNeill & Strauchler, P.A. |
| 5. | Cosgrove, Jr., James F. | Omni Environmental Corporation                     |
| 6. | DeGraeve, G.M.          | Great Lakes Environmental Center                   |
| 7. | Dressel, Jr. William G. | New Jersey State League of Municipalities          |

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| 8.  | Egenton, Michael A.      | New Jersey State Chamber of Commerce  |
| 9.  | Enright, Edward          | Cerenzio & Panaro   |
| 10. | Ferrara, Raymond A.      | TRC   |
| 11. | Foster-Sitar, Leann      | American Littoral Society   |
| 12. | Furnari, Russell J.      | New Jersey State Chamber of Commerce  |
| 13. | Giberson, Garrett L.     | City of Asbury Park   |
| 14. | Gulbinsky, Ellen         | Association of Environmental Authorities  |
| 15. | Hall, John C.            | Coastal Wastewater Authorities Group  |
| 16. | Hartnett, Laurie         | Long Branch Sewerage Authority  |
| 17. | Ho, Edward K.            | Rockaway Valley Regional Sewerage Authority   |
| 18. | Huff, Julia L.           | Rutgers Environmental Law Clinic on behalf of:<br>Association of New Jersey Environmental Commission<br>Great Swamp Watershed Association<br>New Jersey Audubon Society<br>New York/New Jersey Bay Keeper<br>New Jersey Public Interest Research Group<br>New Jersey Environmental Federation<br>New Jersey Public Employees for Environmental Responsibility<br>Sierra Club-New Jersey |
| 19. | Klickovich, James W.     | Pepco Holdings, Inc.  |
| 20. | Kushner, Ross            | Pequannock River Coalition  |
| 21. | Leverence, John J.       | Department of Water Pollution Control, Township of Hamilton, NJ   |
| 22. | Manak, Christopher       | Madison-Chatham Joint Meeting   |
| 23. | Martinez, Mayda          | Merck   |
| 24. | McMillin Jr., William E. | CH2Mhill  |

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| 25. | Meyers, Mark B.         | Quantitative Environmental Analysis LLC                      |
| 26. | Mottola, Dena           | New Jersey Public Interest Research Group                    |
| 27. | Norkis, Charles M.      | Cape May County Municipal Utilities Authority                |
| 28. | Patoczka, Jurek B.      | Hatch Mott MacDonald   |
| 29. | Pisauro Jr., Michael L. | Franscella & Pisauro, LLC                                    |
| 30. | Pringle, Dave           | New Jersey Environmental Federation                          |
| 31. | Ruppel, Michael J.      | South Monmouth Regional Sewerage Authority                   |
| 32. | Russo, Anthony          | Chemistry Council of New Jersey                              |
| 33. | Sachau, Barb            | Florham Park   |
| 34. | Searing, William J.     | Borough of Hightstown, Advanced Wastewater Treatment Plant   |
| 35. | Singer, Steven T.       | Steven T. Singer Counselor-At-Law                            |
| 36. | Tittle, Jeffrey         | Sierra Club-New Jersey                                       |
| 37. | Wolfe, Bill             | New Jersey Public Employees for Environmental Responsibility |
| 38. | Wynne, Michael C.       | Hanover Sewerage Authority                                   |

### **Extension of Comment Period**

- 1. COMMENT:** The comment period should be extended. (3, 32, 36)
- 2. COMMENT:** The public comment period should be extended because the comment period has to stay open at least 15 days after the public hearing. (37)

**RESPONSE TO COMMENTS 1 and 2:** The Department provided a 60 day comment period on the proposal. The Department believes that sufficient notice of the public hearing and the comment period was provided in accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq. The Department does not believe that extension of the comment period would be likely to result in the receipt of comments that raise new issues or provide new information, data, or findings not previously presented or provided during the written comment period or at

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the public hearing. Contrary to the assertion of the commenter, the public comment period is not required to remain open 15 days after the public hearing.

**3. COMMENT:** The rule is given a six-month or 180-day extension after proposal under the Administrative Procedure Act. Therefore, the commenter is curious as to the basis for the conclusion that the SWQS must be adopted by February 17, 2006. The commenter urges that the Department not adopt the rule by February 17, 2006, but take time to carefully consider public comments. (37)

**RESPONSE TO COMMENT 3:** In accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., an automatic 180 day extension of the rule expiration occurred upon filing of the proposed readoption. This extended the chapter expiration date to February 13, 2006. The Governor granted the Department an extension of the chapter expiration of the SWQS, N.J.A.C. 7:9B until September 19, 2006 (See 38 N.J.R. 1317(b), March 6, 2006). As indicated elsewhere in this New Jersey Register, the Governor has granted a further extension of the expiration date of the chapter until March 18, 2008.

#### **General**

**4. COMMENT:** The commenter is pleased with the improved thresholds in the proposed rule. These changes will benefit human health and the environment in the coastal zone. Many small and regional coastal economies in New Jersey depend on these activities and on viable fish and shellfish stocks, and the improvements proposed in this rule will provide greater protection for coastal residents and for the recreational/commercial industry. (11)

**RESPONSE TO COMMENT 4:** The Department acknowledges the commenter's support.

#### **N.J.A.C. 7:9B-1.5(c)2 - Design Flows**

**5. COMMENT:** USEPA recommends carcinogen based human health criteria apply at harmonic mean flows. No technical justification is provided for the application of standards in a manner at odds with the Federal recommendations for proper standard application. Application

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of MA7CD10 flows to these standards is inappropriate and unnecessary to protect beneficial uses. (1, 7, 14, 21, 22, 35)

**6. COMMENT:** The current rule recognizes that BDCM should be applied under harmonic mean flow conditions, not MA7CD10 conditions, due to the long term nature of the exposure required to cause impacts (70 years). DBCM and arsenic acts in the same manner as BDCM and therefore should be regulated under the same flow regime. (1, 7, 14, 21, 22, 35)

**7. COMMENT:** The proposed arsenic standard should not be adopted as it is based on the incorrect exposure limit. The arsenic standard as proposed will apply a MA7CD10 standard. This standard is unreasonably and arbitrarily strict, and would result in limits even more stringent than those for human drinking water. Instead, the arsenic standard should be based upon harmonic mean flow. (4)

**8. COMMENT:** The design flow for disinfection by-products should be harmonic mean flow conditions, not MA7CD10 conditions, due to the long-term nature of exposure required for any health impacts. (4)

**9. COMMENT:** If SWQS based on ingestion and fish consumption are established, they should be based on the correct exposure rate, not MA7CD10 flows. (4)

**10. COMMENT:** The Department failed to consider how more restrictive methods for applying the human health criteria based on fish consumption at the MA7CD10 flows ensure that full public health protection will occur. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENTS 5 through 10:** In the summary of the proposal at 37 N.J.R. 3483, the Department indicated that it was proposing to amend the design flow provisions by listing each of design flow individually instead of aggregating them in one paragraph at N.J.A.C. 7:9B-1.5(c)2 and that this was a change to format only and did not include any substantive changes to the design flows. However, in proposing this modification, the Department inadvertently altered the design flows to be applied to human health criteria for carcinogens by deleting the phrase “carcinogen effect-based human health criteria”. The Department did not

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intend to change the design flow applied to carcinogenic human health based criteria at N.J.A.C. 7:9B-1.5(c)2 to the MA7CD10 flow. Therefore, upon adoption, the Department is correcting N.J.A.C. 7:9B-1.5(c)2iii to read as follows: “For human health criteria for carcinogens listed at N.J.A.C. 7:9B-1.14(f)7, the design flow shall be the flow which is exceeded 75 percent of the time appropriate “period of record” as determined by the United States Geological Survey.” In addition, the Department is deleting the listed toxic substances at N.J.A.C. 7:9B-1.5(c)2iii(1)–(14) upon adoption. All these listed toxic substances are specified as carcinogens at N.J.A.C. 7:9B-1.14(f)7. Since the same design flow applies to all carcinogens, it is unnecessary to retain the separate list of toxic substances at N.J.A.C. 7:9B-1.5(c)2iii(1)–(14).

The Department is also correcting N.J.A.C. 7:9B-1.14(f)6 to reflect the corrected provision at N.J.A.C. 7:9B-1.5(c)2iii. N.J.A.C. 7:9B-1.14(f)6 as proposed, indicates that the design flow of MA7CD10 applies to the carcinogens except for those listed at N.J.A.C. 7:9B-1.5(c)2iii. However, as described above, the Department did not intend to change the design flow applied to carcinogenic human health based criteria at N.J.A.C. 7:9B-1.5(c)2. Therefore, upon adoption, N.J.A.C. 7:9B-1.14(f)6 will read as follows: “Human health carcinogenic effect-based criteria are based on a risk level of one-in-one-million and are expressed as a 70-year average with no frequency of exceedance at or above the design flow specified at N.J.A.C. 7:9B-1.5(c)2iii.”

#### **N.J.A.C. 7:9B-1.5(c)7 and 1.14(d) – Implementation of Pathogens/Bacterial Quality**

**11. COMMENT:** The commenter supports the adoption of criteria for E. coli and enterococci as substitutes for fecal coliform at N.J.A.C. 7:9B-1.14(d)1ii. (23)

**12. COMMENT:** The commenter supports the determination of compliance for bacterial indicators using a geometric mean based on five samples collected in a 30-day period at N.J.A.C. 7:9B-1.5(c)7. This is consistent with USEPA’s recommended approach for protection of the recreation use. (23)

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**RESPONSE TO COMMENTS 11 and 12:** The Department acknowledges the commenter's support of the use of the new indicators and a geometric mean based on five samples collected in 30 days.

**13. COMMENT:** The State has inappropriately applied the enterococcus criteria at N.J.A.C. 7:9B-1.14(d)1ii for primary contact waters because the federal guidance at 40 CFR 122.44(d)(2) indicates that, when establishing water quality based effluent limits, states "should account for dilution of the effluent within the receiving water." Clearly, the USEPA intended the criteria to apply at the point of contact and not at the stormwater outfall or the combined sewer overflows (CSOs). Accordingly, the State should immediately conduct a Federal standards analysis, or should rescind the prohibition of mixing zones for pathogens. (6)

**RESPONSE TO COMMENT 13:** The USEPA has recommended water quality criteria for pathogen indicators to determine whether or not the waters meet the designated use for primary contact recreation (Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final rule. 69 Fed. Reg. 67218, November 16, 2004 found at <http://www.epa.gov/fedrgstr/EPA-WATER>). The Federal guidance referred to in the comment is used by the permitting program to develop water quality based effluent limitations for facilities subject to the National Pollutant Discharge Elimination System (NPDES). This guidance is not used to develop water quality criteria.

N.J.A.C. 7:9B-1.5(h) describes how the mixing zones may be used in calculating water quality based effluent limits through the NJPDES permitting program. However, the NJPDES permitting program, rather than the SWQS, specifies how and when the Department imposes water quality based effluent limits. Discharges from combined sewer overflows are regulated in accordance with N.J.A.C. 7:14A-11.12. The Department has not imposed water quality based effluent limitations on Combined Sewer Overflows (CSOs). The "National CSO Control Policy" (published at 40 C.F.R. part 122 in 59 Fed. Reg. 18688, dated April 19, 1994) allows the Department to take feasibility and costs into consideration. The Department is requiring CSO permittees to identify and evaluate pathogen control alternatives and their costs so that prudent and cost-effective decisions can be made. Discharges of stormwater are regulated in accordance

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with N.J.A.C. 7:14A-24 and 25. New Jersey's Stormwater Management Program at N.J.A.C. 7:8 relies primarily on the use of best management practices (BMPs) rather than on numerical water quality based effluent limitations (although numeric effluent limitations are used in some individual industrial stormwater discharges where deemed necessary to control individual pollutants). Since the Department regulates CSOs pursuant to N.J.A.C. 7:14A-11.12 and stormwater discharges pursuant to N.J.A.C. 7:14A-24 and 25, rather than by developing water quality based effluent limits pursuant to N.J.A.C. 7:14A-13, the Department does not believe that any revisions to the mixing zone prohibition for pathogens are necessary.

The mixing zone prohibition at N.J.A.C. 7:9B-1.5(h) was adopted on January 22, 2002. The Department provided a Federal Standards Analysis of the mixing zone prohibition in both the proposal at 32 N.J.R. 4397(a) (December 18, 2000), and the adoption at 34 N.J.R. 537(a) (January 22, 2002). In addition, the Department provided a Federal Standards Analysis with these proposed amendments on September 19, 2005 at 37 N.J.R. 3515. As stated in the Federal Standards Analysis, Federal regulations governing mixing zones indicate that inclusions of mixing zones in State Water Quality Standards are optional. 40 C.F.R. 131.13 provides that "States may, at their discretion, include in their Surface Water Quality Standards policies generally affecting their application and implementation, such as mixing zones..." Therefore, the Department's prohibition on providing mixing zones for pathogenic indicators is consistent with the Federal regulations. The Department submitted the adopted rule to the USEPA for approval on June 13, 2003. The Department received formal approval from the USEPA Region 2 on October 1, 2003.

**14. COMMENT:** The State is retaining fecal coliform bacteria as the appropriate bacterial water quality standard for SE2 and SE3 waters. The standard for these waters is a geometric mean of 770/100 ml for SE2 and 1,500/100 ml for SE3 waters. The State has adopted these limits for non-bathing secondary contact recreation waters. The State has made an unsupportable decision by indicating in N.J.A.C. 7:9B-1.14(d)1ii-iii that the standards apply within the waters being protected, and in N.J.A.C. 7:9B-1.5(h)5(i) by indicating that there can be no mixing zones for bacteria. The State has an internal inconsistency that must be rectified before these standards

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can be applied. Either the standards apply to samples collected within the specific water body, or the standards apply within the discharges entering those waters. (6)

**RESPONSE TO COMMENT 14:** The Department agrees that the fecal coliform criteria are being retained as the appropriate bacterial indicator for SE2 and SE3 waters. The Department has adopted a geometric mean of 770/100 milliliters (ml) to protect the non-contact recreational uses in waters designated as SE2 and 1500/100 ml to protect non-contact recreational uses in waters designated as SE3. The Department uses these criteria to evaluate whether the designated uses of non-contact recreation in SE2 and SE3 waters are met.

N.J.A.C. 7:9B-1.5(h)5i prohibits mixing zones for the development of water quality based effluent limits for bacterial indicators. The Department does not agree with the commenter's suggestion that there is inconsistency between the water quality criteria and the mixing zone policies. As indicated in Response to Comment 13, mixing zones are used to develop water quality based effluent limits pursuant to N.J.A.C. 7:14A-13. Mixing zones are not considered when evaluating whether a waterbody meets the SWQS.

**15. COMMENT:** On August 16, 2005 USEPA proposed methods for analyzing E. coli and enterococci in wastewater that will be adopted at 40 C.F.R. 136 (70 Fed. Reg. 48255-48268). Because these new methods will be adopted by USEPA before the SWQS are adopted as final rule, or shortly thereafter, the Department should use E. coli and enterococci as indicator bacteria in all NJDPES permits issued after the SWQS rule is final. (23)

**16. COMMENT:** The Department does not have to wait for USEPA approval of a Federal method before imposing monitoring for enterococcus and E. coli in NJPDES permits. (37)

**17. COMMENT:** The Department need not wait for USEPA's final approval of a NPDES method. The Federal Clean Water Act mandates New Jersey monitoring and enforcement of WQBELs in State NJPDES programs and does not provide that this obligation can be met solely through monitoring activities associated with the TMDL program. There must not only be

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assessment, permits and TMDLs for pathogens, there must be WQBELs, and specific limits in NJPDES permits to monitor and control enterococcus and E. coli. (11)

**RESPONSE TO COMMENTS 15 through 17:** In the proposal, the Department stated that it could not impose compliance monitoring unless the USEPA had adopted an approved analytical method for the pollutant. This statement was not accurate. Although the Department can use an analytical method that has not been adopted by the USEPA, the Department has made a policy decision to defer imposing compliance monitoring requirements in NJPDES permits for E. coli and enterococcus until the USEPA adopts methods specific for wastewater analysis. The USEPA has been evaluating the existing available methods and will be finalizing a list of methods appropriate for wastewater and ambient waters. However, the adoption of these new pathogen indicators in the SWQS does not modify existing NJPDES permits. Until NJPDES permits are modified, the Department will continue to enforce effluent limitations based on fecal coliform.

**18. COMMENT:** What is the practical effect of using a geometric mean at N.J.A.C. 7:9B-1.14(d)1ii? What is the basis for this change? Is it not the case that the arithmetic mean is always greater than or equal to the geometric mean? If it is not, please explain. If it is, then arguably the arithmetic mean would be more protective of waters of the State. (18, 26, 30, 36, 37)

**RESPONSE TO COMMENT 18:** The use of a geometric mean in evaluating bacterial indicators has not been changed from the existing rule at N.J.A.C. 7:9B-1.14(c)1. The geometric mean is used to estimate the central location in log-normal populations. When sample sizes are very small, a single large value can greatly increase the arithmetic mean. The geometric mean is less sensitive to outliers. Bacterial counts are often close to being log-normal, so the geometric mean is a reasonable estimator. The USEPA recommended criteria for enterococcus and E. coli are specified as a geometric mean based upon a statistically sufficient number of samples, generally not less than 5 samples equally spaced over a 30-day period. A waterbody which exceeds the geometric mean criteria indicates that the waterbody is impaired. Therefore, consistent with the USEPA recommendations, the Department will continue to use a geometric

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mean for bacterial indicators. For more information, see <http://www.epa.gov/waterscience/beaches/1986crit.pdf>.

**19. COMMENT:** Municipal permits should only receive geometric average limits. The Department should add a notation at N.J.A.C. 7:9B-1.14(d) to indicate that the single sample maximum only applies to beach closure decisions to avoid misapplication of the standard in the future. (1, 7, 13, 14, 15, 16, 21, 22, 27, 31, 35)

**RESPONSE TO COMMENT 19:** As indicated in N.J.A.C. 7:9B-1.5(c)7, the Department will use the geometric mean to evaluate compliance with the water quality criteria listed in N.J.A.C. 7:9B-1.14. The Department does not believe that it is necessary to amend the provisions at N.J.A.C. 7:9B-1.14(d) because N.J.A.C. 7:9B-1.5(c)7 already indicates that single sample maximum would be used for beach closing decisions.

**20. COMMENT:** If the Department intends on applying the Single Sample Maximum (SSM) criteria to develop daily maximum permit limitations, the current mixing zone policy must be amended to allow dilution when evaluating the need for daily maximum limits for pathogens. (1, 7, 13, 14, 15, 16, 21, 22, 27, 31, 35)

**RESPONSE TO COMMENT 20:** As indicated in the summary for the proposal at 37 N.J.R. 3483, for the purposes of permit compliance, TMDLs, and 303(d) assessments, the Department will use the geometric mean as the appropriate indicator. The Department indicated that the Single Sample Maximum (SSM) would only be used to make beach closing decisions. Since the Department does not intend to establish daily maximum limits for pathogen indicators, the change in the mixing zone policy recommended by the commenters is not appropriate.

**21. COMMENT:** Chlorine levels in excess of 2 mg/L may be necessary to achieve the disinfection necessary to meet the enterococcus water quality standards. Such a concentration in the effluent could exceed the existing water quality criteria for chlorine produced oxidants (CPO) (13 µg/L) after considering dilution and would be otherwise prohibited without the consideration of instream fate processes, such as chlorine demand. Under the current water quality standards

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and implementation procedures, wastewater treatment facilities would be caught in a catch-22: either meet the enterococcus limits and exceed the water quality standards for CPO, or meet the CPO limits and fail the water quality standards for enterococcus. (13, 15, 16, 27, 31)

**RESPONSE TO COMMENT 21:** The Department recognizes that chlorine levels in excess of 2 mg/L may be necessary to ensure adequate disinfection. The commenters' concerns are related to the development of water quality based effluent limits for CPO and enterococcus in NJPDES permits. Wastewater treatment facilities can evaluate a variety of options to comply with their individual permit requirements. Many facilities dechlorinate their effluent, while others have chosen alternative disinfection options. Should such options not be viable in specific situations, a facility can conduct site-specific water quality studies to support alternative effluent limitations which protect and maintain water quality. For further discussion on CPO, see Response to Comments 56 and 57.

#### **N.J.A.C. 7:9B-1.5(c)8 and 1.14(d)11 Temperature**

**22. COMMENT:** The commenters strongly support the 20° C temperature criteria for trout production waterways. A temperature ceiling at least as protective as the 20° C currently imposed on trout maintenance waterways is reasonable. (20, 26, 30, 36)

**RESPONSE TO COMMENT 22:** The Department acknowledges the commenters' support.

**23. COMMENT:** The commenters would appreciate the opportunity to work with the Department and other stakeholders to modify the assessment methodology for temperature to ensure that the aquatic life use determination is based on good science. (3, 8, 12, 32)

**24. COMMENT:** The proposal states that the Department will revise its assessment methodology to identify impaired waterbodies. This assessment methodology was published as a separate notice and not part of this rule proposal. In light of the fact that the methodology will play a key role in determining when, under the SWQS, waterbodies are impaired as to temperature, the commenters urge the Department to re-open the comment period on that proposal. (18, 26, 30, 36, 37)

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**RESPONSE TO COMMENTS 23 and 24:** The Methods Document is developed as part of the Integrated Water Quality Monitoring and Assessment Report (Integrated Report) (<http://www.state.nj.us/dep/wmm/>) required pursuant to Section 303(d) of the Clean Water Act (33 U.S.C. §1313(d)). This document describes the data that the Department will use to assess attainment of the designated uses; the quality assurance aspects of the data to be considered in the assessment; a detailed description of the methods used to evaluate designated use attainment; and the rationale for the placement of waterbodies on one of five sublists. This document is not part of the SWQS, but a necessary and complementary tool for interpreting data collected to evaluate compliance with the SWQS. The Department is required to develop an Integrated Report and Methods Document every two years. The SWQS are required to be proposed and adopted in accordance with the Administrative Procedure Act. Since the SWQS and the Integrated Report have different time frames and schedules, the Department proposes and adopts these documents independently. A notice requesting public comments on the Methods Document was published in the New Jersey Register at 37 N.J.R. 3733(b) on September 19, 2005. The comment period closed on October 19, 2005. The public had an additional opportunity to comment when the Department proposed the 303(d) list. See 38 N.J.R. 1878(a). The public will have another opportunity to comment on the methods when the Department proposes the Methods Document for the 2008 303(d) List.

**25. COMMENT:** The proposal requires intensive, continuous temperature monitoring before a determination can be made that a waterbody is impaired. When resources are scarce, this approach is the equivalent of a death sentence for certain waterbodies and for many of the wildlife that rely on those waterbodies. Has the Department made any determination as to the number of river or stream miles that will need to be studied in order to fully assess the health of all of the waterbodies in the State? How long will this take? How much will this cost? (18, 20, 26, 30, 36, 37)

**RESPONSE TO COMMENT 25:** The rule does not require intensive continuous temperature monitoring to determine whether a waterbody is impaired. The rule at N.J.A.C. 7:9B-1.14(d)11 replaces the existing narrative criteria with a numeric temperature for trout production waters.

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The Department determines whether a waterbody is impaired for temperature in accordance with its assessment methodology articulated in the Methods Document developed as part of the Integrated Water Quality Monitoring and Assessment Report (Integrated Report) (<http://www.state.nj.us/dep/wmm/>).

Based on the assessment methodology, temperature and dissolved oxygen monitoring data is required to determine whether a waterbody meets the trout use. If one of the parameters is impaired, the waterbody is placed on Sublist 5 of the Integrated Report. Local groups can conduct temperature monitoring and submit their information for consideration in the development of the Integrated Report. The 2006 Integrated Report will identify those waters which do not support the trout use based on elevated temperature, those that support the trout use, and waters where information is insufficient to assess attainment. The Integrated Report also describes actions that will be needed to expand the assessment to all waters.

**26. COMMENT:** In N.J.A.C. 7:9B-1.5(c)8, the Department states that temperature criteria at N.J.A.C. 7:9B-1.14(d) apply unless an alternative effluent limitation is approved in accordance with Section 316(a) of the Clean Water Act, 33 U.S.C. §1326(a). The Department should clarify this to indicate that the aquatic life use is attained on stream segments for which an alternative effluent limitation has been approved in accordance with Section 316(a) of the Clean Water Act, 33 U.S.C. §1326(a). (3, 8, 12, 32)

**RESPONSE TO COMMENT 26:** The implementation provisions at N.J.A.C. 7:9B-1.5(c)8 are all intended to protect the aquatic life use. An alternative effluent limit can only be issued pursuant to Section 316(a) if the “effluent limitation proposed for the control of the thermal component of any discharge for such source will require an effluent limitation more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water” and if the alternate effluent limitation “will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water.” 33 U.S.C. §1326(a). The Department believes that the direct reference to 33 U.S.C. §1326(a) at N.J.A.C. 7:9B-1.5(c)8 is sufficient.

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**27. COMMENT:** The Department has indicated that where a water body is on the Section 303(d) list, water quality standards will be applied end of pipe, even where a TMDL evaluation is scheduled or ongoing. This means that municipal facilities discharging to such waters would receive a 20° C permit limit. Municipal facilities cannot possibly meet such a requirement; nor is it necessary for use protection. As noted by the Department, several trout species can tolerate higher temperature levels without deleterious impacts. Thus, the adoption of the proposed criteria is admittedly unnecessary. (1, 7, 14, 21, 22, 35)

**28. COMMENT:** The new temperature standards do not take into account the natural state of the stream or lake. The new standards could result in a temperature limitation being imposed on a wastewater facility, even though no change in water temperature or impact on uses has occurred. This is of particular concern as it has been shown that in many cases trout are not negatively affected by temperatures above 20° C. Requiring that the receiving stream meet this new standard in cases where there is no impact would be extremely wasteful and an unnecessary burden on the users of the wastewater facility. A further concern is the impact on existing discharges. Implementing this new standard will, in cases, effectively take away existing capacity. If this is not intended to be the case, it should be stated as such in the regulations. (9)

**RESPONSE TO COMMENTS 27 and 28:** The temperature criteria are unique. The Department recognizes, that in addition to point and nonpoint sources, temperature increases may be due to natural conditions such as solar radiation, lack of a stream canopy and flow conditions. For this reason, the Department does not apply the temperature criteria as an “end of pipe” effluent limitation. If the Department determines a waterbody is impaired due to exceedance of the temperature criteria, the Department may require a NJPDES facility to conduct instream temperature monitoring upstream and downstream of their discharge pursuant to its NJPDES permit. This additional sampling is necessary to determine whether the discharge from the facility increases the ambient stream temperature by more than the acceptable levels established at N.J.A.C. 7:9B-1.5(c)8. Therefore the temperature criteria and policies take into account the natural state of a waterbody. If the Department determines that an individual facility does cause the instream temperature to increase more than incremental increase allowed at

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N.J.A.C. 7:9B-1.5(c)8, the Department may authorize a heat dissipation area or an alternative temperature criteria as allowed under Section 316(a) pursuant N.J.A.C. 7:9B-1.5(h).

**29. COMMENT:** Minor and infrequent exceedance of the 20° C temperature may not impair the ability of a waterway to sustain healthy trout populations. However, temperatures beyond the optimum of 20° C, yet below the lethal threshold of 24° C have many negative impacts on trout growth, development, disease resistance, reproduction, and long-term viability. The commenters do not agree with the statement that temperatures in excess of 20° C are not a concern where “the stream provides opportunity for the fish to seek cooler temperatures.” These refuges should not be relied upon to carry entire trout populations through repeated cycles of elevated temperature. Not all trout are capable of seeking thermal refuge, and in many cases those refuges are extremely limited. What waterbody segment specific information did the Department consider when coming to this conclusion? (20, 26, 30, 36)

**RESPONSE TO COMMENT 29:** It is possible for a stream to support trout with temperatures greater than 20°C for short periods of time if the stream provides opportunity for the fish to seek cooler stream temperatures. The Department is not seeking to rely on refuges to carry the entire trout population through repeated cycles of elevated temperature. Rather as part of the assessment method, the Department may conduct additional sampling to determine if exceedances of the 20° C impair the ability of the waterbody to sustain a healthy trout population.

**30. COMMENT:** The Department should expressly confirm that the temperature increment values are not intended to be applicable when the maximum temperature values are not exceeded instream. Such temperature impacts should be addressed on a case-by-case basis as necessary to protect beneficial uses. (1, 7, 14, 21, 22, 35)

**31. COMMENT:** The Department recognizes that the manner and timing of temperature measurements (particularly under certain natural conditions) may show short-term temperatures above the criteria for trout/maintenance, and that such measurements do not necessarily indicate a thermal impairment. This logic can be extended to FW2, SE and SC waters as well. The

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frequency that a maximum criteria is exceeded depends on whether compliance is determined using an instantaneous measurement, daily average measurement, surface measurement or depth averaged measurement. Occasional perturbations above the maximum temperature criteria are not a sufficient basis for finding that the aquatic life use is impaired. (3, 8, 12, 32)

**32. COMMENT:** The Department should consider a variety of criterion such as average summer temperature, maximum summer temperature, average weekly maximum temperature, and mean weekly maximum temperature. (20, 26, 30, 36)

**33. COMMENT:** The Department should place a notation that the criteria are not to be applied as daily maximum values and that the appropriate averaging period will be assessed on a case-by-case basis. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENTS 30 through 33:** The Department did not intend for the temperature criteria to be interpreted as a “never to be exceeded” standard. Temperature criterion of 20° C is an ideal level for the summer season. It is an optimal level for feeding, general activity, growth and reproduction for trout. NJDEP, Coldwater Fisheries Management Plan, December 2005. As indicated in the Summary of the proposal at 37 N.J.R. 3489, the Department believes that it is necessary to evaluate stream temperature over a period of time during the summer rather than an occasional grab sample collected during the afternoon when the ambient temperature is at maximum. Therefore, the rule is being clarified upon adoption at N.J.A.C. 7:9B-1.14(d)11 to specify that the criteria are summer seasonal average.

The Department may consider additional temperature criteria in the future based on shorter time periods, developmental changes of resident species, and a maximum daily value based on acute effects.

**34. COMMENT:** The application of temperature standards has been a subject of considerable confusion in the past. The temperature increments were usually applied to allow a discharge to continue when the receiving water was in excess of the maximum allowable value due to causes unrelated to the discharge. However, in certain cases, the temperature increments

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were applied during low temperature conditions such as winter, to claim that the effluent must be cooled. This is a misapplication of the increment objectives, as there are no data in the temperature criteria development indicating that small changes in temperature during low temperature periods is in any way inimical to aquatic life. Were such requirements placed on municipal facilities during winter low flow months for dischargers to low flow streams, the economic and energy impacts could be considerable. Therefore, the confusion with the current requirements needs to be addressed and resolved to avoid misapplication of the delta temperature standards. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENT 34:** The implementation provisions for temperature at N.J.A.C. 7:9B-1.5(c)8 must be applied in conjunction with the criteria specified at N.J.A.C. 7:9B-1.14(c). Therefore, a facility does not cause a violation of the temperature criteria if the increase in ambient stream temperature downstream of the discharge is less than increased specified at N.J.A.C. 7:9B-1.5(c)8. The Department agrees with the commenter that the existing temperature criteria should not apply in the winter, therefore the Department has amended the rule on adoption to clarify that it is a summer seasonal average. As indicated in Response to Comments 30 through 33, the Department may consider temperature criteria in the future based on shorter time periods, developmental changes of resident species, and a maximum daily value based on acute effects. The Department may also consider establishing temperature criteria for other seasons.

**35. COMMENT:** The Department should enforce the temperature criteria in land use permits and other approvals (for example, stream encroachment and stormwater permits, and WQMP amendments). Has the Department considered taking this approach? If not, why not? If it has and rejected it, what was the rationale for the rejection? (18, 26, 30, 36, 37)

**RESPONSE TO COMMENT 35:** It is extremely difficult to evaluate temperature impacts from nonpoint sources of pollution on a stream prior to issuing a land use permit because these impacts are typically related to storm events. The Department has determined that the most effective method to control temperature impacts from nonpoint sources is to rely on Best Management Practices (BMPs) rather than imposing temperature criteria in land use permits or

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other approvals. For example, the Stormwater Management Regulations at N.J.A.C. 7:8 require that new major development impacting a stream designated as Category One must maintain a 300 foot special water resource protection area (SWRPA) to protect the Category One waters. SWRPAs, in general, provide shading that greatly influences water temperatures during the summer. Summer temperature extremes can reach as much as 10-20°F higher in a deforested stream than a forested stream. Continuity or length, as well as the width of a SWRPA exhibit a strong correlation to stabilizing water temperatures.

**36. COMMENT:** The Department has proposed, at N.J.A.C. 7:9B-1.5(c)8ii, that thermal alterations in lakes, ponds and reservoirs shall not be permitted unless they can be shown to be beneficial to the designated and existing uses. There is no requirement in State or Federal law that a discharge be allowed only if it is beneficial. The Department has relied upon the USEPA Section 304(a) criteria documents. Those documents nowhere support the need to make a demonstration that a pollutant impact is beneficial. As the Department has expressly stated that it relies upon USEPA Section 304(a) criteria as the best available science, absent some substantial demonstration that beneficial effects are “necessary to protect uses,” this proposed change should be deleted. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENT 36:** The temperature criteria at N.J.A.C. 7:9B-1.14(d)11(2) are based on Section 304(a). 40 CFR 131.13 provides that “States may, at their discretion, include in their Surface Water Quality Standards policies generally affecting their application and implementation, such as mixing zones...” Therefore, the Department’s limitation on heat dissipation areas, which are a type of regulatory mixing zone is consistent with the Federal regulations. N.J.A.C. 7:9B-1.5(c)8ii provides that for lakes, ponds and reservoirs, there shall be “no thermal alteration except where it can be shown to be beneficial to the designated and existing use.” By restricting a thermal alterations, except where beneficial to the designated and existing use, the Department has made a policy decision to limit thermal impacts due to discharges. In this way, the rule furthers the Department’s mandate to protect water quality for a variety of uses including aquatic life, water supply, and recreation.

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**37. COMMENT:** The proposed temperature mixing zone requirements go well beyond the requirements associated with other pollutants and lack a scientific basis. The Department is allowing no more than  $\frac{1}{4}$  of the low flow to be available for mixing in all waters. There is nothing in the record that supports such a requirement. Normally this type of mixing zone restriction is applicable to very large waters to avoid a large thermal plume that might impact fish migration (for example, the Delaware River). Moreover, the rule indicates that the temperature restrictions apply at "anytime," even if the flow is less than MA7CD10. This is directly at odds with the provision, elsewhere adopted, indicating criteria compliance is only required for flows greater than MA7CD10. There is nothing in the record indicating that the more restrictive approach is either necessary or appropriate. As such, the Department should withdraw the more restrictive mixing zone provisions or specify that it is only applicable to very large water bodies where thermal plumes pose a fish migration threat. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENT 37:** As specified at N.J.A.C. 7:9B-1.5(c)8, a discharge which does not cause the ambient stream temperature to increase more than the amount specified is deemed to be in compliance with the temperature criteria. If a facility is in compliance with the temperature criteria, it does not require a heat dissipation area pursuant to N.J.A.C. 7:9B-1.5(h). Typically facilities with significant thermal discharges require a heat dissipation area or a thermal variance pursuant to Section 316(a) of the CWA. In reference to the temperature restrictions applying "anytime," the temperature criteria provisions must be read in the context set by the policy section of the rule N.J.A.C. 7:9B-1.5. Specifically, N.J.A.C. 7:9B-1.5(c)2 provides "Water quality criteria are expected to be maintained during periods when nontidal or small tidal stream flows are at or greater than the appropriate design flow." For temperature, the design flow is MA7CD10 flow as specified at N.J.A.C. 7:9B-1.5(c)2.

#### **N.J.A.C. 7:9B-1.5(e)(7) PCB and Mercury Monitoring**

**38. COMMENT:** Numeric limits should be placed in all NJPDES permits. While this will create a situation wherein enforcement at these low levels may not immediately be possible, it does set the standard. As methods are refined for PCBs and DDT in the future, these limits then may be tested for compliance and enforcement can then take place. This is more preferable than

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waiting for testing to become sensitive enough before limits can be promulgated. (18, 26, 29, 30, 36, 37)

**RESPONSE TO COMMENT 38:** The Department has determined that it would not be appropriate at this time to establish water quality based effluent limitations in NJPDES permits for mercury, PCBs and DDT due a lack of effluent data using the new methods and availability of wastewater treatment to meet these low levels. Moreover, the NJPDES facilities would be subject to mandatory penalties pursuant to the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., with no real options available to come into compliance with these limits. However, the Department is taking actions to reduce the levels of these pollutants in the environment. See Response to Comments 39 through 43.

**39. COMMENT:** The Department should change proposed N.J.A.C. 7:9B-1.5(e)(7) to provide that characterization monitoring is required rather than permissive. (18, 26, 29, 30, 36, 37)

**40. COMMENT:** The Department's proposed use of method 1631 is not appropriate because proposed N.J.A.C. 7:9B-1.5(e)7 states that the Department "may" require use of method 1631 for monitoring mercury. (19)

**41. COMMENT:** Environmental authorities should not be required to test for mercury and PCB's. The Department has provided no basis for disputing the fact that wastewater places a negligible amount of these pollutants into the water or the fact that it is not cost effective or even currently possible for wastewater facilities to treat for these pollutants. Accordingly, the testing should be removed and the Department should concentrate its efforts regarding mercury and PCB contamination reduction where those efforts can actually effect a change - ambient air and clean up of contaminated soils. (4)

**42. COMMENT:** All new permits and all renewals should require that the dischargers use best management practices to reduce and eliminate the discharge of mercury, PCBs and DDT. (29)

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**43. COMMENT:** The Department should require dental facilities to remove mercury because these may discharge more than 50% of the mercury found in Publicly Owned Treatment Works (POTWs). (38)

**RESPONSE TO COMMENTS 39 through 43:** Many waterbodies are listed as impaired for mercury and PCBs based on fish consumption advisories. While the environmental authorities and other point sources regulated through the NJPDES program may discharge relatively low levels of mercury and PCBs, these levels contribute to an exceedance of the water quality criteria. Therefore, in order to evaluate the impact of point source discharges of these pollutants, the Department will require facilities which discharge these pollutants to monitor their effluent using the more sensitive methods pursuant to the requirement at N.J.A.C. 7:9B-1.5(e)7.

N.J.A.C. 7:9B-1.5(e)7 provides that the Department may impose characterization monitoring in NJPDES permits using more sensitive analytical methods. The use of the term “may” refers to a selection process to identify facilities that may discharge these pollutants. If the Department determines that the facility discharges mercury, for example, the permit will require monitoring using method 1631, which is listed as the approved method for the NPDES program at 40 C.F.R. Part 136.

The Department agrees that additional efforts should be taken to address other sources of mercury and PCBs, and the Department is taking other regulatory measures to reduce the levels of mercury and PCBs in the environment. On January 3, 2005 the Department adopted new standards and procedures for the control and prohibition of mercury emissions from municipal solid waste (MSW) incinerators, hospital/medical/infectious waste incinerators, iron or steel melters, and coal-fired boilers at N.J.A.C. 7:27 (see <http://www.nj.gov/dep/rules/>). These new rules and amendments will significantly reduce or prevent mercury emissions in the State from the four regulated source categories.

On September 5, 2006 at 38 N.J.R. 3393(a), the Department proposed amendments to the New Jersey Pollutant Discharge Elimination System (NJPDES) rule, entitled “Requirements for

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Dental Facilities” at N.J.A.C. 7:14A-21. The proposed rule is intended to reduce the mercury discharge from dental facilities. Dental facilities contribute as much as 35 to 45 percent of the mercury entering publicly owned treatment works (POTWs). Mercury from these facilities results from dental amalgam (approximately 50 percent mercury by weight) being rinsed down the drain, usually to a municipal wastewater system, and then to the POTW. Mercury not removed by the POTW’s treatment processes is discharged into the surface waters of the State. Mercury that is removed at the POTW by wastewater treatment is concentrated in sludge that may be incinerated, which releases the mercury into the air where it can be deposited into surface waters. The proposed new rule will require certain dental facilities to implement best management practices (BMPs) including installation and operation of amalgam separators. These measures should prevent about 99 percent of the mercury-containing wastes from dental facilities being sent to the POTW.

On December 19, 2005 the Department proposed amendments to the NJPDES rules at N.J.A.C. 7:14A that will require major facilities discharging to PCB-impaired waters to monitor their discharge for PCBs using method 1668A. (See 37 N.J.R. 4723(a)). Based on the results of the monitoring, some of those facilities will be required to develop and implement a PCB Pollutant Minimization Plan (PMP).

The USEPA banned the domestic use of DDT on December 31, 1972 because it is persistent in the environment, accumulates in biological tissues, and therefore, bioaccumulates in the food chain. The current analytical methods are unable to detect DDT at the current water quality criteria. Effluent characterization monitoring with existing analytical methods failed to identify any discharges of DDT. Based on the above, the Department is not recommending any specific action in the SWQS for DDT.

**44. COMMENT:** In N.J.A.C. 7:9B-1.5(e)7 the Department identifies specific USEPA analytical methods (1631E and 1668A) for use in conducting characterization monitoring for mercury and PCBs. The rationale for the use of the 1600 series analytical methodologies is that they will provide ultra low level detection of chemical constituents. However, as identified by the Delaware River Basin Commission’s (DRBC), PCB TMDL Data Quality subcommittee,

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practical application of these methods can lead to laboratory inconsistencies if additional procedures are not established to ensure consistent application by all users. The Department should clearly define its intent regarding the use of these methodologies. Second, the Department should stipulate that, for purposes of permit-required monitoring, enforcement action, and assessment of waterbodies for impairments linked to Sections §305(b) and §303(d) of the CWA, all clean techniques listed by the USEPA in regard to method 1631E, both mandatory and recommended, are mandatory in the State of New Jersey. Such a requirement would ensure that all data collected for purposes of determining permit limits and or compliance would have been obtained using the best available procedures and with highest quality assurance/quality control standards. Third, since USEPA has not promulgated method 1668A for PCBs in 40 C.F.R. Part 136 as an approved analytical method, the Department should establish procedures consistent with those developed by the DRBC. (3, 8, 12, 32)

**RESPONSE TO COMMENTS 44:** The new monitoring provision at N.J.A.C. 7:9B-1.5(e)7 is intended to provide the Department with more detailed information on discharges of PCBs and mercury to the surface waters of the State, and will be used by the Department to identify sources and track improvements over time. The Department has identified many waterbodies as impaired for mercury, PCBs or both based on fish consumption advisories. The current USEPA National Pollutant Discharge Elimination System (NPDES) approved method for analyzing mercury in wastewater is method 1631 (<http://www.epa.gov/waterscience/methods/>). As indicated by the commenters, USEPA has not taken similar action for method 1668A, which is used to analyze PCBs.

The wastewater monitoring for PCBs using 1668A and mercury using 1631 will be conducted through NJPDES permits. The NJPDES permit program requires the facility to use a laboratory certified to perform wastewater analysis. Both 1631 for mercury and 1668A for PCBs are performance-based analytical methods. Therefore, any laboratory doing work for a NJPDES permitted facility must demonstrate the ability to analyze mercury and PCBs to the levels specified in method 1631 and 1668A. The Department will only accept data from a laboratory capable of meeting the performance standards specified in the method. The requirement to

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analyze wastewater using 1668A is also specified in the proposed Monitoring and Minimization of PCBs at N.J.A.C. 7:14A. See 37 N.J.R. 4723(a), December 19, 2005.

The Department recognizes the experience gained by the Delaware River Basin Commission in developing and implementing the PCB TMDL for the Delaware Estuary. USEPA Region 2 and 3 Total Maximum Daily Load for Zones 2-5 of the tidal Delaware River, December 2003. The DRBC used 1668A to obtain information on the discharge of PCBs to the Delaware River. The Department will take into consideration the experience gained through this project to develop appropriate data quality objectives which will be specified in NJPDES permits.

With respect to data collected for the purpose of waterbody assessment pursuant to Sections 303(d) and 305(b), most of data is collected by the Department and/or United States Geological Survey (USGS) consistent with an approved Quality Assurance Project Plan. Any party interested in conducting ambient stream monitoring must submit a Quality Assurance Project Plan to the Department for approval if the data is to be used for water quality assessment pursuant to Section 303(d). Since methods 1631 and 1668A are both performance-based methods, the Department will only accept data from those entities capable of doing this monitoring and analysis.

The Department believes that it is more appropriate to address the need to use the “clean techniques” specified in 1631 based on the intended use of the data. For example, the Department plans to use “clean techniques” when collecting mercury data for the purpose of waterbody assessment pursuant to Section 303(d) and 305(b). However, the Department does not believe it is necessary to mandate the use of “clean techniques” for all mercury monitoring; decisions concerning the use of “clean techniques” for wastewater are best addressed through the permitting process.

**45. COMMENT:** The Department should defer at this time the use of method 1668A. Method 1668A has not been approved by USEPA for any purpose at 40 C.F.R. Part 136. Very few laboratories are capable of using method 1668A. In addition, the USEPA initiated a multi-

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laboratory validation process for method 1668A, which is not yet concluded (a report presenting the results of the validation process is expected in 2006). (19)

**RESPONSE TO COMMENT 45:** In December 2003, USEPA approved a TMDL for PCBs in the Delaware River Estuary which incorporated effluent characterization monitoring using 1668A for 142 point sources that are deemed to be potential sources of penta-PCBs. Based on the experience of the Delaware River Basin Commission requiring the use of 1668A, there is sufficient laboratory capability to provide valid analytical results.

**46. COMMENT:** There are few laboratories in the country and none in New Jersey who are prepared to analyze mercury using method 1631. The USEPA itself noted the difficulties in performing this test. While control of this pollutant is necessary, the commenter believes that an analysis of the accuracy of the testing methods, means available to wastewater treatment plants to meet the criteria and source control are needed before adoption. (38)

**RESPONSE TO COMMENT 46:** Method 1631 has been approved by the USEPA at 40 C.F.R. Part 136. As indicated in Response to Comments 39 through 43, the Department will require facilities to conduct characterization monitoring using method 1631 if the facility is determined to discharge mercury. These new requirements will be placed into NJPDES permits at the time of permit renewal. This will allow the laboratory community time to develop capacity to analyze wastewater samples using the more sensitive analytical methods. At this time there are seven laboratories certified by the Department's Office of Quality Assurance to analyze mercury using method 1631. The Department believes that, once the NJPDES facilities are required to use these methods to analyze waste water, more laboratories will seek to be certified.

#### **N.J.A.C. 7:9B-1.5(h) - Mixing Zones**

**47. COMMENT:** What is the justification for allowing such large mixing zones in trout maintenance waters? Where does this limitation come from? Is it justified based on the uses of the waters? Does the Department know/have data that mixing zones of this size will not result in lowering of water quality outside the mixing zone? The Department cannot allow a discharger to kill organisms in the mixing zone – how will this be ensured? (18, 26, 30, 36, 37)

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**48. COMMENT:** The Department should eliminate or limit the use of mixing zones. Eliminating mixing zones will speed improvements in water quality. Mixing zones provide protection only for free swimming and drifting organisms at N.J.A.C. 7:9B-1.5(h)1v and provide no protection for stationary life. (29)

**RESPONSE TO COMMENTS 47 and 48:** The Federal Water Quality Standards Regulation, at 40 C.F.R. Part 131.13, provides that “States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones.” Mixing zones are areas within a surface water body at or near an outfall or discharge location where a facility discharges effluent for the purpose of mixing, dispersing, or dissipating effluent. Regulatory mixing zones provide initial dispersion and dissipation of the wastewater effluent in the receiving water at or near the discharge point, and are established on a case by case basis during the development of water quality based effluent limits in the NJPDES permit pursuant to N.J.A.C. 7:14A.

Mixing zones are allowed to avoid unnecessary imposition of stringent effluent limitations. The Department has a longstanding policy of allowing mixing zones in the surface water quality standards. As part of the 2002 revisions (34 N.J.R. 537(a), January 22, 2002), the Department adopted additional measures to restrict the use of regulatory mixing zones.

The Department has recodified the existing heat dissipation areas from N.J.A.C. 7:9B-1.14(c)11(ii) to N.J.A.C. 7:9B-1.5(h). This subsection now includes all requirements related to regulatory mixing zones, including heat dissipation areas. This subsection restricts heat dissipation areas for trout maintenance water to “not more than  $\frac{1}{4}$  of the cross section and/or volume of the waterbody or more than  $\frac{2}{3}$  of the surface from shore to shore at any given time.” This is a maximum area to be applied and the area must also meet with the general conditions for establishing a mixing zone at N.J.A.C. 7:9B-1.5(h)1.

The Department believes that the mixing zone provisions appropriately restrict the size of heat dissipation areas in trout maintenance waters. Specifically, N.J.A.C. 7:9B-1.5(h)1vii limits

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the size of the area and volume of a waterbody assigned a regulatory mixing zone to that which will not adversely affect beneficial uses or interfere with biological communities or populations of important species, such as trout.

Traditionally, mixing zones have been limited to small portions of waterbodies in an effort to ensure that adverse impacts are avoided. N.J.A.C. 7:9B-1.5(h)1vii limits the physical dimension of the mixing zone and therefore, also limits the area and number of stationary organisms that may be impacted by the discharge. Plumes of treated wastewater discharged to New Jersey's waters are either surface discharges or submerged discharges. Surface discharges are not expected to have significant impact on stationary life as these discharges tend to remain in the water column above these stationary aquatic organisms. Submerged discharges may impact some stationary life. However, because these discharges are generally at a higher temperature than the receiving waters, the discharge plume rises as it mixes with the receiving water, thus limiting any impact on stationary life on the bottom of the waterbody.

**49. COMMENT:** Dischargers should be required to measure the discharges into mixing zones so that the true extent of the impact can be measured and evaluated. Once this data has been collected, the impact on life in the mixing zone can then be analyzed to determine whether the mixing zones have a significant impact on the waterway. (29)

**RESPONSE TO COMMENT 49:** Dischargers are required to conduct routine effluent monitoring as specified in their New Jersey Pollutant Discharge Elimination System (NJPDES) permit. Water quality-based effluent limitations are developed to ensure the applicable water quality criteria are met at the edge of the mixing zone under low flow conditions. Compliance with these permit limits demonstrates that the discharge will not have a significant adverse impact on the waterway. In addition to the effluent monitoring, the Department conducts ambient biological monitoring to evaluate the condition of the benthic macroinvertebrate community. These complementary programs act to measure and evaluate impacts from discharges of treated wastewaters.

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**50. COMMENT:** The focus on important species at N.J.A.C. 7:9B-1.5(h) is misguided on two accounts. First, it does not recognize that the Clean Water Act (CWA) is for the benefit of all of nature. Second, it does not reflect that unimportant species are the food sources for the important species. By not including the affects on “non-important” species, the chances that bioaccumulation of pollutants will occur in the important species or other wildlife are increased.  
(29)

**RESPONSE TO COMMENT 50:** The section the commenter is referring to, N.J.A.C. 7:9B-1.5(h)1vii does not protect “important” species at the expense of “non-important” species. Rather, this provision provides a further level of protection for populations of important species. The water quality criteria are established at levels to protect the most sensitive aquatic organisms. N.J.A.C. 7:9B-1.5(h)1vii is a restriction on mixing zones . It provides that mixing zones shall not affect beneficial uses, or interfere with biological communities, or populations of important species. As a matter of public policy, the Department has determined that it is appropriate to limit mixing zones to further protect biological communities of Threatened and Endangered species. For further discussion see Responses to Comments 292-321, 34 N.J.R. 565-568 (January 22, 2002).

**51. COMMENT:** The Department should modify N.J.A.C. 7:9B-1.5(h)2i(3) to read "heat dissipation areas under both (1) and (2) above may be increased pursuant to Section 316(a) of the Clean Water Act." (19)

**RESPONSE TO COMMENT 51:** The Department believes that N.J.A.C. 7:9B-1.5(h)2i(3) as proposed is sufficiently clear and that the language suggested by the commenter is not necessary.

#### **N.J.A.C. 7:9B-1.14(f) - Criteria**

**52. COMMENT:** The commenters support the proposed toxic criteria. (26, 30, 36)

**RESPONSE TO COMMENT 52:** The Department acknowledges the commenters’ support.

**53. COMMENT:** The Department has developed human health surface water criteria that are lower than those provided by USEPA. This is contrary to the Department’s directive on

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being consistent with USEPA. The Department has not provided an analysis of the additional benefits to be derived from establishing criteria more stringent than USEPA nor has it provided an economic impact analysis of the additional costs to regulated community to achieve these more conservative criteria. (3, 8, 12, 32)

**RESPONSE TO COMMENT 53:** Except for the pollutants identified in the Federal Standards Analysis, included in Table 12 of the summary of the proposal, the Department's revised human health surface water criteria are consistent with the USEPA recommendations. The criteria were developed using the USEPA methodology and updated toxicity factors. This is consistent with the USEPA approach. Some proposed criteria (identified in the Federal Standards Analysis) are more stringent because the criteria were derived from toxicity basis or approaches specific to New Jersey, namely, criteria for pollutants evaluated by the New Jersey Drinking Water Quality Institute (NJDWQI) and Group C carcinogens. The NJDWQI has provided the scientific basis for risk assessment of pollutants. Pursuant to 40 C.F.R. Part 131.11, states have the option to derive water quality criteria different from the USEPA 304(a) criteria if the states' criteria are derived using scientifically defensible methods. The Department used toxicity bases developed pursuant to the New Jersey Safe Drinking Water Act (NJSDWA) in deriving its human health criteria for NJDWQI pollutants for surface waters so as to establish a consistent level of human health protection for all of its water programs. In addition, some criteria are different from the USEPA based on the Department's Group C carcinogen approach. This approach is also scientifically defensible. See Response to Comments 98 through 101. The Department believes its criteria are scientifically valid and therefore, variation from the Federal standard is appropriate.

The expected economic impact of adoption of these proposed criteria was identified in the economic impact section of the summary of the rule proposal. As indicated in that section, the economic impact will vary based on factors including the type of existing treatment, configuration of the treatment facility, composition of the wastewater stream, and opportunities for pollution prevention.

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**54. COMMENT:** The Department has not considered practical quantitation limits (PQL) in proposing the water quality criteria at N.J.A.C. 7:9B-1.14(f). The proposed fresh water surface water quality criteria for many of constituents classified as carcinogens are below the PQL including arsenic, benzene, and benzo(a) pyrene. (3, 8, 12, 32)

**RESPONSE TO COMMENT 54:** The surface water quality criteria are established at the levels necessary to protect the designated uses and are not based on practical quantitation limits. The Department recognizes that many of the criteria are below the current analytical capabilities and limitations on analytical capabilities are specifically addressed at N.J.A.C. 7:9B-1.5(e)5. N.J.A.C. 7:9B-1.5(e)5 states, "Where the effluent limitations developed pursuant to N.J.A.C. 7:14A-13.6 are below the level of detectability of the procedures in N.J.A.C. 7:18, the Department will use an effluent limitation of nondetectable in any NJPDES permit."

#### **Aquatic metals**

**55. COMMENT:** There should be aquatic criteria for all metals including mercury, chromium, and also pollutants such as pentachlorophenol and dieldrin. (33)

**RESPONSE TO COMMENT 55:** The Department is adopting aquatic life criteria for mercury, chromium, pentachlorophenol and dieldrin.

**56. COMMENT:** Chlorine criterion should be modified at least to the level permitted in drinking water regulations. There is no sound basis for the Department to require municipal wastewater facilities to reduce chlorine to the proposed level when water purveyors are adding chlorine to levels that exceed the proposed restrictions on treatment facilities. (4)

**57. COMMENT:** The proposed rules effectively eliminated the use of chlorine for disinfection. The Department has not provided any analysis of public health effects for eliminating this means of disinfection. In addition, the Department has not demonstrated that the alternate means of disinfection, which will have to be utilized, are capable of meeting the disinfection requirements of the proposed rule. (38)

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**RESPONSE TO COMMENTS 56 and 57:** Chlorine is a fast-acting toxicant that can be lethal to aquatic life. In December 1993, the Department adopted a criterion for Chlorine Produced Oxidant (CPO) at 25 N.J.R. 5569(a) and has not proposed any modifications to this criterion in this rulemaking. This criterion was established to protect aquatic life, not human health. Since that time, NJPDES permits have incorporated effluent limitations based on the CPO criterion and NJPDES facilities have complied. Neither the SWQS nor the NJPDES rules specify the type of treatment that must be utilized to disinfect wastewater. The SWQS do not prohibit the use of chlorine for disinfection. Although many facilities use chlorine for disinfection, some facilities use other means of disinfection to avoid the additional cost of dechlorinating their effluent to comply with CPO limits. Wastewater treatment facilities may consider a variety of options to comply with their NJPDES permit limits. For further discussion see Response to Comment 21.

**58. COMMENT:** The acute averaging period for CPO is assumed to be one hour. It is inappropriate to establish the acute criterion for CPO with a one-hour exposure period. This is apparent, given that all acute toxicity tests used to establish the Department's surface water quality criteria are 96-hour no-effect tests. With this proposed amendment, the Department recognized that numerous metals were not "fast-acting" toxicants and established acute averaging periods up to 24 hours for these metals. Previously, the Department recognized that the acute ammonia criterion has a three-hour averaging period. The Department should have made a similar determination for CPO because, like the metals with extended acute averaging periods, chlorine is also not "fast acting." (13, 15, 16, 27, 31)

**59. COMMENT:** Chlorine should be established on the basis of a longer and more appropriate averaging period. (4)

**RESPONSE TO COMMENTS 58 and 59:** The Department agrees that where data supports the development of longer averaging periods, revisions are appropriate. In 1996, the Department reviewed the averaging periods and determined that a 1-hour averaging period was appropriate for chlorine because chlorine can be toxic over a short period. The Department also concluded that the acute average periods for several metals should be revised from 1-hour to six hours. (See 28 N.J.R. 343, February 5, 1996 and 37 N.J.R. 3491, September 19, 2005 for additional

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information). The Department is unaware of any new information that justifies revising the existing 1-hour averaging period for CPO.

**60. COMMENT:** Since chlorine forms far less toxic and non-toxic compounds due to chlorine demand of surface waters, the regulations should provide a note that where chlorine demand studies are conducted, the Department may adjust the WQBEL for that parameter. (1, 7, 14, 21, 22, 35)

**61. COMMENT:** The surface water quality criteria for CPO should be amended to specifically include an adjustment for chlorine demand where such detoxification processes occur within the requisite mixing zone. (13, 15, 16, 27, 31)

**62. COMMENT:** The rules should explicitly provide that, where a chlorine demand study is conducted, the Department may adjust the based on the results of such a study. (4)

**RESPONSE TO COMMENTS 60 through 62:** The aquatic life based criteria for CPO was developed based on the toxicity effects to aquatic organisms. A mixing zone provides for the initial dispersion of wastewater into the receiving stream. The water quality criteria are to be met at the edge of the mixing zone. The size of the mixing zone is evaluated when the Department develops a water quality based effluent limitation pursuant to N.J.A.C. 7:14A-13 for the NJPDES facility. Therefore, concerns regarding the water quality based effluent limit for CPO must be addressed on a site-specific basis as part of the issuance of the NJPDES permit for the affected facility.

**63. COMMENT:** Several wastewater treatment plants which discharge to the Atlantic Ocean submitted a chlorine demand study to the Department nearly three years ago. When chlorine demand is taken into consideration, NJPDES permit limits can be derived that meet designated use requirements for both CPO and bacteria. (13, 15, 16, 27, 31)

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**RESPONSE TO COMMENT 63:** As indicated, in the Response to Comments 60 through 62, a study can be done to modify the effluent limits based upon site-specific factors. These concerns must be addressed through the NJPDES program, not the SWQS.

**64. COMMENT:** The commenter supports the proposed averaging periods for the acute aquatic life criteria for copper, cadmium, chromium, lead, mercury, nickel, silver, and zinc (37 N.J.R. 3532). This change from the previous 1-hour averaging period is justified by the scientific data cited in the preamble to the proposed rule. (23)

**65. COMMENT:** The commenter is pleased that the Department proposed to modify the saltwater criteria for nickel to reflect the most up to date scientific information. The three new saltwater acute chronic ratios used to derive the chronic criteria provide a high degree of confidence and are scientifically justified. (6)

**RESPONSE TO COMMENTS 64 and 65:** The Department acknowledges the commenters' support.

**66. COMMENT:** The Department should regulate free cyanide, by using total cyanide the Department is not being environmentally realistic. USEPA approved method (1677) measures weak acid dissociable (WAD) cyanide, which is the fraction of total cyanide that contains free cyanide (the bioavailable form) and labile cyanide complexes. The commenter feels strongly that until USEPA approves a free cyanide method, WAD cyanide should be used rather than total cyanide to regulate cyanide in NPDES permits. This approach would protect aquatic life from the toxic effects of cyanide in surface waters. When a free cyanide method is approved, permit limits should then be calculated on the basis of free cyanide. (6)

**RESPONSE TO COMMENT 66:** The water quality criterion for cyanide for aquatic and chronic aquatic life effects is expressed as "free cyanide" and not total cyanide. However, the NJPDES program has established water quality based effluent limits as total cyanide because there is no USEPA approved method to analyze for free cyanide in wastewater. The Department

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is working with USEPA Region II to explore the use of alternate methods for measuring free cyanide.

### **Water Effect Ratios**

**67. COMMENT:** The commenter supports the inclusion of the Water Effect Ratio (WER) definition and its use in the aquatic life criteria for metals in the SWQS (37 N.J.R. 3522). The WER is an invaluable USEPA methodology that is used to develop site-specific metals criteria that properly account for the bioavailability of a metal in surface water. (23)

**RESPONSE TO COMMENT 67:** The Department acknowledges the commenter's support.

**68. COMMENT:** Freshwater metals criteria should be displayed in criteria tables at N.J.A.C. 7:9B-1.14(f) based on a hardness of 100 mg/L and a WER of 1.0 for comparison purposes. (24)

**RESPONSE TO COMMENT 68:** The Department has elected to display the aquatic criteria for metals at N.J.A.C. 7:9B-1.14(f) as a hardness dependent formula. This will ensure that site-specific hardness data is used to develop the criteria for the waterbody and to establish water quality based effluent limits. For comparison purposes, the Department listed metals criteria values calculated using a hardness of 100 mg/L and a WER of 1 in the Federal standards analysis at 37 N.J.R. 3518.

**69. COMMENT:** The commenter believes that simply referring to the possible influence of alkalinity, pH, inaction with other metals, and other toxic substances on WER estimates alone does not constitute grounds for the Department's decision to "not entertain requests to conduct site-specific WER studies" using current USEPA guidance. Nearly all of the factors mentioned above are addressed within the current USEPA WER guidance, or can be addressed via a Department-approved work plan prior to initiating any WER study. (6, 28)

**70. COMMENT:** There is no rational justification for rejecting WER studies performed by dischargers that can use stream water to conduct their toxicity testing. (6)

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**71. COMMENT:** The Department failed to provide specific reasons for which New Jersey dischargers are to be denied benefit of utilizing WER procedure, which is widely used across the United States in developing appropriate, protective, site specific metals criteria, particularly for copper. The possibility that the WER study may not be successful should not form the bases for the Department refusing to contemplate conductance of such studies. (28)

**72. COMMENT:** The commenter strongly disagrees with comments on the WER made in the preamble of the proposed rule that suggest that a measured WER may not be adequately protective of aquatic biota (37 N.J.R. 3491). The statement in the preamble suggests that the WER procedure may not adequately represent receiving water alkalinity, pH, interaction with other metals and other toxic substances is not accurate, given that the WER procedure uses surface water upstream of a discharge in the test procedure and accounts for seasonal changes in site-specific water quality. Many states have used the WER method to establish site-specific and protective water quality criteria for metals such as aluminum and copper. (23)

**73. COMMENT:** If these proposed rules are adopted, it appears that the Department will then rely on the language contained in the WER definition section to justify an absolute rejection of all requests for WER studies in determining appropriate metals limits. Such an application of the proposed rules would be arbitrary and contrary to the guidance from USEPA, which guidance provides that metals standards and other toxicity limits should be based on site-specific conditions. (4)

**74. COMMENT:** If the Department is not going to allow use of WERs, it should not adopt its own metals limits, but, instead, it should leave metals as part of the National Toxics Rule, and under the jurisdiction of the USEPA which accepts the WER study, until the Department has dealt with this issue appropriately. If the Department insists on adopting the proposed metals limits, then, at the very least, it must accept WERs until approval of an alternate method of determining bioavailability. (4)

**75. COMMENT:** The use and application of WERs is necessary to properly implement the metals criteria. (1, 7, 14, 21, 22, 35)

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**76. COMMENT:** If WERs cannot be used, the criteria must be withdrawn as the Department will clearly be regulating the wrong form of the pollutant. (1, 7, 14, 21, 22, 35)

**77. COMMENT:** There should be no provision in the final rule that would restrict the use of WERs where they are scientifically appropriate, nor should the Department express any preconceived opinions or interpretations that the WER method is unacceptable for developing site-specific criteria at any location in New Jersey where the requirements of the USEPA methodology can be satisfied. (23)

**78. COMMENT:** WERs are conducted using acute methods. The receiving water would have to exhibit acute toxicity, which should be easily traceable to a point source, if it were occurring. If the condition is natural, then the water body cannot maintain aquatic life uses that are assumed in the criteria. Either way, this is an issue to be reviewed on a case-by-case basis and does not serve as a reason to eliminate WERs in all situations, even with those where instream acute toxicity is not an issue. (1, 7, 14, 21, 22, 35)

**79. COMMENT:** Use of the water-effect ratio is fully justified. The Department's decision to not allow WERs is at odds with the purpose motivating use of the WER, which is, as explained in the National Toxics Rule, "to assure that the aquatic life metals criteria are appropriate for the chemical conditions under which they are applied." (19)

**80. COMMENT:** The Department should allow the application of WER values other than 1.0 so long as workplans continue to be reviewed and refined as needed on a case-by-case basis, and study results continue to be carefully interpreted. (24)

**RESPONSE TO COMMENTS 69 through 80:** The Department acknowledges that the use and application of WER is necessary to properly implement the metals criteria. The aquatic life metals criteria listed at N.J.A.C. 7:9B-1.14(f) are expressed as a formula which includes a WER, a conversion factor and, where appropriate, water hardness. The use of a WER is consistent with the USEPA's recommendation in the Water Quality Standards Handbook: Second Edition (EPA-823-B-94-005) August 1994.

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In the summary to the rule proposal, the Department indicated that it would not entertain requests to conduct site-specific WER studies and would use the USEPA recommended default WER of 1 to calculate the applicable aquatic life protection criteria for metals. The Department has reviewed the comments received and has been in contact with USEPA Region II concerning the appropriate use of the default WER. The Department agrees with the commenters that developing a site-specific WER is appropriate in specific circumstances. As indicated in the summary, the Department still believes that many dischargers will be unable to successfully perform a WER study due to upstream impacts. However, the Department recognizes that there may be facilities that may perform a successful demonstration. In addition, the USEPA has agreed to provide its expertise and guidance to the Department to review of WER studies. Therefore, the Department has reconsidered its decision, and will entertain site-specific WER studies using current USEPA methodology as set forth in the Interim Guidance on Determination and Use of Water-Effect Ratios for Metals in 1994. (EPA-823-B-94-001) (Interim Guidance).

Prior to initiating a site-specific WER study, a permittee will be required to submit a workplan for Department approval. The sampling plan must be developed in accordance with the Interim Guidance. The Department will review the final report and determine the appropriate site-specific WER. Until a site-specific WER is developed, the default WER of 1 will apply. Since the aquatic life metals criteria listed at N.J.A.C. 7:9B-1.14(f) are expressed as a formula which includes a WER, a conversion factor and where appropriate water hardness, the Department has determined it is not necessary to modify the rule text to allow the use of site-specific WERs.

**81. COMMENT:** The Department should adopt a default WER scale-up of 3 for all municipal facilities that discharge copper. Adoption of a default WER of 1 is plainly inappropriate. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENT 81:** The Department does not have sufficient data to demonstrate a default WER of 3 for copper is appropriate for the entire State. As indicated in Response to Comments 69 through 80, site-specific WERs can be developed by a discharger.

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**82. COMMENT:** Several of the metals standards proposed for adoption at N.J.A.C. 7:9B-1.14 are made more stringent, than those recommended by USEPA, by adoption of an alternate conversion factor and by the use of a default water effect ratio of 1. These changes will arbitrarily impose stricter metals limits for most waters than is required to protect aquatic life. (4)

**RESPONSE TO COMMENT 82:** The aquatic life criteria are based on dissolved metals. Conversion factors are used to convert the total recoverable metal to the dissolved metal. Most of the criteria were developed using the USEPA conversion factors. As explained in the summary of the proposal at 37 N.J.R. 3491, some of the conversion factors used by the USEPA were calculated inconsistently and therefore, the Department determined it was appropriate to use some of the conversion factors developed by the Delaware River Basin Commission (DRBC). The DRBC conversion factors were published in the *Revised Procedure for Converting Total Recoverable Water Quality Criteria for Metals to Dissolved Criteria*. 1995, DRBC (<http://www.state.nj.us/drbc>). The USEPA evaluated the DRBC conversion factors and determined that these factors were acceptable. (Letter dated March 4, 1998 from Jeanette Wiltse, Director of Health and Ecological Criteria to Vincent P. D'Anna, Federal Commissioner, DRBC).

With respect to the default water effect ratio, the USEPA recommends that a default WER of 1 be used to calculate the aquatic life criteria unless a site-specific WER has been approved. As indicated in Response to Comments 69 through 80, the Department is allowing site-specific WERs to be developed.

**83. COMMENT:** The site-specific copper criteria that the Department adopted for the New York/New Jersey Harbor Estuary at N.J.A.C. 7:9B-1.14(g) is based on a WER study. The Department does not assert in the preamble that the NY/NJ Harbor Estuary site-specific copper criteria is not protective; indeed, the Department proposes to continue to utilize this criterion. (23)

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**RESPONSE TO COMMENT 83:** The Department agrees that the promulgated copper criteria at N.J.A.C. 7:9B-1.14(g) for the New York/New Jersey Harbor Estuary is based on a site-specific WER study. As indicated in Response to Comments 69 through 80 the Department agrees that a site-specific WER study may be used to implement the metals criteria.

**84. COMMENT:** While the Biotic Ligand Model (BLM) has performed reasonably well for predicting the ambient toxicity to a few species for a number of metals, it most certainly does not perform well for all species and all metals in all surface waters. The BLM version available at [www.hydroqual.com/wr\\_blm.html](http://www.hydroqual.com/wr_blm.html) consistently over-predicted (under-estimated) copper toxicity to the very metal-sensitive freshwater cladoceran species *Ceriodaphnia dubia*. This particular model should not be expected by the Department to replace the WER procedure for deriving site-specific criteria in the near term. Only results from laboratory toxicity tests spiked with contaminants in site water, which become the numerator of all WERs, can be considered benchmarks for site-specific criteria adjustments. (6, 28)

**85. COMMENT:** The commenter supports the adoption of the BLM for bioavailability analysis for all metals, and the Department should permit utilization of the BLM for copper as soon as the USEPA has given final approval. The USEPA has received overwhelmingly positive responses to that document, but has not yet completed formal adoption of the water quality criteria for copper based on the BLM. The commenter requests that the Department affirmatively recognize that, upon such USEPA approval the BLM will be the accepted method for determining bioavailability. (4)

**86. COMMENT:** The adoption of the biotic ligand model is certainly being evaluated on the Federal level, but the prediction that the BLM method will replace WERs is overstated. The majority of USEPA's research efforts in the BLM arena suggest that USEPA may propose the adoption of the BLM as an additional method that can be used to establish site-specific criteria. This rationale as part of the Department's decision to not entertain WER studies is an excuse for continued indecisiveness. (24)

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**87. COMMENT:** The biotic ligand model described in the preamble, if USEPA approves the approach, is a complementary approach to the WER for developing site-specific aquatic life criteria for metals. It is not, however, a replacement for the WER method which is well proven and widely used by many states. (23)

**RESPONSE TO COMMENTS 84 through 87:** The Biotic Ligand Model (BLM) is a metal bioavailability model taking a number of water quality constituents (for example, dissolved organic carbon, calcium, magnesium, potassium, and dissolved oxygen) into consideration in deriving the aquatic criteria. Unlike the empirically derived hardness dependent criteria using the site-specific WER, the BLM explicitly accounts for individual water quality variables and addresses variables that were not factored into the hardness relationship. The USEPA recommended copper criteria based on the BLM is anticipated to be released before the end of 2006. The Department may consider using the BLM method after the USEPA finalizes the copper criteria based on BLM.

#### **Human health**

**88. COMMENT:** The Department indicates that the proposed criteria are rounded to two significant figures from the final calculations. Rounding follows the general scientific practice of dropping digits that are not significant, as recommended by the USEPA 2000 Human Health Methodology. This is appropriate and consistent with USEPA. (3, 8, 12, 32)

**RESPONSE TO COMMENT 88:** The Department acknowledges the commenters' support.

**89. COMMENT:** In the proposed groundwater quality standard the "criteria derived from the final calculations are rounded to one significant figure." In that document, the Department indicated that their procedure "follows the general scientific practice of dropping digits that are not significant. The practice used by the Department for the groundwater criteria was not scientifically correct or consistent with USEPA. (3, 8, 12, 32)

**RESPONSE TO COMMENT 89:** The Ground Water Quality Standards (GWQS) at N.J.A.C. 7:9C are scientifically correct and consistent with USEPA. For a discussion on the rounding

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policy used to develop the Ground Water Quality Standards, see the Basis and Background for Criteria Derivation and Practical Quantitation Levels at <http://www.state.nj.us/dep/wmm/sgwqt/gwqsbb.pdf>.

**90. COMMENT:** The proposed amendments would impose unduly stringent human health criteria for mercury and arsenic. The proposed amendments' human health criteria for mercury and arsenic are not justified. (19)

**RESPONSE TO COMMENT 90:** New Jersey followed the USEPA Final Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000) (EPA-822-B-00-004; October 2000) when developing arsenic and mercury criteria. New Jersey and other states consider the USEPA methodology to be scientifically correct and to yield appropriately protective criteria. The methodology incorporates exposure to chemicals from drinking water and consumption of organisms so that the combined exposure is limited to an acceptable level.

**91. COMMENT:** The commenter agrees with the Department that use of the RPFs for developing individual PAH water quality criteria is scientifically justified and protective of human health. (23)

**RESPONSE TO COMMENT 91:** The Department acknowledges the commenter's support for its approach for the development of the criteria for PAHs.

**92. COMMENT:** The proposed surface water quality criteria are more restrictive than the standards for drinking water, and cannot be defended as necessary to protect human health. The SWQS should be the same as the drinking water standards, not more stringent. No surface water in New Jersey is permitted for use as drinking water without treatment. Therefore, while establishing drinking water standards for this class of toxics is appropriate for the protection of human health, setting SWQS for this class of toxics is not required for the protection of human health. Nothing in the proposal justifies treating New Jersey's surface water more restrictively than drinking water. For this reason, the proposed standards are arbitrary and the cost for achieving them cannot be justified by any cost benefit analysis. (4)

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**RESPONSE TO COMMENT 92:** Ambient surface water quality criteria are established at levels necessary to protect the designated uses as required by 40 C.F.R. Part 131.11(a)(1). This section of the Federal Surface Water Quality Standards Regulation states that: "States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale..." Under the Water Pollution Control Act and the Water Quality Planning Act, the Department is to protect, maintain and restore the water quality of New Jersey. As part of this mandate, New Jersey has adopted human health surface water quality criteria to protect human health from exposures to toxics through drinking water and fish consumption. A state as densely populated as New Jersey must protect all its fresh waters as potable water supplies for possible future use. Further, residents should be able to consume fish caught in New Jersey waters. Therefore, it is reasonable and appropriate for surface water quality criteria for human health protection to be set at levels that protect human health from potential and current exposures and not just drinking water use based on current exposures.

The Safe Drinking Water Program adopted Maximum Contaminant Levels (MCLs) at N.J.A.C. 7:10 which apply to all water purveyors. Although the same factors are used to develop the MCLs and human health criteria listed in the SWQS, the Safe Drinking Water program must take into consideration additional factors such as the feasibility of treatment, cost, and analytical capabilities to set these MCLs for all facilities.

Unlike the drinking water MCLs, which apply to all drinking water facilities, the human health criteria listed in the SWQS are used by the NJPDES program to develop site-specific effluent limitations. Not all NJPDES facilities require effluent limits. Only facilities that cause or have reasonable potential to cause a violation of water quality criteria receive an effluent limit. The Department reviews effluent characterization data for each facility to determine whether the pollutant is present in the wastewater. If the pollutant is present in quantifiable amounts, an effluent limit is developed to ensure that the SWQS will be met in the receiving water. Effluent limitations for those pollutants listed as human carcinogens or "(hc)" at N.J.A.C. 7:9B-1.14(f)7, are based on an average stream flow condition which is the flow exceeded 75 percent of the time.

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The SWQS address analytical capability and treatment availability and cost on a facility-specific basis. N.J.A.C. 7:9B-1.5(e)5 addresses the establishment of effluent limitations, when criteria at N.J.A.C. 7:9B-1.14(f)7 is below the method detection level. N.J.A.C. 7:9B-1.8 and 1.9 allows the Department to consider the availability of treatment and the associated economic impacts on a facility-specific basis.

**93. COMMENT:** The criteria for arsenic, dibromochloromethane (DBCM), bromodichloromethane (BDCM) should be based only on fish consumption, because ingestion is otherwise appropriately regulated under the drinking water rules. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENT 93:** New Jersey follows the USEPA Final Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000) (EPA-822-B-00-004; October 2000) when developing this type of criteria. The methodology specifies calculation of criteria with factors for ingestion of aquatic organisms and 2 liters of water. No change is being made to the method of calculating human health criteria. For further discussion of the differences between SWQS criteria and drinking water standards, please see Response to Comment 92.

**94. COMMENT:** The Department cites the USEPA's matrix for their source for relative source contribution (RSCs) used in calculating the proposed water quality criteria. The RSC concept is not new to the Department as it has applied this in developing the groundwater and drinking water criteria. However, different RSC's were applied for the human health surface water criteria than used previously by the Department. This creates an inconsistency between programs and should be resolved. (3, 8, 12, 32)

**RESPONSE TO COMMENT 94:** The Department recognizes that there is an inconsistency in the development of criteria for the SWQS and GWQS. This inconsistency is based on the use of Relative Source Contribution (RCS). In the SWQS, the Department used a RSC to develop criteria only for those pollutants where the USEPA recommended using a RSC in the derivation

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of the USEPA 304(a) recommended criteria. See 2002 and 2003 304(a) recommendations (National Recommended Water Quality Criteria: 2002, Human Health Criteria Calculation Matrix (EPA-822-R-02-012, November 2002). National Recommended Water Quality Criteria for the Protection of Human Health (68 Fed. Reg. 75507, December 31, 2003)). Both these documents can be found at <http://www.epa.gov/waterscience/criteria/history.htm>.

In contrast, a RSC is always used to develop ground water quality criteria in the Ground Water Quality Standards (GWQS), N.J.A.C. 7:9C. In the GWQS, the Department used the same RSC as recommended by the USEPA for the 304(a) criteria. At this time, the Department has chooses to establish criteria consistent with the recommendations of the USEPA pursuant to Section 304(a).

**95. COMMENT:** The proposed human health criterion for total chromium in fresh and marine surface waters is not scientifically valid. The Department should revise the human health criteria for total chromium so that it applies only to hexavalent chromium. If the Department also believes that a criterion for trivalent chromium is necessary, then it should use the RfD in IRIS to establish a separate limit for the trivalent form of chromium. Also, contrary to the statement in the preamble to the proposed rule, hexavalent chromium in water can be measured separately by an approved analytical method. Therefore, compliance with a water quality criterion for hexavalent chromium can be measured directly. (23)

**96. COMMENT:** The Department should not apply the hexavalent RfD to develop a criteria for total chromium. If the Department intends on promulgating the standard based on hexavalent chromium RfD, then the criteria should be expressed as hexavalent and not total recoverable chromium. (3, 8, 12, 32)

**RESPONSE TO COMMENTS 95 and 96:** The USEPA 304(a) criteria for hexavalent chromium and trivalent chromium are both expressed as total chromium and based on the toxicity of hexavalent chromium. The oxidation of trivalent chromium to hexavalent chromium has been reported in the literature under a variety of environmental conditions. The criterion is

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expressed as total chromium because the two valence states of chromium are in a dynamic equilibrium depending on the environmental conditions. Chromium contamination of ground water and surface water is mainly associated with hexavalent chromium, which is far more water soluble than trivalent chromium. While it may be possible to analyze for both hexavalent and trivalent chromium, the Department believes that expressing the criteria as total chromium ensures human health protection under all environmental conditions.

### **Group C**

**97. COMMENT:** Given the uncertainty in applying a slope factor to a possible (Group C) carcinogen, some consideration should be given to the hardship and expense caused by the criterion, and the excess cancer risk on which the criterion is based should be adjusted accordingly. This approach would not be less stringent than USEPA guidance, because the Department classifies all freshwaters as supporting drinking water uses, as opposed to just actual source waters. (1, 2, 17, 34, 38)

**RESPONSE TO COMMENT 97:** The Federal Surface Water Quality Standards Regulation states that: "States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale..." 40 C.F.R. Part 131.11(a). This language does not provide for modification of the criteria as a result of economic considerations. The SWQS are used to develop effluent limitations for NJPDES permits. As indicated in Response to Comment 92, the decision to impose an effluent limit is addressed in the issuance of an individual NJPDES permit. If the cost to meet effluent limits based on these criteria result in widespread social and economic impacts, the SWQS have provisions to allow for the issuance of a variance (N.J.A.C. 7:9B-1.8 and 1.9). The Department believes that it is more appropriate to provide relief in specific cases through this mechanism.

**98. COMMENT:** Since Group C agents are, by definition, probably not human carcinogens, non-carcinogenic criteria should be calculated, perhaps using an additional factor of ten to protect from possible carcinogenic effects. Any criteria based on potential carcinogenic risk for Group C agents should be based on no less than  $10^{-5}$  excess cancer risk, given the fact that they

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are only possible carcinogens, as opposed to probable or known human carcinogens. (1, 2, 17, 34, 38)

**99. COMMENT:** The Department should be consistent with USEPA and use sound science in their practice of assessment of USEPA's former carcinogen classification, Group C. If USEPA has not applied a 10 fold uncertainty factor to the surface water human health criteria for Group C carcinogens, why did the Department select to do so? (3, 8, 12, 32)

**100. COMMENT:** The Department has selected the most conservative practices within USEPA without validating why the differences exist and lack of realization as to the scientific weight of evidence. This practice has "elevated" the concern for these chemicals, as well as classified other chemicals as Group C carcinogens, above what the scientific and technical bodies deemed appropriate and without USEPA concurrence. In the past, the USEPA classified chemicals as Group C carcinogens when the evidence for the carcinogenicity of the chemical was inadequate or equivocal. Many times there was insufficient information to develop a cancer slope factor but there was sufficient data to calculate a non-cancer reference dose. USEPA has not developed a cancer slope factor for Group C carcinogens since 1992. Most cancer slope factors were developed in 1988 as part of the agency's application of their original cancer risk management policy, which has since changed. USEPA is systematically, based on program priority, re-evaluating these chemicals in light of USEPA's revised cancer risk policy and the scientific literature. (3, 8, 12, 32)

**101. COMMENT:** The Department contends that its Group C approach is technically defensible as well as compatible with the various USEPA programs for the development of health-based standards and criteria. The proposed policy is neither technically defensible nor compatible with the USEPA programs as evidenced by the USEPA National Recommended Water Quality Criteria for Group C carcinogens. (3, 8, 12, 32)

**RESPONSE TO COMMENTS 98 through 101:** Toxic pollutants are characterized based upon the overall weight of evidence for human carcinogenicity. Group C carcinogens (possible

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human carcinogens) have some evidence of human carcinogenicity, but the evidence is not sufficient to warrant classification as Group B carcinogens (probable human carcinogens). Formerly, the Department utilized the same approach employed by the USEPA Office of Drinking Water. This approach involved using the Reference Dose for noncarcinogenic effects with a hazard quotient of 1 with an additional uncertainty factor of 10 to protect for possible carcinogenic effects. If the data to develop a Reference Dose did not exist, the standard was based on the carcinogenic slope factor using a risk management factor of  $1 \times 10^{-5}$ . In contrast, the USEPA Superfund program bases its risk assessments for Group C contaminants on the carcinogenic slope factor, if available, with a risk management factor of  $1 \times 10^{-6}$ . If no carcinogenic slope factor is available, the Reference Dose for noncarcinogenic effects is used with a hazard quotient of 1 but without the incorporation of an additional uncertainty factor of 10. Notably, the USEPA recommended 304(a) criteria allow the use of a risk management factor of  $1 \times 10^{-5}$  or  $1 \times 10^{-6}$  for Group C carcinogens. See 2002 and 2003 304(a) recommendations (National Recommended Water Quality Criteria: 2002, Human Health Criteria Calculation Matrix (EPA-822-R-02-012, November 2002). National Recommended Water Quality Criteria for the Protection of Human Health (68 Fed. Reg. 75507, December 31, 2003).)

The Department's new approach for risk assessment for Group C constituents involves a policy decision based on combining the approaches used by the USEPA Office of Water and USEPA Superfund program. Under this approach, the Department applies a risk management factor of  $1 \times 10^{-6}$  if a cancer slope factor is available and is judged by internal Departmental review to be technically sound, and based on adequate toxicological data. If no suitable cancer slope factor is available, the criterion will be based on noncarcinogenic effects using the Reference Dose with a hazard quotient of 1 with an additional uncertainty factor of 10 to protect for possible carcinogenicity.

The Department has developed this approach to be used throughout its implementing programs for Group C contaminants. This approach is technically defensible as well as compatible with the various USEPA programs for the development of health-based standards and criteria. The use of an additional uncertainty factor of 10 when using the Reference Dose to

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provide sufficient health protection from possible carcinogenic effects is consistent with USEPA's water programs, and New Jersey's current standards and guidance for drinking water, surface water, ground water, and soil cleanups. The health-based ground water quality criteria using this approach were adopted on November 7, 2005 at 37 N.J.R. 4226(b).

The Department utilized the approaches identified in the proposal at 37 N.J.R. 3498 to derive health-based criteria for carcinogens and non-carcinogens. The health-based criteria for those constituents listed as “possible human carcinogens” or “Group C” were derived using the formulas for carcinogens, if an acceptable slope factor is available, using a lifetime cancer risk level of one-in-one-million. If a slope factor is not available, the health-based criterion was derived using the non-carcinogen formulas published at 37 N.J.R. 3498 using an additional uncertainty factor of 10. Since the Reference Dose (RfD) for these chemicals is based on non-carcinogenic effects, which may be unrelated to the carcinogenic effects of the chemical, it is a prudent, protective public health policy to include the additional uncertainty factor in the risk assessment. The Department believes that this approach for Group C constituents is appropriate and reasonable based on the available scientific information. Further, this approach is consistent with the 304(a) recommended criteria.

**102. COMMENT:** The Department’s proposed Group C methodology would result in carcinogenic criteria for five possible human carcinogens (beta-BHC, dibromochloromethane, hexachlorobutadiene, hexachloroethane, and isophorone) based on a  $10^{-6}$  excess cancer risk, just as if they were probable or known human carcinogens. The Department offers no explanation as to how it judged that the carcinogenic slope factors for these agents were technically sound. It appears that if an oral slope factor is published, it was deemed technically sound. The fact that there is not enough evidence to even categorize these agents as probable human carcinogens means that any carcinogenic slope factor is certainly not “technically sound” enough to calculate risks to the  $10^{-6}$  level. The resultant criteria based on a  $10^{-6}$  excess cancer risk using uncertain slope factors are very stringent, and are not justified. If the “slope factor” is so uncertain as to not even be able to categorize the agent as a probable human carcinogen, then certainly it is not a

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technically sound basis to calculate the level above which a one in a million excess risk of cancer is incurred. (1, 2, 17, 34, 38)

**103. COMMENT:** The Department's new Group C methodology results in an extremely stringent limit for dibromochloromethane, a common disinfection byproduct. Given that dibromochloromethane is not even a probable human carcinogen, and that it is a common disinfection byproduct, the Department should not promulgate a carcinogenic criterion based on a  $10^{-6}$  excess cancer risk. (1, 2, 17, 34, 38)

**RESPONSE TO COMMENTS 102 and 103:** For the five Group C chemicals noted by the commenter, USEPA has derived slope factors based on results of chronic studies designed to evaluate carcinogenic potential. These slope factors are included in the USEPA IRIS, which represents the consensus of scientists from programs throughout USEPA. The fact that the level of evidence for carcinogenicity for a chemical does not warrant classification as Group A or B does not mean that the slope factor is uncertain and not sound enough to be the basis for quantitative risk assessment. Although Dibromochloromethane has not been documented as a known human carcinogen, the USEPA classified this constituent as a possible human carcinogen (Group C) based on limited evidence of carcinogenicity in mice, positive mutagenicity data, and its structural similarity to other trihalomethanes, which are known animal carcinogens.

**104. COMMENT:** Under the 1986 cancer policy guidelines, USEPA classified 1,1-Dichloroethylene (DCE) as a Group C carcinogen, possible human carcinogen. Under the draft revised guidelines, USEPA reassessed the carcinogenicity of DCE determining that it "exhibits suggestive evidence of carcinogenicity but not sufficient evidence to assess human carcinogenic potential following inhalation exposure in studies in rodents." This resulted in the conclusion that quantitative risk from oral and inhalation exposures is not applicable. Specifically for the inhalation exposure route, USEPA determined that the "weight of evidence, however, is not sufficient to justify deriving an inhalation unit risk." Nonetheless, the Department elected to apply an additional 10-fold uncertainty factor on this previously classified Group C carcinogen. (3, 8, 12, 32)

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**RESPONSE TO COMMENT 104:** As described in the proposal (37 N.J.R. 3499), for pollutants that have been addressed by the New Jersey Drinking Water Quality Institute (NJDWQI), the human health criteria are based on the toxicity factors and carcinogen classifications recommended by NJDWQI rather than those from IRIS. The Department has relied on the recommendations of the NJDWQI for the development of human health criteria. The Department adopted, and the USEPA approved, human health criteria for 17 chemicals based on these risk assessments on December 6, 1993 (See 25 N.J.R. 5569(a)). The recommendations of the NJDWQI are used consistently throughout the Department for criteria and guidance based upon the oral route of exposure for these chemicals, including drinking water standards, soil standards, groundwater criteria, fish advisories, and surface water criteria. 1,1-Dichloroethylene is considered to be a possible human carcinogen (New Jersey Category II equivalent to USEPA Group C) by the NJDWQI, and the proposed criteria are based on this classification. See Response to Comment 98 to 101 for additional information.

The Department agrees with the commenters that quantitative risk assessment based upon carcinogenicity for 1,1-dichloroethylene is not warranted. The term “quantitative risk assessment” in the context of carcinogenicity refers to the development of a cancer slope factor from animal or human data. For contaminants classified as Possible Human Carcinogens (Group C) for which quantitative risk assessment (for example, slope factor development) is not warranted, criteria are based on the non-carcinogenic endpoint. A Reference Dose is developed based on the No Observed Adverse Effect Level or the Lowest Observed Adverse Effect Level with the application of appropriate uncertainty factors. For the Group C constituents, an additional uncertainty factor of 10 to account for possible carcinogenicity is applied. This approach was used for 1,1-dichloroethylene.

**105. COMMENT:** Beryllium and benzyl butyl phthalate are identified by the Department as Group C carcinogens, but not USEPA. An additional 10-fold safety factor was applied in developing the SWQC for these chemicals as well. It should be noted that USEPA classified beryllium as a B-1 carcinogen by the inhalation route only. (3, 8, 12, 32)

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**RESPONSE TO COMMENT 105:** The Department's classification of beryllium as Group C, possible human carcinogen, is based on USEPA's evaluation in developing its drinking water Maximum Contaminant Level for beryllium (57 Fed. Reg., 31784, July 17, 1992).

Butyl benzyl phthalate has been classified by USEPA as a Group C carcinogen in its IRIS data base since 1993.

**106. COMMENT:** The Department acknowledged that the proper form of arsenic to regulate is inorganic arsenic. 37 N.J.R. 3499. The Department, however, changed the regulated form of the pollutant to total arsenic. The Department must account for the difference between inorganic and total arsenic measurements. (1, 7, 14, 21, 22, 35)

**107. COMMENT:** The Department has selected to depart from USEPA for the proposed human health arsenic "organisms only" criterion. USEPA's recommended water quality criterion for arsenic refers to the inorganic form only and not for total arsenic. The Department, in an overly conservative step and a departure from USEPA, used the cancer slope factor for inorganic arsenic to derive criteria for total arsenic that includes inorganic and organic arsenic "because of the interconversion of the arsenic species both in the environment and in the body." Furthermore, the Department states that "analytical methods used do not usually speciate arsenic." Using the cancer slope factor to represent potential risks posed by all forms of arsenic is overly conservative and not technically supported. Routine laboratory analysis is performed for inorganic arsenic. Therefore, the proposed criterion should reflect the true basis for the criterion, such as "inorganic" versus total recoverable. (3, 8, 12, 32)

**108. COMMENT:** The Department is proposing to restrict the wrong form of arsenic. Inorganic arsenic should be regulated, not total arsenic. The Department's proposed regulations fail to apply the appropriate conversions and adjustments to total arsenic needed to establish the appropriate inorganic limits. (4)

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**RESPONSE TO COMMENTS 106 through 108:** The Department regulates total arsenic because of its potential to convert between organic and inorganic forms in the environment. This is consistent with the approach taken by the USEPA in the USEPA National Primary Drinking Water Regulations (40 C.F.R. Part 141). For example, the MCL for arsenic in drinking water is based on total arsenic including both organic and inorganic forms. As explained by the USEPA, organo-arsenicals in surface waters have been reported to convert to inorganic arsenic via demethylation. Therefore, most methods routinely used for arsenic determination in surface water (USEPA Method 200.8, 200.9, 206.2) determine total arsenic, not inorganic arsenic.

**109. COMMENT:** Arsenic present in tap water will be regulated at the 5 ppb level. That same arsenic coming through the water supply once discharged by the wastewater plant will be regulated for consumption at a 0.018 ppb level. Thus, POTWs will be required to remove arsenic that was determined safe for human ingestion to protect from adverse health impacts associated with ingestion. This is arbitrary and unnecessary. There is no basis for regulating the drinking of wastewater effluent more stringently than regulating the drinking of tap water. Both locations are protecting for the same human health protection goal. Direct ingestion of effluent does not even occur and is, in fact, illegal under the Safe Drinking Water Act rendering the need to regulate effluents more stringently unnecessary. See USEPA Surface Water Protection Rule; 40 C.F.R. Part 141. The Department should withdraw the provisions that regulate ingestion of effluent more stringently than ingestion of tap water because there is no demonstrable public health protection need for the more restrictive regulation. (1, 7, 14, 21, 22, 35)

**110. COMMENT:** The rule proposal includes new arsenic water quality standards which are actually more stringent than drinking water standards. This proposal may require treatment to remove arsenic from wastewater to lower levels than the drinking water supplied to the users. This potential situation is impractical and would be extremely wasteful. (9)

**111. COMMENT:** The proposed 0.017 µg/L freshwater human health standard corresponds to an incremental 1 in a million cancer risk, while drinking water standards are based on a much

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higher cancer risk. The drinking water arsenic standard in New Jersey will be 5 µg/L in January 2006. (4)

**RESPONSE TO COMMENTS 109 through 111:** The 0.017 µg/L criterion for arsenic is a proposed readoption of the existing criterion, not the proposal of a new criterion. The drinking water Maximum Contaminant Level Goal (MCLG) and the human health criteria are both based on the same cancer risk of one-in-one-million. The adopted drinking water MCL takes into consideration treatment, costs, and analytical capabilities. As explained in Response to Comment 92, these factors can not be used to revise the surface water quality criteria. However, these factors can be addressed on a site-specific basis. For the reasons stated in Response to Comment 92 the Department believes that this more focused approach is appropriate.

**112. COMMENT:** The proposed 0.017 µg/L freshwater standard is even lower than natural background. Arsenic is a naturally occurring element, and a common source of arsenic in drainage waters is the release from weathering of arsenic-bearing minerals to groundwater, which forms the base-flow for surface waters draining New Jersey watersheds. USGS monitoring of arsenic concentrations in New Jersey groundwater show that the 99.2% is above the 0.017 µg/L limit. If the natural background arsenic concentration in the State of New Jersey is above 0.017 µg/L, then from a practical standpoint this limit is unachievable by any means to restrict discharges of arsenic from point or non-point sources. All water bodies in the State will exceed that value regardless of any anthropogenically derived arsenic sources. (4)

**RESPONSE TO COMMENT 112:** N.J.A.C. 7:9B-1.5(c)1 provides that "The natural water quality shall be used in place of the promulgated water quality criteria of N.J.A.C. 7:9B-1.14 for all water quality characteristics that do not meet the promulgated water quality criteria as a result of natural causes." Accordingly, natural concentrations of arsenic documented in the States' waters will be used as the criteria to be met. Because of this, not all waters of the State will automatically violate the SWQS. However, until the natural concentration of arsenic is documented in a waterbody, the State-wide criteria apply.

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**113. COMMENT:** The Department's rationale for its proposed human health criterion for arsenic in saline waters is unclear. The proposed saline arsenic criterion of 0.061 µg/L is justified as improving upon USEPA's "outdated" criteria 0.14 µg/L for consumption of fish only. Increased rates of fish consumption would not, however, appear to justify a more than twofold increase in the stringency of the saline criterion. (19)

**RESPONSE TO COMMENT 113:** The change in the saline criterion for arsenic is not based solely on the change to the fish consumption factor. The Department developed the revised criterion for arsenic in saline waters in accordance with the USEPA Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000) (EPA-822-B-00-004, October 2000) (2000 Human Health Methodology) using updated scientific information. As listed in Table 5 at 37 N.J.R. 3504, in addition to the recommended fish consumption factor of 17.5g/day, a revised slope factor was used. This slope factor was updated based on revisions made in the USEPA IRIS database.

**114. COMMENT:** Dibromochloromethane (DBCM), bromodichloromethane (BDCM), chloroform, and bromoform are by-products of disinfection by chlorine and should not be regulated in surface waters. The human health effects of these disinfection by-products is from ingestion of water only. There is no risk from fish consumption. In addition, since there are no aquatic life protection standards for these parameters, there is no need to regulate them for the protection of aquatic life. Both wastewater treatment facilities and water purveyors chlorinate. The current drinking water standard for these disinfection by-products is 100 µg/L for the sum of all four parameters. There has not been any establishment of drinking water standards for these parameters individually. The drinking water standards are, therefore, much less restrictive than the proposed SWQS and these compounds can be present in drinking water, and in compliance with drinking water standards, at much higher levels than in wastewater effluents under the proposed rules. Since no surface water in New Jersey can be used as a water supply without treatment, there is no opportunity for raw surface water containing disinfection by-products to be consumed directly as drinking water. Accordingly, there is no demonstrable benefit to human health in regulating and restricting the discharge of these compounds to surface waters. (4)

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**115. COMMENT:** The disinfection byproducts are present in tap water because all surface waters require disinfection prior to consumption. This creates BDCM and DBCM at levels far greater than present in wastewater effluents. USEPA studies concluded that surface waters were not a significant source of these pollutants in drinking waters. Because surface waters must be disinfected prior to consumption under Federal law and the source of these parameters is not the surface water, regulation of BDCM and DBCM ingestion in surface waters has no demonstrable relationship to public health protection needs. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENTS 114 and 115:** Under the Water Pollution Control Act and the Water Quality Planning Act, the Department is to protect, maintain and restore the water quality of New Jersey. As part of this mandate, New Jersey has adopted human health surface water quality criteria to protect human health from exposures to toxics through drinking water and fish consumption. A state as densely populated as New Jersey must protect all its fresh waters as potable water supplies for possible future use. The Department has designated all freshwater streams as potential water supply sources. The human health criteria listed at N.J.A.C. 7:9B-1.14(f)7 are used to protect this use.

A Maximum Contaminant Level (MCL) has been adopted for Total Trihalomethanes (TTHM). This is the sum of bromodichloromethane, bromoform; dibromochloromethane and Chloroform. The current MCL for TTHM is 80 µg/L not 100 µg/L as indicated by the commenters. The human health criteria are based on the same factors used to develop Maximum Contaminant Level Goals (MCLG) for the Safe Drinking Water Program. While there is no collective MCLG for the TTHM contaminant group, the individual MCLGs for bromodichloromethane and bromoform is zero. The MCLG for dibromochloromethane is 0.06 mg/L. Chloroform is regulated with this group but has no MCLG.

The adopted MCLs apply to all water purveyors. Although the same factors are used to develop the drinking water MCLGs and human health criteria listed in the SWQS, the Safe Drinking Water program must take into consideration additional factors such as the feasibility of

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treatment, cost, and analytical capabilities to set these standards for all facilities.

The disinfection of wastewater prior to discharge is necessary. However, chlorination is not the only treatment technology available for disinfection. Those facilities that continue to utilize chlorination to disinfect their wastewater may generate disinfection byproducts. These facilities will have to evaluate treatment options to ensure that the levels of bromodichloromethane, bromoform; dibromochloromethane, and chloroform comply with the effluent limitations established by their NJPDES permit. For further discussion on chlorine see Response to Comments 56 and 57. In addition, as explained in Response to Comment 92, options exist to address situations where there is no technology available to comply, or the costs to install and operate treatment will result in significant and widespread economic impact.

**116. COMMENT:** The Department should replace the proposed mercury water column criteria with the new methylmercury fish tissue criteria now recommended by the USEPA. Methylmercury is also generally easier to quantify in fish tissue than in water and is less variable. Thus, the data used in permitting activities can be based on a more consistent and measurable endpoint. (19)

**117. COMMENT:** The Department indicated that it will not use USEPA's recommended 0.3 mg/kg fish tissue value until USEPA has developed implementation procedures but also stated that it may use the fish tissue criteria for evaluating impairment. It is not clear how these two uses are different. (19)

**RESPONSE TO COMMENTS 116 and 117:** The Department evaluated the methylmercury criterion recommended by the USEPA in 2001. The Department decided to retain a water column concentration criterion for mercury at this time due to implementation issues. As part of the methylmercury criteria, the USEPA had committed to develop implementation guidance to assist states in implementing the methylmercury fish tissue criterion. This rule proposal was issued before the USEPA issued the implementation. On August 9, 2006, the USEPA released draft implementation guidance for public comment. See

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<http://www.epa.gov/waterscience/criteria/methylmercury/>. The comment period on this guidance closes on October 10, 2006. The Department will be evaluating the USEPA implementation guidance and may propose a methylmercury in fish tissue criteria in a future rule proposal.

The Department agrees that it is generally easier to quantify Methylmercury in fish tissue than in water. However, because the fish tissue residue based criterion is a weighted value, it is necessary to obtain and analyze fish tissue from multiple trophic levels. This increases the time and cost for collecting fish and costs for analyzing the data.

The acceptable concentration in the water column is calculated based on the acceptable level of the contaminant in fish tissue. See: Water Quality Criterion for the Protection of Human Health: Methylmercury Final; EPA-823-R-01-001, January 2001. The Department determined that until the implementation issues were addressed, the Department would continue to use a water column concentration for permitting purposes.

The assessment methods are developed pursuant to 303(d) and currently the Department lists waters as impaired based on fish consumption advisories. These advisories are based on mercury levels measured in fish tissue. For more information on fish advisories go to: <http://www.nj.gov/dep/dsr/>.

**118. COMMENT:** Compliance with the proposed 0.051 µg/L criterion for mercury will be difficult. In that regard, Table 7 of the preamble to the proposed amendments (37 N.J.R. 3514) notes that the average value for mercury (total recoverable) from Discharge Monitoring Report (DMR) data for the two year period 2002-03 was more than 5.8 µg/L, which is two orders of magnitude higher than the proposed criterion. While recognizing that a variety of factors would affect derivation of the WQBELs that could result from the proposed criterion, the cost implications and resource commitments associated with the proposed criterion are likely to be quite substantial. (19)

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**RESPONSE TO COMMENT 118:** The adverse impacts of mercury to human health are substantive and reflected in, among other items, Statewide fish advisories. As indicated in the summary of the proposal, the costs and resource commitments associated with the proposed mercury criteria may be quite substantial. However, these costs will vary based on site-specific factors which are used in the development of water quality based effluent limits. The Department recognizes that technology may not be available to meet the low levels of mercury criteria today and that variances might be necessary.

**119. COMMENT:** NJDWQI's toxicity factor for benzene results in a human health criterion that is 4 to 15 times more stringent than USEPA. The USEPA National Recommended Water Quality Criteria for benzene are 2.2 ppb and 51 ppb. The USEPA included a footnote to indicate that these criteria were developed using a RfD from IRIS in 2002. The Department's belief that "its criteria reflect more recent best available scientific information, and therefore, variation from the Federal standard is appropriate" is not supported. (3, 8, 12, 32)

**RESPONSE TO COMMENT 119:** The criteria for benzene listed at N.J.A.C. 7:9B-1.14(f) is based on the risk assessment completed by the New Jersey Drinking Water Quality Institute (NJDWQI) and the USEPA 2000 Human Health Methodology. The NJDWQI was established by the 1983 amendments to the Safe Drinking Water Act (SDWA), and is responsible for developing and recommending to the Department MCLs for hazardous contaminants in drinking water. As indicated in the summary (37 N.J.R. 3499), the Department used the toxicity factors developed by the NJDWQI rather than those listed in IRIS to provide a consistent level of protection for all water related programs including drinking water standards, soil standards, groundwater criteria, and surface water criteria. The Department used the risk assessments used to derive the MCLs in 1996 in calculating the proposed benzene criteria. The NJDWQI is currently reevaluating its chemical-specific recommendations to determine whether updates are needed. If the Department determines that these criteria need to be updated, it will initiate rulemaking.

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**Fish Consumption Factor**

**120. COMMENT:** The Department's proposed human health criteria based on the new fish consumption rate are three times more restrictive. This action is arbitrary and capricious because there is no evidence in the record that currently applicable standards are in any way underprotective. (1, 7, 14, 21, 22, 35)

**121. COMMENT:** The Department has not cited any New Jersey specific data to support the use of this national default value. In the past, the Department has applied State-specific information and it should do so in this case. Documentation of the New Jersey-specific fish and shell fish consumption rate should be provided if it is consistent with the "new default" fish ingestion rate used in the development of these human health criteria. If not, then the Department should either use a more representative fish ingestion rate for fish and shell fish taken from the State waters or apply a fraction of the 17.5 g/day ingestion rate that would be characteristic of fish and shell fish consumption from New Jersey waters. (3, 8, 12, 32)

**122. COMMENT:** The record is devoid of information demonstrating that USEPA's high fish consumption rates associated with subsistence fishermen apply in New Jersey. A recent evaluation by the State of Minnesota (a state with high fish consumption rates due to the extensive American Indian population and lake fisheries) indicated that USEPA's fish consumption rate was too high. Some type of information needs to be presented for New Jersey if USEPA's more restrictive approach is to be justified. (1, 7, 14, 21, 22, 35)

**123. COMMENT:** The proposed toxics standards for surface waters that are human health-based on ingestion and fish consumption should be reconsidered. It appears that the Department is proposing these stringent toxics standards in reliance on the USEPA's criteria for areas with an active population of subsistence fisherman. New Jersey does not have a significant population of subsistence fisherman and, therefore, there is no reasonable basis in New Jersey to apply this type of standard to the State's surface waters. No evidence has been provided that would establish that the existing SWQS for toxics are under-protective or that the proposed changes will be more protective of human health. (4)

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**RESPONSE TO COMMENTS 120 through 123:** The USEPA recommends that a fish consumption factor of 17.5g/day be used to develop human health criteria to be protective of the general population. See Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (USEPA, EPA-822-B-00-004; October 2000). Also see: USEPA Mercury Study Report To Congress; Volume I: Executive Summary (EPA-452/R-97-003; December 1997) which documented the distribution of fish consumption rates of various populations, including general populations, recreational anglers, subsistence fisherman, and Native Americans.

Several studies conducted in the mid-Atlantic region support the fish consumption factor of 17.5 g/day. These studies include:

- Development of Human Health Water Quality Criteria for PCBs for the Delaware Estuary Using the 2000 U.S. EPA Methodology (Fikslin, Thomas J., Greene, Richard W. and MacGillivray, A. Ronald; Water Environment Federation, TMDL 2005 Conference, Philadelphia, PA. June 2005).
- Patterns of Sport-fish Consumption at Six Pennsylvania Sites Along the Tidal Portion of the Delaware River with Special Emphasis on Shore Anglers. Pennsylvania Coastal zone Management Program. Technical Report. Project no. CZ1:02PD.09, Ann Faulds, Nancy Connelly, Barbara A. Knuth, Jill Benowitz, Joe Matassino, and Kevin P. Norton, March 31, 2004.
- KCA Research Division, David C. Cox & Associates. Fish Consumption Patterns of Delaware Recreational Fishermen and Their Households. Prepared for the State of Delaware, Department of Natural Resources and Environmental Control in support of the Delaware Estuary Program. April, 1994.

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- Estimation of fish consumption and methylmercury intake in the New Jersey population. J Expo. Anal. Environ. Epidemiol. 1996 Oct-Dec; 6(4): 503-525. Stern A.H., Korn L.R., Ruppel B.E.

Therefore, the USEPA recommended fish consumption factor and the fish consumption factor used by the Department to develop the human health criteria are reasonable and not overly protective.

**124. COMMENT:** The adoption of these surface water quality criteria based on the current fish ingestion rate will result in designating many waters of the State as “impaired” based on overly conservative exposure assumptions. This will produce undue concern regarding impacts on human health due to fish consumption from the waters of the State by the public as well as an economic impact due to loss of recreational sports fishing. The economic impact of the loss of sports fishing by the promulgation of these standards was not conducted. (3, 8, 12, 32)

**RESPONSE TO COMMENT 124:** The surface water quality criteria will be used to identify waters as impaired pursuant to Section 303(d). The new criteria may result in listing of additional waters as impaired. The Department believes that the fish consumption factor used to derive the water quality criteria is not overly conservative. The fish consumption factor used is based on the current recommendation of the USEPA and the consumption pattern for the mid-Atlantic region.

Fish consumption advisories based on fish tissue levels of mercury, PCBs and dioxin are also used to list waters as impaired pursuant to Section 303(d). The goal of the fish advisories is to reduce risk from potentially contaminated fish and crabs by recommending limited consumption of those species (or in some cases, no consumption). Fish consumption advisories are based on the concentrations measured in fish tissue, chemical specific slope factor, an appropriate body weight and a meal size of 8-ounces fish. Promulgation of these human health criteria based on the new fish consumption rates is not expected to result in any additional loss of sports fishing.

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**125. COMMENT:** For USEPA's exposure assumptions underlying the criteria to realistically occur, fish must be consumed from the same waters where the elevated pollutant levels occur. This is virtually impossible, as only waters with little or no natural flow would experience such instream concentrations as a result of point-source discharges. However, the Department applies the more restrictive fish consumption rates to all waters, even those that cannot possibly support the numbers and types of fish needed to result in ingestion above USEPA recommended levels. Fish tissue standards are based on high trophic state fish (lake trout, walleye, etc.). Where such fish do not exist, the ingestion concerns cannot be manifested. Small streams, for example, do not provide habitat where such organisms may exist in large numbers to support subsistence fishermen or where bioaccumulation will occur to the level assumed in the existing criteria. For significant bioaccumulation to occur, these organisms need to be in a very stable environment where the pollutant may biomagnify (lakes and estuaries). Moreover, the presence of algae reduced bioaccumulation because of pollutant binding (Minnesota's Total Maximum Daily Load Study of Mercury, May 24, 2005). However, the Department ignores this reality in imposing the current standards regardless of instream conditions and fishery type present. (1, 7, 14, 21, 22, 35)

**126. COMMENT:** There is no basis to believe that the Department's current application of fish tissue based standards to all waters is in any way underprotective. As necessary, the more restrictive standards could be applied to waters that support sufficient fish populations such that subsistence fishing could and does occur. This certainly would not be small ponds, streams or intermittent tributaries where the current standards apply to produce the most restrictive limits. There is no reason to regulate the entire State more restrictively using a concept that is applicable, if at all, in a very small locality. (1, 7, 14, 21, 22, 35)

**RESPONSE TO COMMENTS 125 and 126:** The human health criteria based on drinking exposure and fish consumption or fish consumption only, are not overly protective. The Department has used the USEPA recommended fish consumption factors and the USEPA 2000 Human Health Methodology to derive the criteria. These criteria apply to all surface waters, including small streams. Lower trophic level organisms can drift or move downstream to larger

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waterbodies with higher trophic level organisms that can then consume them. Because of this, it is necessary to limit the discharge of bioaccumulative toxics in all waters. Additionally, some of New Jersey's most sought after game fish (American Shad and Striped Bass) are anadromous and can travel great distances up rivers and their tributaries to feed on smaller fish.

The commenter stated that the Department's criterion did not take into consideration that the presence of algae may reduce bioaccumulation because of pollutant binding. Any adjustment to the criteria resulting from significant binding of mercury by algae would most appropriately be done on a waterbody-specific basis as a waterbody specific bioconcentration factor. The Department believes that these type of site-specific factors are best addressed through the TMDL process and not incorporated into the State-wide criterion.

#### **N.J.A.C. 7:9B-1.15 Stream Classification Upgrades**

**127. COMMENT:** The commenters commend the Department for recognizing the importance of a number of waterbodies in the State of New Jersey and consequently proposing to classify those waterbodies as Category One waters in N.J.A.C. 7:9B-1.15 and the corresponding tables of the proposal. (18, 26, 30, 36, 37)

**RESPONSE TO COMMENT 127:** The Department acknowledges the commenters' support.

**128. COMMENT:** The commenter strongly supports the amendments to the stream classifications to Wanaque River and Stone House Brook. A typographical error was noted in the location of a portion of Stone House Brook, improperly listed as "Kennelon" rather than "Kinnelon." (20)

**RESPONSE TO COMMENT 128:** The Department acknowledges the commenter's support for the upgraded stream classifications and antidegradation designation. The typographical error of improperly listed "Kennelon" will be corrected upon adoption with the proper name "Kinnelon."

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**129. COMMENT:** Beach Brook proposed for Category One designation in West Milford Township should be classified as FW1. The entire watershed is either in lands that are owned by public agencies or in the heart of open space protection. Passaic County, owns Tranquility Ridge County Park, the Monksville Reservoir, Long Pond Ironworks State Park and one piece of property that has a State deed restriction on it. Only a small place of that watershed is not in New Jersey and that's in a State Park in New York. Therefore, the commenter believes that the watershed for Beach Brook is totally within public lands and should be FW1. (30, 36)

**RESPONSE TO COMMENT 129:** Due to the fact that the FW1 waters are those that are wholly contained within State and Federal lands and special holdings, Beach Brook does not qualify because the headwaters of Beach Brook originate in New York State. The designation of Category One to Beach Brook in West Milford Township should provide the necessary water quality protection and maintain the existing water quality.

**Summary of Agency Initiated changes:**

N.J.A.C. 7:9B-1.5(c)2ii

The Department is correcting a typographical error through the adoption. The provision at N.J.A.C. 7:9B-1.5(c)2ii reads, "Thermal alterations to lakes, pond, or reservoirs . . . , the Department is correcting the word pond to read as "ponds."

N.J.A.C. 7:9B-1.15(c)

**Barnegat Bay:** The waters of Barnegat Bay were designated as Category One in 1985. The current listing under Barnegat Light specifies that all other waters of the bay are classified as SE1(C1). This listing is confusing because the waters of the bay are listed under Barnegat Light. Upon adoption, the Department is changing Barnegat Light to Barnegat Bay and identifying that all waters of the bay as SE1(C1) at N.J.A.C. 7:9B-1.15(c).

### **Federal Standards Analysis**

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Executive Order 27 (1994) and N.J.S.A. 52:14B-1 *et seq.* require that State agencies which adopt, readopt, or amend State regulations that exceed any Federal standards or requirements include in the rulemaking document a Federal standards analysis.

The Federal Clean Water Act (CWA), 33 U.S.C. §1251 *et seq.*, as amended by the Water Quality Act of 1987 (PL 100-4) requires the establishment of water quality standards for all surface waters of the United States. (The Water Quality Act of 1987 amended the CWA to require the adoption of criteria for toxic pollutants identified as causing or contributing to an impairment of a waterbody's designated use(s).) Individual states are given primary responsibility for developing and adopting surface water quality standards applicable to their waters. The USEPA is responsible for overseeing and approving state water quality standards, providing guidance on the content of the standards, and developing water quality criteria guidance documents. Key elements of the surface water quality standards program required under the CWA are: a classification system establishing designated beneficial uses of the waters; ambient water quality criteria necessary to protect those uses; minimum uses to be attained, which reflect the fishable and swimmable goals of the CWA; and antidegradation policies and implementation procedures to prevent water quality from deteriorating. Furthermore, the CWA includes provisions requiring the USEPA to promulgate superseding Federal standards where the USEPA concludes that a State's standards are not consistent with the requirements of the CWA, or where Federal requirements are necessary to meet the requirements of the CWA.

The SWQS amendments being adopted are required by and consistent with the Federal statutes, regulations and guidance. The Department has prepared the following sectional analysis of the SWQS, which compares each section with the applicable Federal law, regulations and guidance, as required by Executive Order 27 (1994) and P.L. 1995, c. 65.

N.J.A.C. 7:9B-1.4 contains definitions of terms used within the SWQS. Most of these definitions are the same as those used by the Federal government in either the Federal Water Quality Standards Regulation at 40 CFR 131.3 or in the glossary of a guidance document for states entitled *Water Quality Standards Handbook: Second Edition* (August 1994, EPA-823-B-

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94-005a) (Handbook). There are a few definitions that can not be found in the Federal regulations or guidance documents however, each one of them is consistent with the Federal policies.

N.J.A.C. 7:9B-1.5 establishes the policies applicable to the protection and enhancement of surface water resources throughout the State. These include general, interstate waters, general technical (including mixing zone policies), antidegradation, water quality-based effluent limitation, bioassay and biomonitoring, and nutrient policies. The general policies and interstate waters policies at N.J.A.C. 7:9B-1.5(a) and (b) are either exempt from Federal standards, or identical to language found in the Federal Water Quality Standards Regulations (see 40 CFR 131).

The general technical policies are specified at N.J.A.C. 7:9B-1.5(c). These policies include the design flows for different types of water quality criteria and metal translators for developing effluent limitations or expressing aquatic life criteria in the equivalent total recoverable form. The USEPA provides guidance and recommendations on design flows in the Handbook and in the Technical Support Document. The design flows and the metal translators specified at N.J.A.C. 7:9B-1.5(c) are identical to the USEPA recommendations, therefore, no further analysis is required.

N.J.A.C. 7:9B-1.5(e), (h), and 1.6 set forth policies, conditions and procedures to be used when developing water quality-based effluent limitations, bioassays, and nutrient policies, including general applicability, necessary information, and methodologies. They are based on Federal NPDES regulations at 40 CFR 122.44(d), and Federal guidance derived from *Technical Support Document for Water Quality-based Toxics Control* or the TSD (EPA/505/2-90-001). Therefore, no further analysis is required.

New Jersey's mixing zone policies are found at N.J.A.C. 7:9B-1.5(h). Mixing zones are defined in the SWQS as localized areas of surface waters, as may be designated by the Department, into which wastewater effluents may be discharged for the purpose of mixing,

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dispersing, or dissipating such effluents without creating nuisances or hazardous conditions. If applied to a particular discharge, they result in less stringent NJPDES permit limitations. Federal regulations governing mixing zones clearly state that inclusion of mixing zones in State SWQS is optional. 40 CFR 131.13 provides that "States may, at their discretion, include in their State surface water quality standards, policies generally affecting their application and implementation, such as mixing zones..." None of the language in the SWQS regarding mixing zones is more stringent than provided for in the Federal rule; therefore no further analysis is necessary. The Department notes that the USEPA's Handbook and TSD provide guidance for developing and implementing mixing zone regulations for states that include mixing zones in their SWQS. N.J.A.C. 7:9B-1.5(c)4 does not contain any provisions that are more stringent than those contained in the Handbook or TSD.

N.J.A.C. 7:9B-1.14 contains the surface water aquatic life and human health protection criteria (both narrative statements and numerical values) for waters classified as PL, FW2, SE and SC. New Jersey has adopted criteria for pollutants to protect the aquatic biota and humans from detrimental effects from exposure to these pollutants in surface waters of the State. N.J.A.C. 7:9B-1.14 also states that the surface water criteria for the Delaware River and Bay are as contained in the Delaware River Basin Commission regulations. Federal regulations require that states must adopt water quality criteria that protect the designated uses (40 CFR 131.11 (a)(1)). The numerical criteria should be based on CWA Section 304(a) guidance or 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods (40 CFR 131.11(b)(1) (i.-iii.)).

To determine whether any New Jersey criteria being adopted herein are more stringent than Federal criteria, the Department compared each with CWA Section 304(a) criteria promulgated by the USEPA through National Toxic Rule (NTR) for New Jersey. These criteria are enforceable Federal surface water quality criteria in New Jersey. However, for parameters for which the USEPA has not promulgated criteria through the NTR, the Department compared New Jersey's criteria with the respective USEPA recommended criteria published as part of

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National Recommended Water Quality Criteria 2002. EPA 822-R-02-047. The Federal statute and rules do not require states to adopt guidance criteria as part of SWQS.

New Jersey criteria for toxic substances may be considered more stringent than NTR criteria or 304(a) criteria if they are numerically lower. Differences in numerical values between criteria can be attributed to a number of factors which could result in New Jersey criteria being either more stringent or less stringent than the NTR criteria or 304(a) guidance criteria. In the following analysis, the Department explains the differences in State and Federal numerical values where the New Jersey criteria are more stringent or the relative stringency cannot be ascertained. Because of the complex nature of calculating criteria, the derivation of the criteria is also briefly described for clarification, wherever warranted.

#### General Criteria:

The Department has identified that New Jersey's pH criterion, 6.5-8.5 standard units for FW2 waters, is more stringent than the CWA Section 304(a) guidance criterion of 6.5-9.0 standard units. However, the Federal water quality regulations (40 CFR 131.11(a)(1)) note that: "States must adopt those water quality criteria that protect the designated use." A pH criterion of 6.5-8.5 reflects the pH range naturally occurring in New Jersey's surface waters classified as FW2 and was adopted to protect the designated uses specified in the SWQS. These criteria are approved by the USEPA, and therefore, no further analysis is required.

#### Aquatic Life Protection Criteria:

Adopted Metals criteria: The adopted aquatic life-based freshwater acute and chronic criteria for arsenic, cadmium, chromium III, copper, and nickel and freshwater acute criteria for mercury and silver appear to be more stringent when compared with the NTR criteria. Where the criteria are hardness-dependent, a criterion derived at a hardness of 100 mg/L of CaCO<sub>3</sub> is used for comparison purposes. The adopted criteria are based on the 304(a) national recommendations. However, the freshwater acute and chronic criteria for cadmium, chromium III, chromium VI, copper, nickel, and zinc also appear to be more stringent than the 304(a) national recommendations. The apparently more stringent criteria are necessary because the adopted

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criteria presented in Table 1 reflect the dissolved criteria using the DRBC conversion factors that are lower than the USEPA conversion factors (See Table 2). The DRBC conversion factors have been approved by the USEPA as acceptable conversion factors for converting total recoverable criteria into dissolved criteria (see Summary above). Therefore, the criteria and the conversion factors used are appropriate to maintain the uses.

The adopted aquatic life-based saltwater acute and chronic criteria for cadmium and acute criterion for nickel appear to be more stringent than the NTR criteria. The adopted saltwater criteria for cadmium are based on the 304(a) national recommendation. The adopted saltwater criteria for nickel are based on the recommended criteria by GLEC. The adopted saltwater acute criterion is more stringent and the chronic criterion is less stringent than the 304(a) national recommended criteria. However, the revised adopted criteria are based on more recent toxicity data available. The USEPA recommends updating criterion as new toxicity data become available. In addition, these revised criteria were derived based on the USEPA recommended methodology and have been reviewed and approved by the USEPA for consistency. Therefore, the adopted criteria are meeting the Federal requirements at 40 CFR 131.11(a)1.

Adopted criteria for other toxic pollutants: The adopted aquatic life-based freshwater acute and chronic criteria for gamma BHC, dieldrin, endrin, and pentachlorophenol based on updated toxicity information in the NRWQC 2005. These revised criteria were derived based on the USEPA recommended methodology, therefore, meeting the Federal requirements.

Criteria adopted: As explained further below, New Jersey aquatic life protection criteria for endosulfans (alpha and beta) adopted without change are more stringent than the NTR criteria because the Department and the USEPA regulate different forms of the chemicals. The freshwater acute and chronic criteria for lead are not comparable with the NTR criteria because of conflicting analyses regarding the relationship between lead toxicity and water hardness.

The freshwater acute and chronic criteria of 0.22 µg/L and 0.056 µg/L, respectively, and saline acute and chronic criteria of 0.034 µg/L and 0.0087 µg/L, respectively for endosulfans

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(alpha and beta) are numerically equivalent to the USEPA criteria, but in application are more stringent than the 304(a) criteria. The difference exists because the Department regulates the family of endosulfans, which includes both alpha and beta forms, while the USEPA criteria are chemical-specific, either for alpha-endosulfan or beta-endosulfan, even though the same data were utilized by the USEPA and the Department to calculate the endosulfan criteria. For example, the New Jersey freshwater acute endosulfans criterion allows 0.22 µg/L of total endosulfans, both alpha and beta forms together. The USEPA freshwater acute criterion for endosulfans, however, allows for 0.22 µg/L of alpha-endosulfan and 0.22 µg/L of beta-endosulfan. The Department has determined that the New Jersey aquatic life protection criteria for endosulfan as total endosulfans is more appropriate than the USEPA endosulfan criteria, because the toxicity data from which the criteria were derived were obtained from a mixture of alpha and beta forms. The USEPA has approved these criteria to be protective of the uses.

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**Table 1. COMPARISON OF AQUATIC METALS CRITERIA**  
(NTR / 304(a) / NJ Adopted)  
(µg/L)

Toxic substance	Freshwater						Saltwater					
	Acute			Chronic			Acute			Chronic		
	NTR	304(a)	NJ	NTR	304(a)	NJ	NTR	304(a)	NJ	NTR	304(a)	NJ
Arsenic	360	340	340	190	150	150	69	69	69	36	36	36
Cadmium	3.7a	4.3a	1.4a	1.0a	2.2a	0.17a	42	40	40	9.3	8.8	8.8
Chromium(III)	550a	570a	500a	180a	74a	24a						
Chromium(VI)	15	16	15	10	11	10	1100	1100	1100	50	50	50
Copper	17a	13a	13a	11a	9a	8.5a	2.4	4.8	4.8	2.4	3.1	3.1
Mercury	2.1	1.4	1.4	0.012	0.77	0.77	1.8	1.8	1.8	0.025	0.94	0.94
Nickel	1400a	470a	400a	160a	52a	44a	74	74	64	8.2	8.2	22
Selenium	20	B	20	5	5	5	290	290	290	71	71	71
Silver	3.4a	3.2a	3.2a				1.9	1.9	1.9			
Zinc	110a	120a	110a	100a	120a	110a	90	90	90	81	81	81

a Dissolved criteria derived at a hardness of 100 mg/L

b Criteria under review

**Table 2. Comparison of Conversion Factors**

Chemical	Freshwater			
	Acute		Chronic	
	USEPA	DRBC	USEPA	DRBC
Cadmium	0.944a	0.651+	0.944a	0.651+
Chromium III	0.361	0.277+	0.860	0.277+
Chromium VI	0.982	0.919+	0.962	0.919+
Copper	0.960	0.908+	0.960	0.908+
Nickel	0.998	0.846+	0.997	0.846+
Zinc	0.978	0.950+	0.986	0.950+

a Hardness dependent conversion factor derived at 100 mg/L CaCO<sub>3</sub>

+ DRBC recalculated conversion factors

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The freshwater acute and chronic criteria for lead are not comparable with the NTR criteria because the NTR promulgated freshwater criteria for lead are hardness-dependent equations, and the criteria promulgated by the Department are non-hardness-dependent values. Although the NTR and the Department have promulgated an identical saltwater acute criterion, the Department's chronic criterion is less stringent. These criteria, based on the USEPA recommended methodology, have been approved by the USEPA, thus satisfying the Federal requirements at 40 CFR 131.11(a)1.

### **Human Health Criteria:**

To determine whether any adopted New Jersey human health criteria are more stringent than the corresponding Federal criteria, the Department compared them with CWA section 304(a) human health criteria published by the USEPA. The criteria being adopted to replace the NTR criteria are compared with section 304(a) criteria promulgated by the USEPA through the NTR for New Jersey. Other New Jersey criteria are compared with the respective section 304(a) guidance criteria recommended by the USEPA in the *National Recommended Water Quality Criteria: 2002 (EPA822-R-02-47)* or "*National Recommended Water Quality Criteria for the Protection of Human Health*" (68 Fed. Reg. 75507, December 31, 2003). It should be noted that the adopted New Jersey human health criteria are termed FW2 and saline criteria, derived for fresh and saline surface waters of specific classifications, while the Federally promulgated or recommended criteria are identified as "for consumption of water and organisms" or "for consumption of organisms only." The New Jersey criteria are derived in analogous manner to the corresponding Federally derived criteria and intended to protect the same designated uses. Therefore, the two sets of criteria are directly comparable.

**NTR Criteria:** Criteria being adopted to replace the NTR criteria are based on the 2002 or 2003 USEPA recommended criteria except that criteria for 1,1-dichloroethylene, 1,1,2,2-tetrachloroethane and 1,1,2-trichloroethane are based on toxicity factors recommended by the NJDWQI. Because of scientific advances in criteria development from 1992, when the NTR was promulgated, to 2002/2003, when the recommended criteria were recently updated, some criteria

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have been revised by the USEPA to become less stringent or more stringent to reflect current science. Compared with the NTR criteria, seven of the 11 New Jersey criteria adopted to replace the NTR are more stringent because they are numerically lower, as shown in the following Table 3 and for the reasons discussed below.

**Table 3. NTR Criteria Compared With NJ Adopted Criteria and USEPA National Recommended Criteria (NRWQC)\***

Toxic Substance	Freshwater Human Health Criteria (µg/L)			Saline Human Health Criteria (µg/L)		
	NTR	New Jersey	NRWQC	NTR	New Jersey	NRWQC
gamma-BHC	0.19	0.98	0.98	0.63	1.8	1.8
Dibromochloromethane				340	13	13
1,1-Dichloroethylene				32	100	7,100
Fluorene				14,000	5,300	5,300
Hexachlorobutadiene				500	18	18
Isophorone				6,000	960	960
PCBs	0.00017	0.000064	0.000064	0.00017	0.000064	0.000064
1,1,2,2-Tetrachloroethane				110	110	4.0
1,1,2-Trichloroethane				420	350	16

\*Data from Summary Table 4 on "Chemical-Specific Surface Water Human Health Criteria"

Of the seven adopted criteria that are more stringent, six are based on the USEPA *National Recommended Water Quality Criteria: 2002*. They were derived with the 2000 Human Health Criteria Development Methodology, including updated fish consumption rate of 17.5 g/day and toxicity factors. These six include the adopted saline criteria for dibromochloromethane (13 µg/L), fluorene (5,300 µg/L), hexachlorobutadiene (18 µg/L), isophorone (960 µg/L) and the two adopted criteria for PCBs (0.000064 µg/L for both FW2 and saline). They are more stringent than the NTR criteria at 340 µg/L, 14,000 µg/L, 500 µg/L, 6,000 µg/L, and, for PCBs, at 0.00017 µg/L respectively. For the NJDWQI pollutant 1,1,2-trichloroethane, the adopted saline criterion (350 µg/L) is more stringent than the corresponding NTR criterion (420 µg/L). The criterion for 1,1,2-trichloroethane becomes more stringent as the result of using the updated default fish consumption rate of 17.5 g/day to replace the 1980 rate at 6.5 g/day, as with all criteria derived using the 2000 Methodology. The Department believes that

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the more stringent criteria being adopted are justified, since they are based on USEPA's updated guidance to reflect more recent best available scientific information.

**Non-NTR Criteria:** Most of the adopted non-NTR criteria are based on the national recommended water quality criteria published by the USEPA in 2002 and 2003. Therefore, these adopted criteria are identical to the corresponding Federal section 304(a) guidance criteria. As discussed above in the Human Health Criteria Section of the Summary, some of the others are based on updated data from the USEPA Integrated Risk Information System (IRIS), the National Primary Drinking Water Regulations (NPDWR), the relative potency approach for Group B2 polycyclic aromatic hydrocarbons. Seven pollutants from the groups mentioned above, namely acrolein, arsenic, endrin aldehyde, nickel, N-nitrosodiethylamine, phenol and methoxychlor, have criteria more stringent than the corresponding NRWQC. The detailed comparisons are shown in Table 4 and discussed as follows:

Thirteen criteria are more stringent (Table 4) than the corresponding NRWQC because updated information was used in developing the adopted criteria. As indicated in Table 4, the adopted fresh water and saline criteria for four pollutants, those of acrolein (6.1 µg/L, 9.3 µg/L), arsenic (0.017 µg/L, 0.061 µg/L), N-nitrosodiethylamine (0.00023 µg/L, 0.13 µg/L) and phenol (10,000 µg/L, 860,000 µg/L), are more stringent than the corresponding NRWQC of acrolein (190 µg/L, 290 µg/L), arsenic (0.018 µg/L, 0.14 µg/L), N-nitrosodiethylamine (0.0008 µg/L, 1.24 µg/L) and phenol (21,000 µg/L, 1,700,000 µg/L). In developing these criteria the Department used recent IRIS data and 2000 methodology to update the 304(a) criteria. The criteria for endrin aldehyde are based on the criteria for endrin because there are no data available for endrin aldehyde. The adopted criteria for endrin aldehyde (0.059 µg/L, 0.060 µg/L) are based on the NRWQC 2003 for endrin, but the NRWQC for endrin aldehyde (0.29 µg/L, 0.30 µg/L) are based on the 2002 endrin data. The adopted nickel criteria (500 µg/L, 1,700 µg/L) are based on the 17.5 g/day fish consumption rate, while the NRWQC criteria (610 µg/L, 4,600 µg/L) are based on the 1980 methodology, using 6.5 g/day as the fish consumption rate. The fresh water criterion for methoxychlor (40 µg/L) from the NPDWR is more stringent than the section 304(a) criterion at 100 µg/L that is based on pre-1980 information. In each of the above comparisons,

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the more stringent adopted criteria are the result of utilizing updated data. The Department is justified to update the criteria to reflect current science.

Some adopted criteria are more stringent because the criteria were derived from toxicity basis or approaches specific to New Jersey, namely, criteria for a few NJDWQI pollutants and Group C carcinogens. The NJDWQI has provided the scientific basis for risk assessment of pollutants. According to 40 CFR 131.11, states have the option to derive water quality criteria different from the USEPA 304(a) criteria if the states' criteria are derived using scientifically defensible methods. The Department used toxicity bases developed pursuant to the New Jersey Safe Drinking Water Act (NJSDWA) in deriving its human health criteria for NJDWQI pollutants for surface waters so as to establish a consistent level of human health protection for all of its water programs. However, different bases could lead to differences in the resulting criteria. Nine of the 20 pollutants based on the NJDWQI have criteria more stringent than the corresponding section 304(a) guidance criteria as shown in Table 4. The nine toxic substances are benzene, chlordane, 1,2-dichloroethane, 1,1-dichloroethylene, methylene chloride, tetrachloroethylene, 1,2,4-trichlorobenzene, trichloroethylene and 2,4,6-trichlorophenol. The Department believes its criteria reflect the best available scientific information, and therefore, variation from the Federal standard is appropriate.

The adopted freshwater and saline criteria for butylbenzyl phthalate at 150 µg/L and 190 µg/L are more stringent than the corresponding Federal NRWQC at 1,500 µg/L and 1,900 µg/L respectively. Butylbenzyl phthalate is a Group C carcinogen. If an acceptable slope factor is not available to derive a criterion for a Group C carcinogen, the Department's policy mandates the use of an extra uncertainty factor of ten for the RfD to derive the criterion as for a non-carcinogen in order to provide sufficient protection from possible carcinogenic effects. Hence the ten-fold stringency is justified.

Chemical Family/Chemical-Specific Comparison: Some adopted criteria are more stringent than Federal criteria because the Department and the USEPA regulate different forms of the chemicals, as discussed below:

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1). Arsenic: The New Jersey freshwater and saline criteria for arsenic at 0.017 µg/L and 0.061 µg/L are more stringent than the Federal criteria of 0.018 µg/L and 0.14 µg/L, respectively, due also to the differences in chemical forms regulated by New Jersey and USEPA.

The USEPA in promulgating its arsenic criteria included a footnote in the reference stating that the criteria refer only to the inorganic form of arsenic. However, the New Jersey criteria apply to all arsenic forms, organic and inorganic, because of the potential interconversion between organic and inorganic forms of arsenic. Additionally, there is no 40 CFR Part 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act) approved analytical methodology available to allow for differential measurement of organic and inorganic forms, thus resulting in control efforts applying to all arsenic forms.

2). Endosulfan: New Jersey is proposing fresh water and saline criteria at 62 µg/L and 89 µg/L respectively, for endosulfan (alpha and beta forms combined), that are more stringent than the Federal criteria at 62 µg/L and 89 µg/L respectively, for either alpha-endosulfan or beta-endosulfan. As discussed previously with regard to the Department's aquatic life protection criteria for endosulfans, the Department regulates the family of endosulfans, which includes both alpha and beta forms, while the USEPA has established isomer-specific criteria, for alpha-endosulfan and beta-endosulfan.

The New Jersey endosulfan criteria were derived from IRIS data that were based on a technical grade mixture of alpha- and beta-endosulfan isomers. The USEPA utilized the same information to calculate its criteria, but chose to designate the endosulfan criteria to the specific isomeric forms (alpha or beta). However, the USEPA has previously approved this approach used by New Jersey in the current SWQS. The Department considers the New Jersey human health endosulfans criteria appropriate because the toxicity data from which the criteria were derived were obtained from a mixture of alpha and beta forms and the criteria should be expressed accordingly.

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**TABLE 4. New Jersey Adopted Human Health Criteria More Stringent Than USEPA Criteria\***

Toxic Substance	Freshwater Human Health Criteria (µg/L)			Saline Human Health Criteria (µg/L)		
	New Jersey	USEPA	Reason	New Jersey	USEPA	Reason
Acrolein	6.1	190	a	9.3	290	a
Arsenic	0.017	0.018	a, d	0.061	0.14	a, d
Benzene <sup>#</sup>	0.15	0.61-2.2	b	3.3	14-51	b
Butylbenzyl phthalate	150	1,500	c	190	1,900	c
Chlordane <sup>#</sup>	0.00010	0.00080	b	0.00011	0.00081	b
1,2-Dichloroethane <sup>#</sup>	0.29	0.38	b	28	37	b
1,1-Dichloroethylene <sup>#</sup>	4.7	330	b	100	7,100	b
Endosulfans (alpha and beta)	62		d	89		d
alpha-Endosulfan		62			89	
beta-Endosulfan		62			89	
Endrin aldehyde	0.059	0.29	a	0.060	0.30	a
Methoxychlor	40	100	a			
Methylene chloride <sup>#</sup>	2.5	4.6	b	310	590	b
Nickel	500	610	a	1,700	4,600	a
N-Nitrosodiethylamine	0.00023	0.0008	a	0.13	1.2	a
Phenol	10,000	21,000	a	860,000	1,700,000	a
Tetrachloroethylene <sup>#</sup>	0.34	0.69	b	1.6	3.3	b
1,2,4-Trichlorobenzene <sup>#</sup>	21	35	b	42	70	b
Trichloroethylene <sup>#</sup>	1.0	2.5	b	12	30	b
2,4,6-Trichlorophenol <sup>#</sup>	0.58	1.4	b	1.0	2.4	b

\* Data from Summary Table 4 (37 N.J.R. 3501)

# NJDWQI pollutants

Reason codes for difference in criteria:

- (a) updated information used in developing NJ criteria
- (b) toxicity bases
- (c) Group C policy
- (d) chemical family/chemical-specific

**Stream classifications:**

N.J.A.C. 7:9B-1.15 contains specific waterbody classification listings, antidegradation designations, and instructions for the use of the classification tables. The waterbody

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classifications and antidegradation designations are arranged by major drainage basin. The Federal water quality regulations at 40 CFR 131.10 require that states specify appropriate water uses to be achieved and protected. The Department's SWQS waterbody classification listing is a tool to identify these designated uses such as protection and propagation of fish, shellfish, and wildlife, recreation in and on water, public water supplies, agricultural and industrial. Therefore, these waterbody classifications are consistent with the Federal regulations.

In addition, 40 CFR 131.12 establishes requirements for states to develop and adopt antidegradation policies and implementation procedures to ensure that the level of water quality needed to protect existing uses is maintained, and that water quality better than necessary to protect existing uses is maintained and protected unless demonstrations are made in support of lowering the water quality. The adopted changes in antidegradation designation identify the level of protection and implementation procedures that must be followed. The antidegradation designations are consistent with, and do not exceed Federal standards. Therefore, no further analysis is required.

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

#### **7:9B-1.4 Definitions**

...

"Best management practices" or "BMPs" (No change from proposal.)

...

"Calculable changes" means \*[detectable changes including predicted]\* changes **\*to\*** \*[in]\* water quality \*[that fall outside of the 95% confidence interval of the mean water quality]\* **\*characteristics as demonstrated by any acceptable mathematical, predictive method\*** \*[based on an acceptable mathematical predictive model or sampling and analysis conducted in accordance with USEPA approved methods as identified in 40 CFR 136 or other methods approved by the Department]\*.

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...

"Carcinogen" (No change from proposal.)

...

"Category one waters" means those waters designated in the tables in N.J.A.C. 7:9B-1.15(c) through (h), for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), for protection from **\*measurable\*** **\*[calculable]\*** changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s). These waters may include, but are not limited to:

1. -5. (No change from proposal.)

...

**\*"Measurable changes" means changes measured or determined by a biological, chemical, physical, or analytical method, conducted in accordance with USEPA approved methods as identified in 40 C.F.R. 136 or other analytical methods (for example, mathematical models, ecological indices) approved by the Department, that might adversely impact a water use (including, but not limited to, aesthetics).\***

...

\*[“Necessary and justifiable social or economic development” means:

- (1) Projects located in Planning Areas 1 and 2, or in designated centers as mapped on the State Plan Policy Map adopted and amended in accordance with the State Planning Rules, N.J.A.C. 5:85, and the State Planning Act, N.J.S.A. 52:18A-196 *et seq.*
- (2) projects to protect public health and safety; or
- (3) new or expanded public institutions, including, but not limited to, schools, hospitals, and rehabilitation centers.]\*

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...

"Non-carcinogen" (No change from proposal.)

...

\*[“Substantial Economic Impact” means the cost of a proposed project exceeds the community or facility's ability to pay for the project. The economic impact is determined by a financial analysis conducted on a proposed pollution control project in accordance with USEPA guidance (Interim Economic Guidance for Water Quality Standards Workbook. EPA-823-B-95-002, March 1995, as amended and supplemented, incorporated herein by reference).]\*

...

"Water effect ratio" or "WER" (No change from proposal.)

...

### **7:9B-1.5 Statements of policy**

(a) General policies are as follows:

1. - 4. (No change.)
5. (No change from proposal.)
6. - 7. (No change.)

(b) Interstate waters policies are as follows:

1. - 2. (No change from proposal.)

(c) General technical policies are as follows:

1. (No change.)
2. (No change from proposal.)
  - i. (No change from proposal.)
  - ii. (No change from proposal.)
  - iii. For human health criteria\*[,] for \*[toxic substances listed below]\* **carcinogens listed at N.J.A.C. 7:9B-1.14(f)7\***, the design flow shall be the flow which is exceeded 75

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percent of the time for the appropriate "period of record" as determined by the United States Geological Survey.

\*[(1) Aldrin;

(2) Chlordane;

(3) Bromodichloromethane (BDCM);

(4) 4,4'-DDD (p,p'-TDE);

(5) 4,4'-DDE;

(6) 4,4'-DDT;

(7) 3,3'-Dichlorobenzidene;

(8) Dieldrin;

(9) Heptachlor;

(10) Heptachlor epoxide;

(11) Hexachlorobenzene;

(12) Polychlorinated biphenyls (PCBs);

(13) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD); and

(14) Toxaphene.]\*

3. - 6. (No change.)

7. (No change from proposal.)

8. (No change from proposal.)

i. (No change from proposal.)

ii. Thermal alterations to lakes, \*[pond]\* **\*ponds\***, or reservoirs shall not be permitted unless it can be shown to be beneficial to the designated and existing uses.

(d) **\*Antidegradation policies\*** \*[applicable to all surface waters of the State]\* **\*are as follows:\***

1. **\*These antidegradation policies apply to all surface waters of the State.\*** \*[The antidegradation policies shall maintain existing uses and water quality where the existing water quality is better than water quality criteria.]\*

**\*2\* \*i]\*. \*Existing uses shall be maintained and protected. Designated uses shall be maintained or, as soon as technically and economically feasible, be attained wherever**

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**these uses are not precluded by natural conditions.**\* \*[The maintenance, migration, and, as appropriate, propagation of threatened or endangered species (as defined under the Federal Endangered Species Act of 1973 as amended, 16 U.S.C. §1531 *et seq.*, and/or the New Jersey Endangered and Nongame Species Conservation Act N.J.S.A. 23:2A-1 *et seq.*) is considered an existing use that must be maintained.]\*\*

**\*3. - 4.\*** \*[ii. - iii.]\* (No Change in Text.)

\*[iv. Where a lower classification of water (including the antidegradation designation) may impinge upon a higher classification of water, the Department shall ensure that the quality and uses of the higher classification water are protected.

v. A waterway or waterbody from which raw water is transferred to another waterway or waterbody shall be treated as a tributary to the waterway or waterbody receiving the transferred water.

vi. Modifications of water quality-based effluent limitations established to implement the antidegradation policy may be granted pursuant to N.J.A.C. 7:9B-1.8 and 1.9.

vii. Antidegradation policies may be applied during one or more regulatory phases including water quality planning (under N.J.A.C. 7:15), TMDL development (under N.J.A.C. 7:15), or any of the Department's permitting programs.

2. The waters of the State are assigned antidegradation designations pursuant to N.J.A.C. 7:9B-1.15. Antidegradation policies applicable to a waterbody based upon its antidegradation designation are as follows:

i. FW1 waters shall be maintained in their natural state (set aside for posterity) and shall not be subject to any manmade wastewater discharges or increases in runoff from anthropogenic activities. The Department shall not approve any activity which, alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics.

ii. For Pinelands waters, the Department shall not approve any activity which alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics. This policy shall apply as follows:

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- (1) This policy is not intended to interfere with water control in the operation of cranberry bogs or blueberry production.
- (2) Dischargers holding valid NJPDES permits as of May 20, 1985, shall be allowed to continue discharging under the terms of their existing NJPDES permits provided that the discharge is not creating any water quality problems and that the designated uses are being attained. If a water quality problem has been created or the designated uses are not being attained, the NJPDES permit shall be modified to eliminate the water quality problem or attain the designated uses.
- (3) Existing dischargers shall be subject to all the provisions of this subchapter when they apply for modification or expansion of their existing discharge.
- iii. Category One Waters shall be protected from any calculable changes to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to meet water quality criteria and maintain or provide for the designated uses where this can be accomplished without adverse impacts to organisms, communities or ecosystems of concern.
- iv. For Category Two Waters, water quality characteristics that are generally better than, or equal to the water quality standards shall be maintained within a range of quality that protects the existing and designated uses. Water quality characteristics that are generally worse than the water quality criteria, except when due to natural conditions, shall be improved to meet the water quality criteria.]\*

**\*5. Where water quality exceeds levels necessary to support the designated uses, including but not limited to, propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the Department finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the Department's continuing planning process as set forth in the Statewide Water Quality Management Plan (see N.J.A.C. 7:15), which includes, but is not limited to, the NJPDES Regulations (N.J.A.C. 7:14A), that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.**

**6. These antidegradation policies shall be applied as follows:**

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- i. The quality of Nondegradation waters shall be maintained in their natural state (set aside for posterity) and shall not be subject to any manmade wastewater discharges. The Department shall not approve any activity which, alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics.
- ii. For Pinelands waters, the Department shall not approve any activity which alone or in combination with any other activities, might cause changes, other than toward natural water quality, in the existing surface water quality characteristics. This policy shall apply as follows:

  - (1) This policy is not intended to interfere with water control in the operation of cranberry bogs or blueberry production.
  - (2) Dischargers holding valid NJPDES permits as of May 20, 1985, shall be allowed to continue discharging under the terms of their existing NJPDES permits provided that the discharge is not creating any water quality problems and that the designated uses are being attained. If a water quality problem has been created or the designated uses are not being attained, the NJPDES permit shall be modified to eliminate the water quality problem or attain the designated uses.
  - (3) Existing dischargers shall be subject to all the provisions of this subchapter when they apply for modification or expansion of their existing discharge.
- iii. Category One Waters shall be protected from any measurable changes (including calculable or predicted changes) to the existing water quality. Water quality characteristics that are generally worse than the water quality criteria, except as due to natural conditions, shall be improved to maintain or provide for the designated uses where this can be accomplished without adverse impacts on organisms, communities or ecosystems of concern.
- iv. For Category Two Waters, water quality characteristics that are generally better than, or equal to, the water quality standards shall be maintained within a range of quality that shall protect the existing/designated uses, as determined by studies acceptable to the Department, relating existing/designated uses to water quality. Where such studies are not available or are inconclusive, water quality shall be protected from changes that

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**might be detrimental to the attainment of the designated uses or maintenance of the existing uses. Water quality characteristics that are generally worse than the water quality criteria shall be improved to meet the water quality criteria.\***

\*[3. Activities not subject to antidegradation review:

- i. Short term, temporary (not to exceed six months) lowering of water quality which will not result in long term or permanent changes to the aquatic ecosystem, including, but not limited to, bank/sediment stabilization projects; establishment of buffer zones; scientific study or research; and repairs to existing roads, bridges, dams, or other infrastructure.
- ii. Emergency response actions undertaken to remediate a discharge into the environment of hazardous substances which may pose an imminent and substantial danger to public health, welfare, and environment.
- iii. Site remediation actions which have the net effect of improving surface water quality by reducing existing or impending net loading of pollutants to a waterbody which is currently or would eventually be affected.
- iv. Transfers of water for water supply purposes approved by the Department.
- v. The following NJPDES permit actions:
  - (1) Permit renewals that do not authorize an increase in permitted flow or pollutant loadings;
  - (2) Discharges authorized by a NJPDES general permit issued pursuant to N.J.A.C. 7:14A-6.13 after (the effective date).
4. Antidegradation policies for new or expanded point source discharges regulated pursuant to N.J.A.C. 7:14A shall be implemented as follows:
  - i. The applicant shall perform an alternatives analysis to determine if other options are available to prevent or minimize the lowering of water quality. The applicant shall consider all feasible non-discharge alternatives including relocation of the outfall and connection to another treatment plant; alternative treatment technologies available to minimize the lowering of water quality; and modifications to the existing treatment system.
  - ii. If the Department determines there are no alternatives to a surface water discharge, the applicant may be required to conduct a water quality study to establish effluent limitations for the identified pollutants which could result in a lowering of water quality.

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- (1) For existing discharges, the applicant shall evaluate existing effluent data and current plant performance to identify those pollutants that may increase as a result of the expansion.
- (2) For new discharges, the applicant shall utilize effluent data from a similar facility taking into account the size, treatment, and water supply source.
- iii. In Category One waters the discharge is consistent with the antidegradation policies if it does not result in calculable change in water quality.
- iv. In Category Two waters, the discharge is consistent with the antidegradation policies if:
  - (1) The proposed new or expanded discharge will not result in a calculable change in water quality;
  - (2) The proposed new or expanded discharge to Highlands open waters, as defined at N.J.S.A. 13:20-3, within the Preservation Area of the Highlands Water Protection and Planning Act (N.J.S.A. 13:20-1 *et seq.*) will not result in a calculable change in water quality; or
  - (3) The proposed project qualifies as a necessary and justifiable social or economic development or the cost to prevent the lowering of water quality would result in substantial economic impact. For projects qualifying under this provision, a lowering of water quality may be allowed provided that the existing and designated uses will be maintained and protected. The Department shall determine the extent of lowering water quality based upon:
    - (i) The type of project and the anticipated public benefit from the project;
    - (ii) The predicted in-stream water quality based upon treatment options;
    - (iii) The cost of treatment; and
- (D) Environmental impacts associated with each treatment option.]\*

**\*7. Where a lower classification of water (including the different antidegradation waters) may impinge upon a higher classification of water the Department shall ensure that the quality and uses of the higher classification water are protected.**

**8. A waterway or waterbody from which raw water is transferred to another waterway or waterbody shall be treated as a tributary to the waterway or waterbody receiving the transferred water.**

**9. Modifications of water quality-based effluent limitations established to implement this antidegradation policy may be granted pursuant to N.J.A.C. 7:9B-1.8 and 1.9.\***

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(e) Water quality-based effluent limitation policies are as follows:

- 1. - 6. (No change.)
- 7. (No change from proposal.)

(f) - (g) (No change.)

(h) (No change from proposal.)

7:9B-1.6 Establishment of water quality-based effluent limitations (No change from proposal.)

**7:9B-1.14 Surface water quality criteria**

- (a) (No change.)
- (b) (No change from proposal.)
- (c) (No change from proposal.)
- (d)** Surface Water Quality Criteria for FW2, SE and SC Waters:

**7:9B-1.14(d) General** Surface Water Quality Criteria for FW2, SE and SC Waters;  
(Expressed as Maximum concentrations unless otherwise noted)

Substance	Criteria	Classifications
1. (No change from proposal.)		
2. – 10. (No change.)		
11. Temperature	(i) No thermal alterations which would cause temperatures to exceed 20° C (68° F) <b>*Summer seasonal average*</b>	FW2-TP, FW2-TM
	(ii) No thermal alterations which would cause temperatures to exceed 27.8° C (82° F) <b>*Summer seasonal average*</b>	FW2-NT (small mouth bass and yellow perch waters)
	(iii) No thermal alterations which would cause temperatures to exceed 30° C (86° F) <b>*Summer seasonal average*</b>	All other FW2-NT
	(iv) No thermal alterations which would cause temperatures to exceed 29.4° C (85° F) <b>*Summer seasonal average*</b>	SE
	(v) No thermal alterations which would cause temperatures to exceed 26.7° C (80° F) <b>*Summer seasonal average*</b>	SC
12. (No change.)		
(e) (No change from proposal.)		

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(f) Surface Water Quality Criteria for Toxic Substances are as follows:

1. – 5. (No change from proposal.)
6. Human health carcinogenic effect-based criteria are based on a risk level of one-in-one-million and are expressed as a 70-year average with no frequency of exceedance at or above \*[the MA7CD10 flow except for those] **\*the design flow as\*** specified at N.J.A.C. 7:9B-1.5(c)2iii.
7. (No change from proposal.)
- (g) (No change from proposal.)
- (h) (No change from proposal.)

**7:9B-1.15 Surface water classifications for the waters of the State of New Jersey**

- (a) (No change.)
- (b) (No change from proposal.)
- (c) The surface water classifications in Table 1 are for waters of the Atlantic Coastal Basin:

TABLE 1

Waterbody	Classification
-----------	----------------

...

**BARNEGAT BAY**

- (Barnegat National Wildlife Refuge) - (No change from proposal.)
- (Barnegat \*[Light]\* **\*Bay\***) - All \*[other]\* waters of the Bay SE1(C1)
- (Island Beach State Park) - (No change from proposal.)
- (Island Beach State Park) - (No change from proposal.)

...

BRIGANTINE	(No change from proposal.)
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...

GREAT BAY	(No change from proposal.)
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...

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- (d) The surface water classifications in Table 2 are for waters of the Delaware River Basin: (No change from proposal.)
- (e) The surface water classifications in Table 3 are for waters of the Passaic, Hackensack and New York Harbor Complex Basin:

TABLE 3

Waterbody	Classification
...	
STONE HOUSE BROOK *[(Kennelon)]* *( <b>Kinnelon</b> )*- Source	
to Valley Road bridge	FW2-NT
(Butler) - Valley Road bridge to confluence with	
Pequannock River	FW2-TP(C1)
...	

- (f) The surface water classifications in Table 4 are for waters of the Raritan River and Raritan Bay Basin: (No change from proposal.)
- (g) The surface water classifications in Table 5 are for waters of the Wallkill River Basin: (No change from proposal.)
- (h) FW1 waters are listed in Table 6 by tract within basins: (No change from proposal.)
- (i) (No change.)

Based on consultation with staff, I hereby certify that the above statements, including the Federal standards analysis addressing the requirements of Executive Order 27 (1994), permit the

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public to understand accurately and plainly the purposes and expected consequences of these amendments. I hereby authorize this adoption.

\_\_\_\_\_  
Date:

\_\_\_\_\_  
Lisa P. Jackson, Commissioner  
Department of Environmental Protection