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**DISTRICT DEPARTMENT OF THE ENVIRONMENT**

**NOTICE OF FINAL RULEMAKING**

**District of Columbia Water Quality Standards**

The Director of the District Department of the Environment (DDOE), in accordance with the authority set forth in the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51; D.C. Official Code § 8-151.01 *et seq*. (2012 Repl.)), Sections 5 and 21 of the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§ 8-103.04 and 8-103.20 (2012 Repl.)), and Mayor's Order 2006-61, dated June 14, 2006, hereby gives notice of final rulemaking action to amend Chapter 11 (Water Quality Standards) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR).

On August 30, 2013, DDOE published the Notice of Proposed Rulemaking in the *D.C. Register* at 60 DCR 012420. Electronic notice was also sent directly to interested parties identified by DDOE. On October 3, 2013, DDOE conducted a public hearing to solicit comments on the rulemaking. DDOE carefully considered the comments received for this rulemaking. All comments received were supportive of the revised criterion. No substantive changes have been made to the proposed rules as published on August 30, 2013. Final rulemaking action was taken on October 23, 2013, and the rules will become effective on the date of publication of this notice in the *D.C. Register*.

**Summary of changes from the 2010 Water Quality Standards:**

DDOE conducted its Triennial Review of the District of Columbia's Water Quality Standards as required by Section 303(c) of the Federal Clean Water Act (CWA) (33 U.S.C. § 1313 (c)) and the District's Water Pollution Control Act of 1984. It is DDOE's goal to continue to update and make available the latest scientific findings in the ambient water quality criteria that are used to restore and protect the quality of District waters. DDOE considered the environmental, technological, institutional, and socio-economic impact of the revised criterion on the application and enforcement.

DDOE revised the aquatic life numeric criteria for Acrolein from 10.0 µg/L to 3.0 µg/L, a more stringent criteria (§ 1104.8, Table 3). This change was based on EPA toxicity data and other information on the effects of Acrolein that were obtained from EPA's internal and external peer review, including scientific input from the public. The revised criteria will protect most aquatic species from adverse effects due to Acrolein exposure. Acrolein is used as biocide and herbicide to control algae, aquatic weeds and mollusks in recirculating process water systems. Acrolein can enter the aquatic environment by its use as an aquatic herbicide, from industrial discharge, and from the chlorination of organic compounds in drinking water and wastewater treatment. Monitoring studies conducted after field application show that Acrolein can be transported up to 61 miles from the point of application. See *Ambient Aquatic Life Water Quality Criteria for Acrolein,* (CAS Registry Number 107-02-8), (EPA 822-F-09-004), August 2009.

This rulemaking also establishes the aquatic life numeric water quality criteria for Carbaryl pesticide (§ 1104.8, Table 3). The major uses of Carbaryl include insect control on lawns, home gardens, fruit

orchards, forage and field crops, ornamentals, forests, turf, shade trees, poultry and pets. Carbaryl is toxic and potentially harmful to aquatic life and can enter water bodies via runoffs. Carbaryl is the second most frequently found insecticide in water with detections in approximately 50 percent of urban streams. See *Aquatic Life Ambient Water Quality Criteria for Carbaryl* (CAS Registry Number 63-25-2), (EPA-820-R-12-007), April 2012.

All other provisions, tables and definitions in the chapter remain unchanged.

**Section 1104.8 of Chapter 11 (Water Quality Standards), Title 21 of the District of Columbia Municipal Regulations, is amended as follows:**

1104.8 Unless otherwise stated, the numeric criteria that shall be met to attain and maintain designated uses are as follows in Tables 1 through 3:

**TABLE 1 – NUMERIC CRITERIA**

| Constituent | Criteria for Classes | | |
|---|---|---|---|
| | A | B | C |
| Bacteriological (MPN/100 mL) | | | |
| E. coli[1] | | | |
| Geometric Mean (Maximum 30 day | 126 | | |
| geometric mean for 5 samples) | | | |
| Single Sample Value | 410 | | |
| Physical | | | |
| Dissolved Oxygen (mg/L) Instantaneous minimum (Year-round) [2] | | | 5.0 |
| February 1 through May 31 [3,5] | | | |
| 7-day mean | | | 6.0 |
| Instantaneous minimum | | | 5.0 |
| June 1 through January 31 [3,5] | | | |
| 30-day mean | | | 5.5 |
| 7-day mean | | | 4.0 |
| Instantaneous minimum [4] | | | 3.2 |
| Temperature ($^{o}$C) | | | |
| Maximum | | | 32.2 |
| Maximum change above ambient | | | 2.8 |
| pH | | | |
| Greater than | 6.0 | 6.0 | 6.0 |
| And less than | 8.5 | 8.5 | 8.5 |
| Turbidity increase above ambient (NTU) | 20 | 20 | 20 |
| Secchi Depth [3,5] (m)(seasonal segment average) | | | |
| April 1 through October 31 | | | 0.8 |
| Total dissolved gases (maximum % saturation) | | | 110 |
| Hydrogen Sulfide (maximum $\mu$g/L) | | | 2.0 |

| | | | |
|---|---|---|---|
| Oil & grease (mg/L) | | | 10.0 |
| Biological | | | |
| Chlorophyll *a* [3,5] ($\mu$g/L)(seasonal segment average) | | | |
| July 1 through September 30 | | | 25 |

**Notes:**
[1] The geometric mean criterion shall be used for assessing water quality trends and for permitting. The single sample value criterion shall be used for assessing water quality trends only.

[2] This criterion applies to nontidal waters.

[3] Attainment of the dissolved oxygen, water clarity and chlorophyll *a* water quality criteria that apply to tidal influenced Class C waters will be determined following the guidelines documented in the 2003 United States Environmental Protection Agency publication: Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries, EPA-903-R-03-002, April 2003, Region III Chesapeake Bay Program Office, Annapolis, Maryland; 2004 Addendum, EPA-903-R-04-005, October 2004; 2007 Addendum, EPA 903-R-07-003 CBP/TRS 285/07, July 2007; 2007 Chlorophyll Criterion Addendum, EPA 903-R-07-005 CBP/TRS 288-07, November 2007; 2008 Addendum, EPA 903-R-08-001 CBP/TRS 290-08, June 2008; and 2010 Criterion Addendum EPA 903-R-10-002 CBP/TRS-301-10, April 2010.

[4] At temperatures greater than 29°C, in tidally influenced waters, an instantaneous minimum dissolved oxygen concentration of 4.3 mg/L shall apply.

[5] Shall apply to tidally influenced waters only.

**TABLE 2 – NUMERIC CRITERIA**

| **Constituent[1]** | **Criteria for Classes** | | |
|---|---|---|---|
| | **C** | | **D[2]** |
| Trace metals and inorganics in $\mu$g/L, except where stated otherwise (see Notes below) | **CCC 4-Day Avg** | **CMC 1-Hour Avg** | **30-Day Avg** |
| Ammonia, total mg N/L | See Note 7 | See Note 8 | |
| Antimony, dissolved | | | 640 |
| Arsenic[3], dissolved | 150 | 340 | 0.14c |
| Cadmium[4,5], dissolved | [I]$^{CF}$ | [I.A]$^{CF}$ | |
| Chlorine, total residual | 11 | 19 | |
| Chromium[4], hexavalent, dissolved | 11 $^{CF}$ | 16 $^{CF}$ | |
| Chromium[4,5], trivalent, dissolved | [II]$^{CF}$ | [II.A]$^{CF}$ | |
| Copper[4,5], dissolved | [III]$^{CF}$ | [III.A]$^{CF}$ | |
| Cyanide, free | 5.2 | 22 | 140 |
| Iron, dissolved | 1000 | | |
| Lead[4,5], dissolved | [IV]$^{CF}$ | [IV.A]$^{CF}$ | |
| Mercury[4], total recoverable | 0.77 | 1.4 | 0.15 |
| Methylmercury (mg/kg, fish tissue residue) | | | 0.3 |

| | | | |
|---|---|---|---|
| Nickel[4,5], dissolved | [V][CF] | [V.A][CF] | 4600 |
| Selenium, total recoverable | 5 | 20 | 4200 |
| Silver[4,5], dissolved | | [VI][CF] | 65000 |
| Thallium, dissolved | | | 0.47 |
| Zinc[4,5], dissolved | [VII][CF] | [VII][CF] | 26000 |

**Notes:**

[1] For constituents without numerical criteria, standards have not been developed at this time. However, the National Pollutant Discharge Elimination System (NPDES) permitting authority shall address constituents without numerical standards in NPDES permit actions by using the narrative criteria for toxics contained in these water quality standards.

[2] The Class D Human Health Criteria for metals will be based on Total Recoverable metals.

[3] The letter "c" after the Class D Human Health Criteria numeric value means that the criteria is based on carcinogenicity of $10^{-6}$ risk level.

[4] The superscript "CF" means that the criterion derived from the formula under Note 5 is multiplied by the conversion factor in Table 2a as specified in Subsection 1105.10:

**TABLE 2A. CONVERSION FACTORS**

| Constituent | CCC | CMC |
|---|---|---|
| Cadmium | 1.101672-[(ln hardness)(0.041838)] | 1.136672-[(ln hardness)(0.041838)] |
| Chromium III | 0.860 | 0.316 |
| Chromium VI | 0.962 | 0.982 |
| Copper | 0.960 | 0.960 |
| Lead | 1.46203-[(ln hardness)(0.145712)] | 1.46203-[(ln hardness)(0.145712)] |
| Mercury | 0.85 | 0.85 |
| Nickel | 0.997 | 0.998 |
| Silver | -- | 0.85 |
| Zinc | 0.986 | 0.978 |

[5] The formulas for calculating the criterion for the hardness dependent constituents indicated above are as follows:

[I] The numerical CCC criterion for cadmium in $\mu$g/L shall be given by:

$$e^{(0.7409[\ln(\text{hardness})]-4.719)}$$

[I.A] The numerical CMC criterion for cadmium in $\mu$g/L shall be given by:

$$e^{(1.0166[\ln(\text{hardness})]-3.924)}$$

[II] The numerical CCC criterion for trivalent chromium in $\mu$g/L shall be given by:

$$e^{(0.8190[\ln(\text{hardness})]+0.6848)}$$

[II.A] The numerical CMC criterion for trivalent chromium in μg/L shall be given by:
$e^{(0.8190[\ln(\text{hardness})]+3.7256)}$

[III] The numerical CCC criterion for copper in $\mu$g/L shall be given by:
$e^{(0.8545[\ln(\text{hardness})]-1.702)}$

[III.A] The numerical CMC criterion for copper in $\mu$g/L shall be given by:
$e^{(0.9422[\ln(\text{hardness})]-1.700)}$

[IV] The numerical CCC criterion for lead in $\mu$g/L shall be given by:
$e^{(1.2730[\ln(\text{hardness})]-4.705)}$

[IV.A] The numerical CMC criterion for lead in $\mu$g/L shall be given by:
$e^{(1.2730[\ln(\text{hardness})]-1.460)}$

[V] The numerical CCC criterion for nickel in $\mu$g/L shall be given by:
$e^{(0.8460[\ln(\text{hardness})]+0.0584)}$

[V.A] The numerical CMC criterion for nickel in $\mu$g/L shall be given by:
$e^{(0.8460[\ln(\text{hardness})]+2.255)}$

[VI] The numerical CMC criterion for silver in $\mu$g/L shall be given by:
$e^{(1.7200[\ln(\text{hardness})]-6.590)}$

[VII] The numerical CCC criterion for zinc in $\mu$g/L shall be given by:
$e^{(0.8473[\ln(\text{hardness})]+0.884)}$

[VII.A] The numerical CMC criterion for zinc in $\mu$g/L shall be given by:
$e^{(0.8473[\ln(\text{hardness})]+0.884)}$

[6] Hardness in the equations (I) through (VII.A) in Note 5 above shall be measured as mg/L of Calcium Carbonate ($CaCO_3$). The minimum hardness allowed for use in those equations shall not be less than 25 mg/L, as $CaCO_3$, even if the actual ambient hardness is less than 25 mg/L as $CaCO_3$. The maximum hardness value allowed for use in those equations shall not exceed 400 mg/L, as $CaCO_3$, even if the actual ambient water hardness is greater than 400 mg/L as $CaCO_3$.

[7]Criterion Continuous Concentration (CCC) for Total Ammonia:

(a) The CCC criterion for ammonia (in mg N/L) (i) shall be the thirty (30)-day average concentration for total ammonia computed for a design flow specified in Subsection 1105.5; and (ii) shall account for the influence of the pH and temperature as shown in Table 2b and Table 2c. The highest four (4)-day average within the thirty (30)-day period shall not exceed 2.5 times the CCC.

(b) The CCC criterion in **Table 2b** for the period March 1st through June 30th was calculated using the following formula, which shall be used to calculate unlisted values: CCC = $[(0.0577/(1+10^{7.688-pH})) + (2.487/(1+ 10^{pH-7.688}))] \text{ X } MIN(2.85, 1.45 \text{ X } 10^{0.028 \text{ X } (25-T)})]$, where MIN indicates the lesser of the two values ($2.85, 1.45 \text{ X } 10^{0.028 \text{ X } (25-T)}$) separated by a comma.

(c) The CCC criterion in **Table 2c** for the period July 1st through February 28/29th, was calculated using the following formula, which shall be used to calculate unlisted values: CCC = $[(0.0577/(1+10^{7.688-pH})) + (2.487/(1+ 10^{pH-7.688}))] \text{ X } [1.45 \text{ X } 10^{0.028 \text{ X } (25-MAX(T,7)}]$, where MAX indicates the greater of the two values (T,7) separated by a comma.

**TABLE 2B. TOTAL AMMONIA**
**(in milligrams of Nitrogen per liter)**
**CCC CRITERION FOR VARIOUS pH AND TEMPERATURES**
**FOR MARCH 1ST THROUGH JUNE 30TH**

| | Temperature (°C) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **pH** | **0** | **14** | **16** | **18** | **20** | **22** | **24** | **26** | **28** | **30** |
| **6.50** | 6. 67 | 6.67 | 6.06 | 5.33 | 4.68 | 4.12 | 3.62 | 3.18 | 2.80 | 2.46 |
| **6.60** | 6.57 | 6.57 | 5.97 | 5.25 | 4.61 | 4.05 | 3.56 | 3.13 | 2.75 | 2.42 |
| **6.70** | 6.44 | 6.44 | 5.86 | 5.15 | 4.52 | 3.98 | 3.42 | 3.00 | 2.64 | 2.32 |
| **6.80** | 6.29 | 6.29 | 5.72 | 5.03 | 4.42 | 3.89 | 3.42 | 3.00 | 2.64 | 2.32 |
| **6.90** | 6.12 | 6.12 | 5.56 | 4.89 | 4.30 | 3.78 | 3.32 | 2.92 | 2.57 | 2.25 |
| **7.00** | 5.91 | 5.91 | 5.37 | 4.72 | 4.15 | 3.65 | 3.21 | 2.82 | 2.48 | 2.18 |
| **7.10** | 5.67 | 5.67 | 5.15 | 4.53 | 3.98 | 3.50 | 3.08 | 2.70 | 2.38 | 2.09 |
| **7.20** | 5.39 | 5.39 | 4.90 | 4.31 | 3.78 | 3.33 | 2.92 | 2.57 | 2.26 | 1.99 |
| **7.30** | 5.08 | 5.08 | 4.61 | 4.06 | 3.57 | 3.13 | 2.76 | 2.42 | 2.13 | 1.87 |
| **7.40** | 4.73 | 4.73 | 4.30 | 3.97 | 3.49 | 3.06 | 2.69 | 2.37 | 2.08 | 1.83 |
| **7.50** | 4.36 | 4.36 | 3.97 | 3.49 | 3.06 | 2.69 | 2.37 | 2.08 | 1.83 | 1.61 |
| **7.60** | 3.98 | 3.98 | 3.61 | 3.18 | 2.79 | 2.45 | 2.16 | 1.90 | 1.67 | 1.47 |
| **7.70** | 3.58 | 3.58 | 3.25 | 2.86 | 2.51 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 |
| **7.80** | 3.18 | 3.18 | 2.89 | 2.54 | 2.23 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 |
| **7.90** | 2.80 | 2.80 | 2.54 | 2.24 | 1.96 | 1.73 | 1.52 | 1.33 | 1.17 | 1.03 |
| **8.00** | 2.43 | 2.43 | 2.21 | 1.94 | 1.71 | 1.50 | 1.32 | 1.16 | 1.02 | 0.897 |
| **8.10** | 2.10 | 2.10 | 1.91 | 1.68 | 1.47 | 1.29 | 1.14 | 1.00 | 0.879 | 0.773 |
| **8.20** | 1.79 | 1.79 | 1.63 | 1.43 | 1.26 | 1.11 | 0.973 | 0.855 | 0.752 | 0.661 |
| **8.30** | 1.52 | 1.52 | 1.39 | 1.22 | 1.07 | 0.941 | 0.827 | 0.727 | 0.639 | 0.562 |
| **8.40** | 1.29 | 1.29 | 1.17 | 1.03 | 0.906 | 0.796 | 0.700 | 0.615 | 0.541 | 0.475 |
| **8.50** | 1.09 | 1.09 | 0.990 | 0.870 | 0.765 | 0.672 | 0.591 | 0.520 | 0.457 | 0.401 |
| **8.60** | 0.920 | 0.920 | 0.836 | 0.735 | 0.646 | 0.568 | 0.499 | 0.439 | 0.386 | 0.339 |
| **8.70** | 0.778 | 0.778 | 0.707 | 0.622 | 0.547 | 0.480 | 0.422 | 0.371 | 0.326 | 0.287 |
| **8.80** | 0.661 | 0.661 | 0.601 | 0.528 | 0.464 | 0.408 | 0.359 | 0.315 | 0.277 | 0.208 |
| **8.90** | 0.565 | 0.565 | 0.513 | 0.451 | 0.397 | 0.349 | 0.306 | 0.269 | 0.237 | 0.208 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **9.00** | 0.486 | 0.486 | 0.442 | 0.389 | 0.342 | 0.300 | 0.264 | 0.232 | 0.204 | 0.179 |

**TABLE 2C. TOTAL AMMONIA**
**(milligrams of Nitrogen per liter)**
**CCC CRITERION FOR VARIOUS pH AND TEMPERATURES FOR JULY 1ST THROUGH FEBRUARY 28TH/29TH**

| | Temperature (°C) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **pH** | **0-7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15*** | **16*** |
| **6.50** | 10.8 | 10.1 | 9.51 | 8.92 | 8.36 | 7.84 | 7.35 | 6.89 | 6.46 | 6.06 |
| **6.60** | 10.7 | 9.99 | 9.37 | 8.79 | 8.24 | 7.72 | 7.24 | 6.79 | 6.36 | 5.97 |
| **6.70** | 10.5 | 9.81 | 9.20 | 8.62 | 8.08 | 7.58 | 7.11 | 6.66 | 6.25 | 5.86 |
| **6.80** | 10.2 | 9.58 | 8.98 | 8.42 | 7.90 | 7.40 | 6.94 | 6.51 | 6.10 | 5.72 |
| **6.90** | 9.93 | 9.31 | 8.73 | 8.19 | 7.68 | 7.20 | 6.75 | 6.33 | 5.93 | 5.56 |
| **7.00** | 9.60 | 9.00 | 8.43 | 7.91 | 7.41 | 6.95 | 6.52 | 6.11 | 5.73 | 5.37 |
| **7.10** | 9.20 | 8.63 | 8.09 | 7.58 | 7.11 | 6.67 | 6.25 | 5.86 | 5.49 | 5.15 |
| **7.20** | 8.75 | 8.20 | 7.69 | 7.21 | 6.76 | 6.34 | 5.94 | 5.57 | 5.22 | 4.90 |
| **7.30** | 8.24 | 7.73 | 7.25 | 6.79 | 6.37 | 5.97 | 5.60 | 5.25 | 4.92 | 4.61 |
| **7.40** | 7.69 | 7.21 | 6.76 | 6.33 | 5.94 | 5.57 | 5.22 | 4.89 | 4.59 | 4.30 |
| **7.50** | 7.09 | 6.64 | 6.23 | 5.84 | 5.48 | 5.13 | 4.81 | 4.51 | 4.23 | 3.97 |
| **7.60** | 6.46 | 6.05 | 5.67 | 5.32 | 4.99 | 4.68 | 4.38 | 4.11 | 3.85 | 3.61 |
| **7.70** | 5.81 | 5.45 | 5.11 | 4.79 | 4.49 | 4.21 | 3.95 | 3.70 | 3.47 | 3.25 |
| **7.80** | 5.17 | 4.84 | 4.54 | 4.26 | 3.99 | 3.74 | 3.51 | 3.29 | 3.09 | 2.89 |
| **7.90** | 4.54 | 4.26 | 3.99 | 3.74 | 3.51 | 3.29 | 3.09 | 2.89 | 2.71 | 2.54 |
| **8.00** | 3.95 | 3.70 | 3.47 | 3.26 | 3.05 | 2.86 | 2.68 | 2.52 | 2.36 | 2.21 |
| **8.10** | 3.41 | 3.19 | 2.99 | 2.81 | 2.63 | 2.47 | 2.31 | 2.17 | 2.03 | 1.91 |
| **8.20** | 2.91 | 2.73 | 2.56 | 2.4 | 2.25 | 2.11 | 1.98 | 1.85 | 1.74 | 1.63 |
| **8.30** | 2.47 | 2.32 | 2.18 | 2.04 | 1.91 | 1.79 | 1.68 | 1.58 | 1.48 | 1.39 |
| **8.40** | 2.09 | 1.96 | 1.84 | 1.73 | 1.62 | 1.52 | 1.42 | 1.33 | 1.25 | 1.17 |
| **8.50** | 1.77 | 1.66 | 1.55 | 1.46 | 1.37 | 1.28 | 1.20 | 1.13 | 1.06 | 0.990 |
| **8.60** | 1.49 | 1.40 | 1.31 | 1.23 | 1.15 | 1.08 | 1.01 | 0.951 | 0.892 | 0.836 |
| **8.70** | 1.26 | 1.18 | 1.11 | 1.04 | 0.976 | 0.915 | 0.858 | 0.805 | 0.754 | 0.707 |
| **8.80** | 1.07 | 1.01 | 0.944 | 0.885 | 0.829 | 0.778 | 0.729 | 0.684 | 0.641 | 0.601 |
| **8.90** | 0.917 | 0.860 | 0.806 | 0.756 | 0.709 | 0.664 | 0.623 | 0.584 | 0.548 | 0.513 |
| **9.00** | 0.790 | 0.740 | 0.694 | 0.651 | 0.610 | 0.572 | 0.536 | 0.503 | 0.471 | 0.442 |

*At 15°C and above, the criterion for July 1st through February 28th/29th is the same as the criterion for March 1st through June 30th.

[8] Criterion Maximum Concentration (CMC) for Total Ammonia:

(a) The CMC criterion for total ammonia (in mg N/L) (i) shall be the one (1)-hour average concentration for total ammonia, computed for a design flow specified in subsection 1105.5; and (ii) shall account for the influence of the

pH as shown in Table 2d.

(b) The CMC criterion was calculated using the following formula, which shall be used to calculate unlisted values: CMC = $[(0.411/(1+10^{7.204-pH})] + [58.4/(1+ 10^{pH-7.204})]$.

**TABLE 2D. TOTAL AMMONIA**
**(in milligrams of Nitrogen per liter)**
**CMC CRITERION FOR VARIOUS pH**

| pH | CMC | pH | CMC | pH | CMC | pH | CMC |
|---|---|---|---|---|---|---|---|
| 6.50 | 48.8 | 7.20 | 29.5 | 7.90 | 10.1 | 8.60 | 2.65 |
| 6.60 | 46.8 | 7.30 | 26.2 | 8.00 | 8.40 | 8.70 | 2.20 |
| 6.70 | 44.6 | 7.40 | 23.0 | 8.10 | 6.95 | 8.80 | 1.84 |
| 6.80 | 42.0 | 7.50 | 19.9 | 8.20 | 5.72 | 8.90 | 1.56 |
| 6.90 | 39.1 | 7.60 | 17.0 | 8.30 | 4.71 | 9.00 | 1.32 |
| 7.00 | 36.1 | 7.70 | 14.4 | 8.40 | 3.88 | | |
| 7.10 | 32.8 | 7.80 | 12.1 | 8.50 | 3.20 | | |

**TABLE 3 – ORGANIC COMPOUNDS**

| Constituent[1] Organics ($\mu$g/L) | CAS Number | Criteria for Classes | | |
|---|---|---|---|---|
| | | C | | D[2] |
| | | CCC 4-Day Avg | CMC 1-Hour Avg | 30-Day Avg |
| Acrolein | 107028 | 3.0 | 3.0 | 9.0 |
| Acrylonitrile | 107131 | 700.0 | | 0.25,c |
| Aldrin | 309002 | 0.4 | 3.0 | 0.000050,c |
| Benzene | 71432 | 1000 | | 51.0,c |
| Carbon Tetrachloride | 56235 | 1000 | | 1.6,c |
| Chlordane | 57749 | 0.0043 | 2.4 | 0.00081,c |
| Chlorinated benzenes (except Di) | | 25.0 | | |
| Chlorobenzene | 108907 | | | 1600 |
| 1,2-Dichlorobenzene | 95501 | 200 | | 1300 |
| 1,3-Dichlorobenzene | 541731 | 200 | | 960 |
| 1,4-Dichlorobenzene | 106467 | 200 | | 190 |
| Hexachlorobenzene | 118741 | | | 0.00029,c |
| Pentachlorobenzene | 608935 | | | 1.5 |
| 1,2,4,5-Tertrachlorobenzene | 95943 | | | 1.1 |
| 1,2,4-Trichlorobenzene | 120821 | | | 70 |
| Chlorinated ethanes | | 50 | | |
| 1,2-Dichloroethane | 107062 | | | 37.0,c |

## TABLE 3 – ORGANIC COMPOUNDS

| Constituent[1]<br><br>Organics ($\mu$g/L) | CAS Number | Criteria for Classes | | |
|---|---|---|---|---|
| | | C | | D[2] |
| | | CCC 4-Day Avg | CMC 1-Hour Avg | 30-Day Avg |
| Hexachloroethane | 67721 | | | 3.3,c |
| 1,1,2,2-Tetrachloroethane | 79345 | | | 4.0,c |
| 1,1,2-Trichloroethane | 79005 | | | 16.0,c |
| Chlorinated naphthalene | | | | |
| 2-Chloronaphthalene | 91587 | 200 | | 1600 |
| Chlorinated phenols | | | | |
| 2-Chlorophenol | 95578 | 100 | | 150 |
| 2,4-Dichlorophenol | 120832 | 200 | | 290.0 |
| Pentachlorophenol[3] | 87865 | [I] | [I.A] | 3.0,c |
| 2,4,5-Trichlorophenol | 95954 | | | 3600 |
| 2,4,6-Trichlorophenol | 88062 | | | 2.4,c |
| Chloroalkyl ethers | | 1000 | | |
| Bis(2-Chloroethyl)Ether | 111444 | | | 0.53,c |
| Bis(2-Chloroisopropyl)Ether | 108601 | | | 65,000 |
| Bis(Chloromethyl)Ether | 542881 | | | 0.00029 |
| 3,3-Dichlorobenzidine | 91941 | 10 | | 0.028,c |
| Dichloroethylenes | | 1000 | | |
| 1,1-Dichloroethylene | 75354 | | | 7,100,c |
| 1,2-Trans-Dichloroethylene | 156605 | | | 10,000 |
| 1,2-Dichloropropane | 78875 | 2000 | | 15,c |
| Dichloropropenes | | 400 | | |
| 1,3-Dichloropropene | 542756 | | | 21 |
| Dieldrin | 60571 | 0.056 | 0.24 | 0.000054,c |
| 2,4-Dimethylphenol | 105679 | 200 | | 850 |
| 2,4-Dinitrotoluene | 121142 | 33 | | 3.4,c |
| Dioxin (2,3,7,8-TCDD) | 1746016 | | | 0.0000000051,c (5.1 E-8) |
| 1,2-Diphenylhydrazine | 122667 | 30 | | 0.20,c |
| Endosulfan | | 0.056 | 0.22 | 89 |
| Alpha-Endosulfan | 959988 | 0.056 | 0.22 | 89 |
| Beta-Endosulfan | 33213659 | 0.056 | 0.22 | 89 |
| Endosulfan sulfate | 1031078 | | | 89 |
| Endrin | 72208 | 0.036 | 0.086 | 0.060 |
| Endrin aldehyde | 7421934 | | | 0.30 |
| Ethylbenzene | 100414 | 40 | | 2,100 |
| Halomethanes | | 1000 | | |
| Bromoform | 75252 | | | 140,c |

## TABLE 3 – ORGANIC COMPOUNDS

| Constituent[1]<br><br>Organics ($\mu$g/L) | CAS Number | Criteria for Classes | | |
|---|---|---|---|---|
| | | C | | D[2] |
| | | CCC 4-Day Avg | CMC 1-Hour Avg | 30-Day Avg |
| Chloroform | 67663 | 3000 | | 470.0,c |
| Chlorodibromomethane | 124481 | | | 13.0,c |
| Dichlorobromomethane | 75274 | | | 17.0,c |
| Methyl Bromide | 74839 | | | 1,500 |
| Methylene chloride | 75092 | | | 590,c |
| Heptachlor | 76448 | 0.0038 | 0.52 | 0.000079,c |
| Heptachlor epoxide | 1024573 | 0.0038 | 0.52 | 0.000039,c |
| Hexachlorobutadiene | 87683 | 10 | | 18.0,c |
| Hexachlorocyclohexane | | | | |
| alpha-BHC | 319846 | | | 0.0049,c |
| beta-BHC | 319857 | | | 0.017,c |
| gamma-BHC (Lindane) | 58899 | 0.08 | 0.95 | 1.8,c |
| Hexachlorocyclopentadiene | 77474 | 0.5 | | 1,100 |
| Isophorone | 78591 | 1000 | | 960,c |
| Manganese | 7439965 | | | 100 |
| Methoxychlor | 72435 | 0.03 | | |
| Mirex | 2385855 | 0.001 | | |
| Naphthalene | 91203 | 600 | | |
| Nitrobenzene | 98953 | 1000 | | 690 |
| Nitrophenols | | 20 | | |
| 2-Methyl-4,6- Dinitrophenol | 534521 | | | 280 |
| 2,4-Dinitrophenol | 51285 | | | 5,300 |
| Dinitrophenols | 25550587 | | | 5,300 |
| Nitrosamines | | 600 | | 1.24 |
| N-Nitrosodibutylamine | 924163 | | | 0.22 |
| N-Nitrosodiethylamine | 55185 | | | 1.24 |
| N-Nitrosodimethylamine | 62759 | | | 3.0,c |
| N-Nitrosodi-n-Propylamine | 621647 | | | 0.51,c |
| N-Nitrosodiphenylamine | 86306 | | | 6.0,c |
| N-Nitrosopyrrolidine | 930552 | | | 34,c |
| Nonylphenol | 84852153 | 6.6 | 28 | |
| Carbamates | | | | |
| Carbaryl (Sevin) | 63252 | 2.1 | 2.1 | |
| Organochlorides | | | | |
| 4,4’-DDD | 72548 | 0.001 | 1.1 | 0.00031,c |
| 4,4’-DDE | 72559 | 0.001 | 1.1 | 0.00022,c |
| 4,4’-DDT | 50293 | 0.001 | 1.1 | 0.00022,c |

## TABLE 3 – ORGANIC COMPOUNDS

| Constituent[1]<br><br>Organics ($\mu$g/L) | CAS Number | Criteria for Classes | | |
|---|---|---|---|---|
| | | C | | D[2] |
| | | CCC 4-Day Avg | CMC 1-Hour Avg | 30-Day Avg |
| Organophosphates | | | | |
| Guthion | 86500 | 0.01 | | |
| Malathion | 121755 | 0.1 | | |
| Parathion | 56382 | 0.013 | 0.065 | |
| Phenol | 108952 | | | 860,000 |
| Phthalate esters | | 100 | | |
| Bis(2-Ethylhexyl) Phthalate | 117817 | | | 2.2,c |
| Butylbenzyl Phthalate | 85687 | | | 1,900 |
| Diethyl Phthalate | 84662 | | | 44,000 |
| Dimethyl Phthalate | 131113 | | | 1,100,000 |
| Di-n-Butyl Phthalate | 84742 | | | 4,500 |
| Polychlorinated biphenyls[4] | | 0.014 | | 0.000064,c |
| Polynuclear aromatic hydrocarbons | | | | |
| Acenaphthene | 83329 | 50 | | 990 |
| Acenaphthylene | 208968 | | | |
| Anthracene | 120127 | | | 40,000 |
| Benzidine | 92875 | 250 | | 0.00020,c |
| Benzo(a)Anthracene | 56553 | | | 0.018,c |
| Benzo(a)Pyrene | 50328 | | | 0.018,c |
| Benzo(b)Fluoranthene | 205992 | | | 0.018,c |
| Benzo(k)Fluoranthene | 207089 | | | 0.018,c |
| Chrysene | 218019 | | | 0.018,c |
| Dibenzo(a,h) Anthracene | 53703 | | | 0.018,c |
| Fluoranthene | 206440 | 400 | | 140.0 |
| Fluorene | 86737 | | | 5,300 |
| Indeno(1,2,3-cd) Pyrene | 193395 | | | 0.018,c |
| Pyrene | 129000 | | | 4,000 |
| Tetrachloroethylene | 127184 | 800 | | 3.3,c |
| Toluene | 108883 | 600 | | 15000 |
| Toxaphene | 8001352 | 0.0002 | 0.73 | 0.00028,c |
| Tributyltin (TBT) | -- | 0.072 | 0.46 | |
| Trichloroethylene | 79016 | 1000 | | 30.0,c |
| Vinyl chloride | 75014 | | | 2.4,c |

**Notes:**

[1] For constituents without numerical criteria, standards have not been developed at this time. However, permit writers shall address these constituents in NPDES permit actions using the

narrative criteria for toxics contained in these water quality standards.

[2] The letter "c" after the Class D Human Health Criteria numeric value means that the criterion is based on carcinogenicity of $10^{-6}$ risk level.

[3] The formulas for calculating the concentrations of substances indicated above are as follows:

[I] The numerical CCC criterion for pentachlorophenol in $\mu$g/L shall be given by:
$e^{(1.005(pH) - 5.134)}$

[I.A] The numerical CMC criterion for pentachlorophenol in $\mu$g/L shall be given by:
$e^{(1.005(pH) - 4.869)}$

[4] The polychlorinated biphenyls (PCB) criterion applies to total PCBs (*e.g.*, the sum of all congener or all isomer or homolog or Aroclor analyses.)