15A NCAC 02B .0211 is proposed for amendment as follows:

15A NCAC 02B .0211 FRESH SURFACE WATER QUALITY STANDARDS FOR CLASS C WATERS

General. The water quality standards for all fresh surface waters shall be the basic standards applicable to Class C waters. Water quality standards for temperature and numerical water quality standards for the protection of human health applicable to all ~~fresh~~ surface waters are in Rule .0208 of this Section. Additional and more stringent standards applicable to other specific freshwater classifications are specified in Rules .0212, .0214, .0215, .0216, .0218, .0219, .0223, .0224 and .0225 of this Section. ~~Action Levels for purposes of National Pollutant Discharge Elimination System (NPDES) permitting are specified in Item (22) of this Rule.~~

(1) Best Usage of Waters: aquatic life propagation ~~and maintenance of biological integrity (including fishing and fish), wildlife, secondary recreation, agriculture and any other usage except for primary recreation or as a source of water supply for drinking, culinary or food processing purposes;~~, survival, and maintenance of biological integrity (including fishing and fish); wildlife; secondary contact recreation as defined in Rule .0202 of this Section; agriculture; and any other usage except for primary contact recreation or as a source of water supply for drinking, culinary, and food processing purposes. All freshwaters shall be classified to protect these uses at a minimum.

(2) Conditions Related to Best Usage: the waters shall be suitable for ~~aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation, and agriculture.~~all best uses specified in this Rule. Sources of water pollution that preclude any of these uses ~~on either a short-term or long-term basis~~ shall be considered to be violating a water quality standard;

(3) Chloride: 230 mg/l;

~~(3)~~(4) Chlorine, total residual: 17 ug/l;

~~(4)~~(5) Chlorophyll a (corrected): not greater than 40 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation not designated as trout waters, and not greater than 15 ug/l for lakes, reservoirs, and other waters subject to growths of macroscopic or microscopic vegetation designated as trout waters (not applicable to lakes or reservoirs less than 10 acres in surface area). The Commission or its designee may prohibit or limit any discharge of waste into surface waters if the surface waters experience or the discharge would result in growths of microscopic or macroscopic vegetation such that the standards established pursuant to this Rule would be violated or the intended best usage of the waters would be impaired;

~~(5)~~(6) Cyanide, total: 5.0 ~~ug/L;~~ug/l;

~~(6)~~(7) Dissolved oxygen: not less than 6.0 mg/l for trout waters; for non-trout waters, not less than a daily average of 5.0 mg/l with a minimum instantaneous value of not less than 4.0 mg/l; swamp waters, lake coves, or backwaters, and lake bottom waters may have lower values if caused by natural conditions;

~~(7)~~(8) Fecal coliform: shall not exceed a geometric mean of 200/100ml (MF count) based upon at least five consecutive samples examined during any 30 day period, nor exceed 400/100ml in more than 20 percent of the samples examined during such period. Violations of the fecal coliform standard

Commented [BC1]: Actions Levels disapproved by US EPA decision document on 2007-2015 Triennial Review (rec'd by DWR April 19, 2016)

Commented [KG2]: Merging usage information from .0101 and .0301 into individual classification rule. No effect.

Commented [KG3]: Moved to (1) above. No effect.

Commented [KG4]: Unnecessary. No effect.

Commented [BC5]: Inadvertently deleted during the last Triennial Review, added to retain protection of aquatic life.

Commented [BC6]: Renumbering to retain alphabetical alignment

Commented [BC7]: Modified for uniformity in identifying units of measure

are expected during rainfall events and, in some cases, this violation is expected to be caused by uncontrollable nonpoint source pollution. All coliform concentrations shall be analyzed using the membrane filter technique, unless high turbidity or other adverse conditions necessitate the tube dilution method. In case of controversy over results, the MPN 5-tube dilution technique shall be used as the reference method;

~~(8)~~(9) Floating solids, settleable solids, or sludge deposits: only such amounts attributable to sewage, industrial wastes, or other wastes as shall not make the water unsafe or unsuitable for aquatic life and wildlife or impair the waters for any designated uses;

~~(9)~~(10) Fluoride: 1.8 mg/l;

~~(10)~~(11) Gases, total dissolved: not greater than 110 percent of saturation;

~~(11)~~(12) Metals:

(a) With the exception of mercury and selenium, freshwater aquatic life standards for metals shall be based upon measurement of the dissolved fraction of the metal. Mercury and selenium water quality standards shall be based upon measurement of the total recoverable metal;

(b) Freshwater metals standards that are not hardness-dependent shall be as follows:

(i) Arsenic, dissolved, acute: WER· 340 ug/l;

(ii) Arsenic, dissolved, chronic: WER· 150 ug/l;

(iii) Beryllium, dissolved, acute: WER· 65 ug/l;

(iv) Beryllium, dissolved, chronic: WER· 6.5 ug/l;

(v) Chromium VI, dissolved, acute: WER· 16 ug/l;

(vi) Chromium VI, dissolved, chronic: WER· 11 ug/l;

(vii) Mercury, total recoverable, chronic: 0.012 ug/l;

(viii) Selenium, total recoverable, chronic: 5 ug/l;

(ix) Silver, dissolved, chronic: WER· 0.06 ug/l;

With the exception of mercury and selenium, acute and chronic freshwater aquatic life standards for metals listed in this Subparagraph apply to the dissolved form of the metal and apply as a function of the pollutant's water effect ratio (WER). A WER expresses the difference between the measures of the toxicity of a substance in laboratory waters and the toxicity in site water. The WER shall be assigned a value equal to one unless any person demonstrates to the Division's satisfaction in a permit proceeding that another value is developed in accordance with the "Water Quality Standards Handbook: Second Edition" published by the US Environmental Protection Agency (EPA-823-B-12-002), free of charge, at http://water.epa.gov/scitech/swguidance/standards/handbook/, hereby incorporated by reference including any subsequent ~~amendments.~~ amendments and editions. Alternative site-specific standards may also be developed when any person submits values that demonstrate to the Commissions' satisfaction that they were derived in

accordance with the "Water Quality Standards Handbook: Second Edition, Recalculation Procedure or the Resident Species Procedure", hereby incorporated by reference including subsequent amendments at http://water.epa.gov/scitech/swguidance/standards/handbook/. This material is available free of charge.

Hardness-dependent freshwater metals standards are located in Sub-Item (c) and (d) of this Rule and in Table A: Dissolved Freshwater Standards for Hardness-Dependent Metals;

(c) Hardness-dependent freshwater metals standards shall be ~~as follows:~~

~~(i) Hardness-dependent metals standards shall be~~ derived using the equations specified in Table A: Dissolved Freshwater Standards for Hardness-Dependent Metals. If the actual instream hardness (expressed as $CaCO_3$ or Ca+Mg) is ~~less than 25 milligrams/liter (mg/l), standards shall be calculated based upon 25 mg/l hardness. If the actual instream hardness is greater than 25 mg/l and~~ less than 400 mg/l, standards shall be calculated based upon the actual instream hardness. If the instream hardness is greater than 400 mg/l, the maximum applicable hardness shall be 400 mg/l;

Commented [BC8]: A "low-end hardness cap" was disapproved for Clean Water Act purposes by US EPA decision document on 2007-2015 Triennial Review (rec'd by DWR April 19, 2016)

~~(ii) Hardness dependent metals in NPDES permitting: for NPDES permitting purposes, application of the equations in Table A: Dissolved Freshwater Standards for Hardness-Dependent Metals shall have hardness values (expressed as $CaCO_3$ or Ca+Mg) established using the median of instream hardness data collected within the local US Geological Survey (USGS) and Natural Resources Conservation Service (NRCS) 8-digit Hydrologic Unit (HU). The minimum applicable instream hardness shall be 25 mg/l and the maximum applicable instream hardness shall be 400 mg/l, even when the actual median instream hardness is less than 25 mg/l and greater than 400 mg/l;~~

Commented [BC9]: NPDES implementing procedures were disapproved for Clean Water Act permitting purposes by the US EPA decision document on the 2007-2015 Triennial review (rec'd by DWR on 04-19-2016)

(d) Alternatives:

Acute and chronic freshwater aquatic life standards for metals listed in Table A apply to the dissolved form of the metal and apply as a function of the pollutant's water effect ratio (WER), which is set forth in Sub-Item (b) of this Rule. Alternative site-specific standards may also be developed as set forth in Sub-Item (b) of this Rule;

Table A: Dissolved Freshwater Standards for Hardness-Dependent Metals

Numeric standards calculated at 25 mg/l hardness are listed below for illustrative purposes. The Water Effects Ratio (WER) is equal to one unless determined otherwise under Sub-Item (d) of this Rule.

Metal	Equations for Hardness-Dependent Freshwater Metals (ug/l)	Standard at 25 mg/l hardness (ug/l)

Cadmium, Acute	WER· [{1.136672-[*ln* hardness](0.041838)} · *e*^{0.9151 [*ln* hardness]-3.1485}]	0.82
Cadmium, Acute, Trout waters	WER· [{1.136672-[*ln* hardness](0.041838)} · *e*^{0.9151[*ln* hardness]-3.6236}]	0.51
Cadmium, Chronic	WER· [{1.101672-[*ln* hardness](0.041838)} · *e*^{0.7998[*ln* hardness]-4.4451}]	0.15
Chromium III, Acute	WER· [0.316 · *e*^{0.8190[*ln* hardness]+3.7256}]	180
Chromium III, Chronic	WER· [0.860 · *e*^{0.8190[*ln* hardness]+0.6848}]	24
Copper, Acute	WER· [0.960 · *e*^{0.9422[*ln* hardness]-1.700}] Or, Aquatic Life Ambient Freshwater Quality Criteria—Copper 2007 Revision (EPA-822-R-07-001)	3.6 NA
Copper, Chronic	WER· [0.960 · *e*^{0.8545[*ln* hardness]-1.702}] Or, Aquatic Life Ambient Freshwater Quality Criteria—Copper 2007 Revision (EPA-822-R-07-001)	2.7 NA
Lead, Acute	WER· [{1.46203-[*ln* hardness](0.145712)} · *e*^{1.273[*ln* hardness]-1.460}]	14
Lead, Chronic	WER· [{1.46203-[*ln* hardness](0.145712)} · *e*^{1.273[*ln* hardness]-4.705}]	0.54
Nickel, Acute	WER· [0.998 · *e*^{0.8460[*ln* hardness]+2.255}]	140
Nickel, Chronic	WER· [0.997 · *e*^{0.8460[*ln* hardness]+0.0584}]	16
Silver, Acute	WER· [0.85 · *e*^{1.72[*ln* hardness]-6.59}]	0.30
Zinc, Acute	WER· [0.978 · *e*^{0.8473[*ln* hardness]+0.884}]	36
Zinc, Chronic	WER· [0.986 · *e*^{0.8473[*ln* hardness]+0.884}]	36

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(e) Compliance with acute instream metals standards shall only be evaluated using an average of two or more samples collected within one hour. Compliance with chronic instream metals standards shall only be evaluated using an average of a minimum of four samples taken on consecutive days, or as a 96-hour average;

~~(f) Metals criteria shall be used for proactive environmental management. An instream exceedence of the numeric criterion for metals shall not be considered to have caused an adverse impact to the instream aquatic community without biological confirmation and a comparison of all available monitoring data and applicable water quality standards. This weight of evidence evaluation shall take into account data quality and the overall confidence in how representative the sampling is of conditions in the waterbody segment before an assessment of aquatic life use attainment, or non-attainment, shall be made by the Division. Recognizing the synergistic and antagonistic complexities of other water quality variables on the actual toxicity of metals, with the exception of mercury and selenium, biological monitoring will be used to validate, by direct measurement, whether or not the aquatic life use is supported:~~

Commented [MJ10]: "Biological confirmation" disapproved by US EPA decision document on 2007-2015 Triennial Review (rec'd by DWR April 19, 2016)

~~(12)~~(13) Oils, deleterious substances, colored, or other wastes: only such amounts as shall not render the waters injurious to public health, secondary recreation, or to aquatic life and wildlife, or adversely affect the palatability of fish, aesthetic quality, or impair the waters for any designated uses. For the purpose of implementing this Rule, oils, deleterious substances, colored, or other wastes shall include substances that cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines pursuant to 40 CFR 110.3(a)-(b) which are hereby incorporated by reference including any subsequent amendments and ~~additions.~~ editions. This material is available, free of charge, at: http://www.ecfr.gov/;

~~(13)~~(14) Pesticides:

(a) Aldrin: 0.002 ug/l;
(b) Chlordane: 0.004 ug/l;
(c) DDT: 0.001 ug/l;
(d) Demeton: 0.1 ug/l;
(e) Dieldrin: 0.002 ug/l;
(f) Endosulfan: 0.05 ug/l;
(g) Endrin: 0.002 ug/l;
(h) Guthion: 0.01 ug/l;
(i) Heptachlor: 0.004 ug/l;
(j) Lindane: 0.01 ug/l;
(k) Methoxychlor: 0.03 ug/l;
(l) Mirex: 0.001 ug/l;
(m) Parathion: 0.013 ug/l; and

(n) Toxaphene: 0.0002 ug/l;

~~(14)~~(15) pH: shall be normal for the waters in the area, which range between 6.0 and 9.0 except that swamp waters may have a pH as low as 4.3 if it is the result of natural conditions;

~~(15)~~(16) Phenolic compounds: only such levels as shall not result in fish-flesh tainting or impairment of other best usage;

~~(16)~~(17) Polychlorinated biphenyls (total of all PCBs and congeners identified): 0.001 ug/l;

~~(17)~~(18) Radioactive substances:

(a) Combined radium-226 and radium-228: the average annual activity level (based on at least one sample collected per quarter) for combined radium-226 and radium-228 shall not exceed five picoCuries per liter;

(b) Alpha Emitters: the average annual gross alpha particle activity (including radium-226, but excluding radon and uranium) shall not exceed 15 picoCuries per liter;

(c) Beta Emitters: the average annual activity level (based on at least one sample collected per quarter) for strontium-90 shall not exceed eight picoCuries per liter; nor shall the average annual gross beta particle activity (excluding potassium-40 and other naturally occurring radionuclides) exceed 50 picoCuries per liter; nor shall the average annual activity level for tritium exceed 20,000 picoCuries per liter;

~~(18)~~(19) Temperature: not to exceed 2.8 degrees C (5.04 degrees F) above the natural water temperature, and in no case to exceed 29 degrees C (84.2 degrees F) for mountain and upper piedmont waters and 32 degrees C (89.6 degrees F) for lower piedmont and coastal plain Waters; the temperature for trout waters shall not be increased by more than 0.5 degrees C (0.9 degrees F) due to the discharge of heated liquids, but in no case to exceed 20 degrees C (68 degrees F);

~~(19)~~(20) Toluene: 11 ug/l or 0.36 ug/l in trout classified waters;

~~(20)~~(21) Trialkyltin compounds: 0.07 ug/l expressed as tributyltin;

~~(21)~~(22) Turbidity: the turbidity in the receiving water shall not exceed 50 Nephelometric Turbidity Units (NTU) in streams not designated as trout waters and 10 NTU in streams, lakes, or reservoirs designated as trout waters; for lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTU; if turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased. Compliance with this turbidity standard can be met when land management activities employ Best Management Practices (BMPs) [as defined by Rule .0202 of this Section] recommended by the Designated Nonpoint Source Agency [as defined by Rule .0202 of this Section]. BMPs shall be in full compliance with all specifications governing the proper design, installation, operation, and maintenance of such ~~BMPs;~~BMPs.

~~(22) Action Levels for Toxic Substances Applicable to NPDES Permits:~~

~~(a) Copper, dissolved, chronic: 2.7 ug/l;~~

~~(b) Silver, dissolved, chronic: 0.06 ug/l;~~

~~(c) Zinc, dissolved, chronic: 36 ug/l; and~~

Commented [BC11]: Actions Levels disapproved by US EPA decision document on 2007-2015 Triennial Review (rec'd by DWR April 19, 2016

~~(d) Chloride: 230 mg/l;~~

~~The hardness-dependent freshwater action levels for copper and zinc, provided here for illustrative purposes, corresponds to a hardness of 25 mg/l. Copper and zinc action level values for other instream hardness values shall be calculated per the chronic equations specified in Item (11) of this Rule and in Table A: Dissolved Freshwater Standards for Hardness-Dependent Metals. If the action levels for any of the substances listed in this Item (which are generally not bioaccumulative and have variable toxicity to aquatic life because of chemical form, solubility, stream characteristics or associated waste characteristics) are determined by the waste load allocation to be exceeded in a receiving water by a discharge under the specified 7Q10 criterion for toxic substances, the discharger shall monitor the chemical or biological effects of the discharge; efforts shall be made by all dischargers to reduce or eliminate these substances from their effluents. Those substances for which action levels are listed in this Item shall be limited as appropriate in the NPDES permit if sufficient information (to be determined for metals by measurements of that portion of the dissolved instream concentration of the action levels parameter attributable to a specific NPDES permitted discharge) exists to indicate that any of those substances may be a causative factor resulting in toxicity of the effluent.~~

History Note: *Authority G.S. 143-214.1; 143-215.3(a)(1);*
Eff. February 1, 1976;
Amended Eff. January 1, 2015; May 1, 2007; April 1, 2003; August 1, 2000; October 1, 1995; August 1, 1995; April 1, 1994; February 1, 1993.