

10 CSR 20-7.031 Water Quality Standards

PURPOSE: This rule identifies [beneficial] uses of waters of the state, criteria to protect those uses and defines the antidegradation policy. It is developed in response to the Missouri Clean Water Law and the federal Clean Water Act, Section 303(c)(1) and (2), which requires that state water quality standards be reviewed at least once every three years. These revisions are pursuant to the national goal of protection of fish, shellfish and wildlife and recreation in and on the water as outlined in Section 101(a)(2) of the Act.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Definitions.

(A) Acute toxicity—Conditions producing adverse effects or lethality on aquatic life following short-term exposure. The acute criteria in Tables A and B are maximum concentrations which protect against acutely toxic conditions. Acute toxicity is also indicated by exceedence of whole-effluent toxicity (WET) test conditions of paragraph [(3)](4)(I)2. For substances not listed in Table A or B, 0.3 of the median lethal concentration, or the no observed acute effect concentration for representative species, may be used to determine absence of acute toxicity.

(B) Aquatic community—A balanced, integrated, and adaptive assemblage of aquatic organisms having natural species composition, diversity and function and species introduced and managed by state or federal wildlife management agencies.

[(B)](C) Aquifer—A subsurface water-bearing bed or stratum which stores or transmits water in recoverable quantities that is currently being used or could be used as a water source for private or public use. It does not include water in the vadose zone.

[(C) Beneficial or designated uses. Those uses specified in paragraphs 1.–15. of this subsection for each water body segment whether or not they are attained. Beneficial or designated uses (1)(C)1.–11. of classified waters are identified in Tables G and H. Beneficial or designated uses (1)(C)12.–15. of classified waters must be determined on a site-by-site basis and are therefore not listed in Tables G and H.

1. Irrigation—Application of water to cropland or directly to plants that may be used for human or livestock consumption. Occasional supplemental irrigation, rather than continuous irrigation, is assumed.

2. Livestock and wildlife watering—Maintenance of conditions to support health in livestock and wildlife.

3. Cold-water fishery—Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a naturally reproducing or stocked trout fishery and other naturally reproducing populations of recreationally important fish species.

4. Cool-water fishery—Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a sensitive, high-quality sport fishery (including smallmouth bass and rock bass) and other naturally reproducing populations of recreationally important fish species.

5. Protection of aquatic life (General warm-water fishery)—Waters in which naturally occurring water quality and habitat conditions allow the maintenance of a wide variety of warm-water biota, including naturally reproducing populations of recreationally important fish species. This includes all Ozark Class C and P streams, all streams with 7Q10 low flows of more than one-tenth cubic foot per second (0.1 cfs), all P1 streams, and all classified lakes. However, individual Ozark Class C streams may be determined to be limited warm-water fisheries on the basis of limited habitat, losing-stream classification, land-use characteristics, or faunal studies which demonstrate a lack of recreationally important fish species.

6. Protection of aquatic life (Limited warm-water fishery)—Waters in which natural water quality and/or habitat conditions prevent the maintenance of naturally reproducing populations of recreationally important fish species. This includes non-Ozark Class C streams and non-Ozark Class P streams with 7Q10 low flows equal to or less than 0.1 cfs and Ozark Class C streams with the characteristics outlined in paragraph (1)(C)5.

7. Human health protection (Fish consumption)—Criteria to protect this use are based on the assumption of an average amount of fish consumed on a long-term basis. Protection of this use includes compliance with Food and Drug Administration (FDA) limits for fish tissue, maximum water concentrations corresponding to the 10⁻⁶ cancer risk level, and other human health fish consumption criteria.

8. Whole body contact recreation—Activities in which there is direct human contact with the raw surface water to the point of complete body submergence. The raw water may be ingested accidentally and certain sensitive body organs, such as the eyes, ears, and the nose, will be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. Water so designated is intended to be used for swimming, water skiing, or skin diving. All waters in Tables G and H of this rule are presumed to support whole body contact recreation unless a Use Attainability Analysis (UAA) has shown that the use is unattainable. The use designation for whole body contact recreation may be removed or modified through a UAA for only those waters where whole body contact is not an existing use. Assignment of this use

does not grant an individual the right to trespass when a land is not open to and accessible by the public through law or written permission of the landowner.

A. *Category A*—This category applies to those water segments that have been established by the property owner as public swimming areas allowing full and free access by the public for swimming purposes and waters with existing whole body contact recreational use(s). Examples of this category include, but are not limited to, public swimming beaches and property where whole body contact recreational activity is open to and accessible by the public through law or written permission of the landowner.

B. *Category B*—This category applies to waters designated for whole body contact recreation not contained within category A.

9. *Secondary contact recreation*—Uses include fishing, wading, commercial and recreational boating, any limited contact incidental to shoreline activities, and activities in which users do not swim or float in the water. These recreational activities may result in contact with the water that is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal. Assignment of this use does not grant an individual the right to trespass when a land is not open to and accessible by the public through law or written permission of the landowner.

10. *Drinking water supply*—Maintenance of a raw water supply which will yield potable water after treatment by public water treatment facilities.

11. *Industrial process water and industrial cooling water*—Water to support various industrial uses; since quality needs will vary by industry, no specific criteria are set in these standards.

12. *Storm- and flood-water storage and attenuation*—Waters which serve as overflow and storage areas during flood or storm events slowly release water to downstream areas, thus lowering flood peaks and associated damage to life and property.

13. *Habitat for resident and migratory wildlife species, including rare and endangered species*—Waters that provide essential breeding, nesting, feeding, and predator escape habitats for wildlife including waterfowl, birds, mammals, fish, amphibians, and reptiles.

14. *Recreational, cultural, educational, scientific, and natural aesthetic values and uses*—Waters that serve as recreational sites for fishing, hunting, and observing wildlife; waters of historic or archaeological significance; waters which provide great diversity for nature observation, educational opportunities, and scientific study.

15. *Hydrologic cycle maintenance*—Waters hydrologically connected to rivers and streams serve to maintain flow conditions during periods of drought. Waters that are connected hydrologically to the groundwater system recharge groundwater supplies and assume an important local or regional role in maintaining groundwater levels.]

(D) *Biocriteria*—Numeric values or narrative expressions that describe the reference biological integrity of aquatic communities [inhabiting waters that have been designated for aquatic-life protection].

(E) *Chronic toxicity*—Conditions producing adverse effects on aquatic life or wildlife following long-term exposure but having no readily observable effect over a short time period. Chronic numeric criteria in Tables A and B are maximum concentrations which protect against chronic toxicity; these values shall be [considered] **calculated as four (4)-day averages with the exception of total ammonia nitrogen which shall be calculated as thirty (30)-day averages.** Chronic toxicity is also indicated by exceedence of WET test conditions of subsection [(4)](5)(Q). For substances not listed in Table A or B, commonly used endpoints such as the no-observed effect concentration or inhibition concentration of representative species may be used to demonstrate absence of toxicity.

(F) *Classified waters*—[All waters listed as L1, L2 and L3 in Table G and P, P1 and C in Table H] **A category that describes the surface water hydrology of a water of the state.** During normal flow periods, some rivers back water into tributaries which [are not otherwise classified] **have a different class.** These permanent backwater areas are considered to have the same classification] as the water body into which the tributary flows.

1. Class L1—Lakes used primarily for public drinking water supply.

2. Class L2—Major reservoirs.

3. Class L3—Other lakes which are waters of the state. These include both public and private lakes. For effluent regulation purposes, publicly owned L3 lakes are those for which a substantial portion of the surrounding lands are publicly owned or managed.

4. Class P—Streams that maintain permanent flow even in drought periods.

5. Class P1—Standing-water reaches of Class P streams.

6. Class C—Streams that may cease flow in dry periods but maintain permanent pools [which support aquatic life].

7. **Class C1—Streams that do not have permanent surface flow or permanent pools, but have periodic surface flow in response to precipitation events.**

[7.]8. *Class W*—Wetlands that are waters of the state that meet the criteria in the *Corps of Engineers Wetlands Delineation Manual* (January 1987), and subsequent federal revisions. Class W waters do not include wetlands that are artificially created on dry land and maintained for the treatment of mine drainage, stormwater control, drainage associated with road construction, or industrial, municipal, or agricultural waste. Class W determination on any specific site shall be consistent with federal law.

(G) **Designated use**—Uses specified for each water body or segment whether or not they are being attained. Uses are designated according to section (2) of this rule and may include, but are not limited to -

1. **Protection and propagation of fish, shellfish and wildlife**

A. **Warm-water aquatic community (WWA)**— Indigenous warm-water aquatic organisms in waters of the state that are supported by naturally occurring water quality and habitat conditions.

B. **Cool-water aquatic community (CLA)**— Indigenous cool-water dependent aquatic organisms in waters of the state that are supported by naturally occurring water quality and habitat conditions. These waters may allow the maintenance of a sensitive, high-quality sport fishery, including smallmouth bass and rock bass.

C. Cold-water aquatic community (CDA)—Indigenous cold-water dependent aquatic organisms in waters of the state that are supported by naturally occurring water quality and habitat conditions. These waters may allow the maintenance of a stocked trout fishery.

D. Limited warm-water aquatic community (LWA)—An assemblage of aquatic organisms of lesser diversity and abundance in waters of the state that do not have naturally occurring water quality and habitat conditions.

2. Recreation in and on the water. Assignment of these uses does not grant an individual the right to trespass when a land is not open to and accessible by the public through law or written permission of the landowner.

A. Whole body contact recreation (WBC)—Activities involving direct human contact with waters of the state to the point of complete body submergence. The water may be ingested accidentally and certain sensitive body organs, such as the eyes, ears, and the nose, will be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. Water so designated is intended to be used for swimming, water skiing, or skin diving.

(I) Category A (WBC-A)—This category applies to waters that have been established by the property owner as public swimming areas welcoming access by the public for swimming purposes and waters with documented existing whole body contact recreational use(s) by the public. Examples of this category include, but are not limited to, public swimming beaches and property where whole body contact recreational activity is open to and accessible by the public through law or written permission of the landowner.

(II) Category B (WBC-B)—This category applies to waters designated for whole body contact recreation not contained within category A.

B. Secondary contact recreation (SCR)—Uses include fishing, wading, commercial and recreational boating, any limited contact incidental to shoreline activities, and activities in which users do not swim or float in the water. These recreational activities may result in contact with the water that is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal.

3. Human health protection (HHP)—Protection for the consumption of aquatic organisms or aquatic organisms and water from a single source. Criteria for this use includes compliance with Food and Drug Administration (FDA) limits for fish tissue, maximum water concentrations corresponding to the 10^{-6} cancer risk level, and other human health aquatic organism consumption criteria such as body weight.

A. Organism only—Protection of human health for the consumption of aquatic organisms from a water of the state.

B. Water + organism—Protection of human health for the consumption of aquatic organisms and water from a water of the state.

4. Livestock and wildlife protection (LWP)—Maintenance of conditions in waters of the state to support health in livestock and wildlife.

5. Drinking water supply (DWS)—Maintenance of a raw water supply which will yield potable water after treatment by public water treatment facilities in accordance with the Federal Safe Drinking Water Act.

6. Irrigation (IRR)—Application of water to cropland or directly to cultivated plants. Occasional supplemental irrigation, rather than continuous irrigation, is assumed.

7. Industrial water supply (IND)—Water to support various industrial uses; since quality needs will vary by industry, no numeric criteria are set in these standards.

8. Runoff storage and attenuation (RSA)—Waters which serve as overflow and storage areas during flood or storm events slowly release water to downstream areas, thus lowering flood peaks and associated damage to life and property.

9. Wildlife habitat protection (WHP)—Habitat for resident and migratory wildlife species, including rare and endangered species. Waters that provide essential breeding, nesting, feeding, and predator escape habitats for wildlife including waterfowl, birds, mammals, fish, amphibians, and reptiles. Wildlife habitat protection waters include, but are not limited to, waters in National Wildlife Refuges, wetlands and threatened or endangered species habitat.

10. Exceptional value waters (EVW)—Waters that serve as special recreational sites for fishing, hunting, and observing wildlife; waters of historic or archaeological significance; waters which provide great diversity for nature observation, educational opportunities, and scientific study.

11. Hydrologic cycle maintenance (HCM)—Waters hydrologically connected to rivers and streams serve to maintain flow conditions during periods of drought. Waters that are connected hydrologically to the groundwater system, recharge groundwater supplies, and assume an important local or regional role in maintaining groundwater levels.

12. Outstanding Resource Waters—Waters that are subject to tier three protection under the antidegradation rule at 10 CSR 20-7.031(3).

A. Outstanding national resource waters (ONRW)—Waters which have outstanding national recreational and ecological significance. These waters shall receive special protection against any degradation in quality. Congressionally designated rivers, including those in the Ozark National Scenic Riverways and the Wild and Scenic Rivers System, are so designated.

B. Outstanding state resource waters (OSRW)—High quality waters with a significant aesthetic, recreational, or scientific value which are specifically designated as such by the Clean Water Commission in accordance with 10 CSR 20-7.031(8).

[(G)](H) Early life stages of fish—The pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, and the larval period during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered an early life stage.

[(H)](I) Existing uses—Those uses actually attained in the water body on or after November 28, 1975, whether or not they are identified in the water quality standards.

[(I)](J) **Ecoregion**—Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. By recognizing the spatial differences in the capacities and potentials of ecosystems, ecoregions stratify the environment by its probable response to disturbance (Bryce, Omernik, and Larsen, 1999).

[(J)](K) **Epilimnion**—Zone of atmospheric mixing in a thermostratified lake.

[(K)](L) ***Escherichia coli* (*E. coli*)**—A type of fecal coliform bacteria found in the intestines of **warm-blooded** animals and humans. The presence of *E. coli* in water is a strong indication of recent sewage or animal waste contamination. Sewage may contain many types of disease-causing organisms (pathogens).

[(L)](M) **Hypolimnion**—Zone beneath the zone of atmospheric mixing in a thermostratified lake.

[(M)](N) **Lethal concentration₅₀ (LC₅₀)**—Concentration of a toxicant which would be expected to kill fifty percent (50%) of the individuals of the test species organisms in a test of specified length of time.

[(N)](O) **Losing stream**—A stream which distributes thirty percent (30%) or more of its flow during low flow conditions through natural processes, such as through permeable geologic materials into a bedrock aquifer within two (2) miles' flow distance downstream of an existing or proposed discharge. Flow measurements to determine percentage of water loss must be corrected to approximate the 7Q10 stream flow. If a stream bed or drainage way has an intermittent flow or a flow insufficient to measure in accordance with this rule, it may be determined to be a losing stream on the basis of channel development, valley configuration, vegetation development, dye tracing studies, bedrock characteristics, geographical data, and other geological factors. Losing streams are listed in Table J; additional streams may be determined to be losing by the Missouri Department of Natural Resources.

[(O)](P) **Low-flow conditions**—Where used in this regulation in the context of mixing zones, the low-flow conditions shall refer to the minimum amount of stream flow occurring immediately upstream of a wastewater discharge and available, in whole or in part, for attenuation of wastewater pollutants.

1. Seven (7)-day, one (1)-in-ten (10)-year low flow (7Q10)—The lowest average flow for seven (7) consecutive days that has a probable recurrence interval of once-in-ten (10) years.

2. Sixty (60)-day, one (1)-in-two (2)-year low flow (60Q2)—The lowest average flow for sixty (60) consecutive days that has a probable recurrence interval of once-in-two (2) years.

3. Thirty (30)-day, one (1)-in-ten (10)-year low flow (30Q10)—The lowest average flow for thirty (30) consecutive days that has a probable recurrence interval of once-in-ten (10) years.

4. One (1)-day, one (1)-in-ten (10)-year low flow (1Q10)—The lowest average flow for one (1) day that has a probable recurrence interval of once-in-ten (10) years.

[(P)](Q) **Mixing zone**—An area of dilution of effluent in the receiving water beyond which chronic toxicity criteria must be met.

[(Q)] **Outstanding national resource waters**—*Waters which have outstanding national recreational and ecological significance. These waters shall receive special protection against any degradation in quality. Congressionally designated rivers, including those in the Ozark national scenic riverways and the wild and scenic rivers system, are so designated (see Table D).]*

[(R)] **Outstanding state resource waters**—*High quality waters with a significant aesthetic, recreational, or scientific value which are specifically designated as such by the Clean Water Commission (see Table E).]*

[(S)](R) **Ozark streams**—Streams lying within the Ozark faunal region as described in the Aquatic Community Classification System for Missouri, Missouri Department of Conservation, 1989.

[(T)](S) **Reference lakes or reservoirs**—Lakes or reservoirs determined by Missouri Department of Natural Resources to be the best available representatives of ecoregion waters in a natural condition with respect to habitat, water quality, biological integrity and diversity, watershed land use, and riparian conditions.

[(U)](T) **Reference stream reaches**—Stream reaches determined by the department to be the best available representatives of ecoregion waters in a natural condition, with respect to habitat, water quality, biological integrity and diversity, watershed land use, and riparian conditions.

[(V)](U) **Regulated-flow streams**—A stream that derives a majority of its flow from an impounded area with a flow-regulating device.

[(W)](V) **Use Attainability Analysis (UAA)**—A structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in 40 CFR 131.10(g).

[(X)](W) **Water effect ratio**—Appropriate measure of the toxicity of a material obtained in a site water divided by the same measure of the toxicity of the same material obtained simultaneously in a laboratory dilution water.

[(Y)](X) **Water hardness**—The total concentration of calcium and magnesium ions expressed as calcium carbonate. For purposes of this rule, hardness will be determined by the lower quartile (twenty-fifth percentile) value of a representative number of samples from the water body in question or from a similar water body at the appropriate stream flow conditions.

[(Z)](Y) **Water quality criteria**—Chemical, physical, and biological properties of water that are necessary to protect beneficial water uses.

[(AA)](Z) **Waters of the state**—All rivers, streams, lakes, and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased, or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common and includes waters of the United States lying within **or adjacent to** the state.

[(BB)](AA) **Wetlands**—Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. This definition is consistent with both the United States Army Corps of Engineers 33 CFR 328.3(b) and the United States Environmental Protection Agency 40 CFR 232.2(r).

~~[(CC)]~~**(BB)** Whole effluent toxicity tests—A toxicity test conducted under specified laboratory conditions on specific indicator organisms. To estimate chronic and acute toxicity of the effluent in its receiving stream, the effluent may be diluted to simulate the computed percent effluent at the edge of the mixing zone or zone of initial dilution.

~~[(DD)]~~**(CC)** Zone of initial dilution—A small area of initial mixing below an effluent outfall beyond which acute toxicity criteria must be met.

~~[(EE)]~~**(DD)** Zone of passage—A continuous water route necessary to allow passage of organisms with no acutely toxic effects produced on their populations.

~~[(FF)]~~**(EE)** Other definitions as set forth in the Missouri Clean Water Law and 10 CSR 20-2.010 shall apply to terms used in this rule.

(2) Designation of Uses.

(A) In designating uses of a water body and the appropriate criteria for those uses, the Department shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters. This includes consideration of groundwater.

(B) For waters assigned multiple designated uses, the criteria supporting the most sensitive use shall apply.

(C) All waters of the state as defined at subsection (1)(Z), except groundwater, shall support Whole body contact recreation Category B, Secondary contact recreation, Warm-water aquatic community, Human health protection, and Livestock and wildlife protection uses, as defined at (1)(G) of this rule. These uses are consistent with the required protection of the Clean Water Act, section 101(a)(2). For the purpose of designation of uses, the term “waters of the state” does not include:

1. Manmade waste treatment systems neither created in waters of the state nor resulting from the impoundment of waters of the state; or

2. Manmade storm water control technologies and structural Best Management Practices (BMPs), including but not limited to sediment basins, wet and dry detention basins, bioremediation cells, rain gardens, mitigated wetlands, and bioswales; except BMPs created in streams.

(D) Uses defined in paragraphs (1)(G)1.-12. are consistent with protection in accordance with the Clean Water Act, section 101(a)(2) and 303(c)(2)(A). Uses other than those mentioned in subsection (2)(C) may be designated to waters of the state on a site-by-site basis and listed in Tables G and H of this rule.

(E) A designated use that is not an existing use, as defined at subsection (1)(I) of this rule, may be removed or subcategories of a use may be assigned if the Department can demonstrate that attaining the Clean Water Act 101(a)(2) designated use is not feasible through a use attainability analysis pursuant to 40 CFR 131.10(g).

(F) A use attainability analysis (UAA) must be performed when the Department:

1. Designates or has designated uses for a water body that do not include the protection of fish, shellfish, wildlife, or recreation in and on the water; or

2. Wishes to remove a designated use that protects fish, shellfish, wildlife, or recreation in and on the water. The use may not be an existing use as defined at subsection (1)(I) of this rule; or

3. Wishes to apply sub-categories of uses that protect fish, shellfish, wildlife, or recreation in and on the water, which require less stringent criteria than 304(a) of the Clean Water Act.

(G) All UAAs will be conducted on a representative portion of the waterbody in question and will not cause segmentation of a waterbody unless the UAA provides sound data that the designated uses or classification are indeed not representative of the water body as a whole.

(H) UAAs intended for recreation in and on the water shall be performed in accordance with methods and procedures found in “Missouri Recreational Use Attainability Analyses: Water Body Survey and Assessment Protocol” which is hereby incorporated by reference for use in conducting such analyses.

AUTHORITY: section 644.021, RSMo Supp. 2008 and section 644.026, RSMo 2000. Original rule filed May 13, 1977, effective Dec. 11, 1977. Amended: Filed Oct. 15, 1980, effective April 11, 1981. Amended: Filed July 12, 1984, effective Dec. 13, 1984. Rescinded and readopted: Filed Aug. 4, 1987, effective Dec. 12, 1987. Amended: Filed Nov. 14, 1988, effective April 15, 1989. Rescinded and readopted: Filed Sept. 5, 1990, effective March 14, 1991. Amended: Filed Sept. 2, 1993, effective May 9, 1994. Amended: Filed Nov. 14, 1995, effective July 30, 1996. Amended: Filed March 1, 1996, effective Nov. 30, 1996. Amended: Filed March 31, 2005, effective Dec. 31, 2005. Amended: Filed Dec. 13, 2007, effective Aug. 30, 2008. Emergency amendment filed Nov. 12, 2008, effective Nov. 22, 2008, expired May 20, 2009. Amended: Filed Feb. 3, 2009, effective Oct. 30, 2009.*

**Original authority: 644.021, RSMo 1972, amended 1973, 2000, 2002, 2007 and 644.026, RSMo 1972, amended 1973, 1987, 1993, 1995, 2000.*