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# KANSAS IMPLEMENTATION PROCEDURES

## Surface Water Quality Standards



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*Prepared by The Kansas Department of Health and Environment*

*Bureau of Water*

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These written procedures provide a uniform mechanism for interpreting Kansas Surface Water Quality Standards in waters of the state.

## **I. Surface Water Classification**

Applicable Regulations: 28-16-28d(a)

### **A. Classified Stream Segments**

Classified stream segments are all stream segments that:

1. Are waters of the state as defined in subsection (a) of K.S.A. 65-161, and amendments thereto, and waters described in subsection (d) of K.S.A. 65-171d, and amendments thereto, and

2. Meet one of the following criteria:

a. Stream segments indicated on the federal environmental protection agency's Reach File 1 (RF1) (1982) and have the most recently available 10-year median flow of equal to or in excess of 1 cubic foot per second (cfs) based on data collected and evaluated by the United States Geological Survey. In the absence of measured stream segment flow data, calculations of flow conducted by extrapolation methods provided by the United States Geological Survey may be used.

or

b. Stream Segments not indicated on RF1 and have the most recently available 10-year median flow of equal to or in excess of 1 cubic foot per second based on data collected and evaluated by the United States Geological Survey or in the absence of stream segment flow data, calculations of flow conducted by extrapolation methods provided by the United States Geological Survey may be used.

or

c. Stream segments actually inhabited by threatened or endangered aquatic species listed in rules and regulations promulgated by the Kansas Department of Wildlife and Parks or the United States Fish and Wildlife Service. The Kansas Department of Wildlife and Parks and the United States Fish and Wildlife Service will be consulted in order to determine the presence of threatened and endangered species.

or

d. Stream segments where scientific studies conducted by the department show that pooling of water during periods of flow below 1 cfs provides important refuges for aquatic life and permits biological recolonization during periods of intermittent flow. Additionally, a cost/benefit analysis taking into account the economic and social impact of classifying the stream segment will be undertaken by the department. The results of the cost/benefit analysis must indicate the benefits of classifying the stream segment outweigh the costs of classifying the stream segment.

or

e. Stream segments at the point of, and downstream from the point of discharge from a facility permitted under the National Pollutant Discharge Elimination System (NPDES). Note: confined animal feeding operations (CAFOs) are not permitted to have a continuous discharge. Therefore, this provision does not apply to NPDES-permitted CAFOs as defined in K.S.A. 65-171d, and amendments thereto.

A schematic depiction of the process is provided in Figure 1 on the following page.

#### **B. Classified Lakes and Reservoirs**

All lakes managed by federal, state, county, or municipal entities and those private lakes and reservoirs used for public drinking water supply or open to the general public for secondary contact recreation, are classified lakes and reservoirs, a portion of those lakes and reservoirs are listed in the Kansas Surface Water Register.

#### **C. Classified Wetlands**

All wetlands managed by federal, state, county, or municipal entities, those wetlands classified as outstanding national resource waters, exceptional state waters, or designated as special aquatic life use waters, are classified wetlands and a portion of those wetlands are listed in the Kansas Surface Water Register. Those privately owned wetlands open to the general public for hunting, trapping, or other secondary contact recreational activities are also classified wetlands. Artificially created wetlands for wastewater treatment are not considered classified wetlands.

#### **D. Classified Ponds**

All ponds owned by federal, state, county, or municipal authorities and all privately owned ponds that impound water from a classified stream segment are classified ponds and a portion of those ponds are listed in the Kansas Surface Water Register.

# Stream Segment Classification Scheme

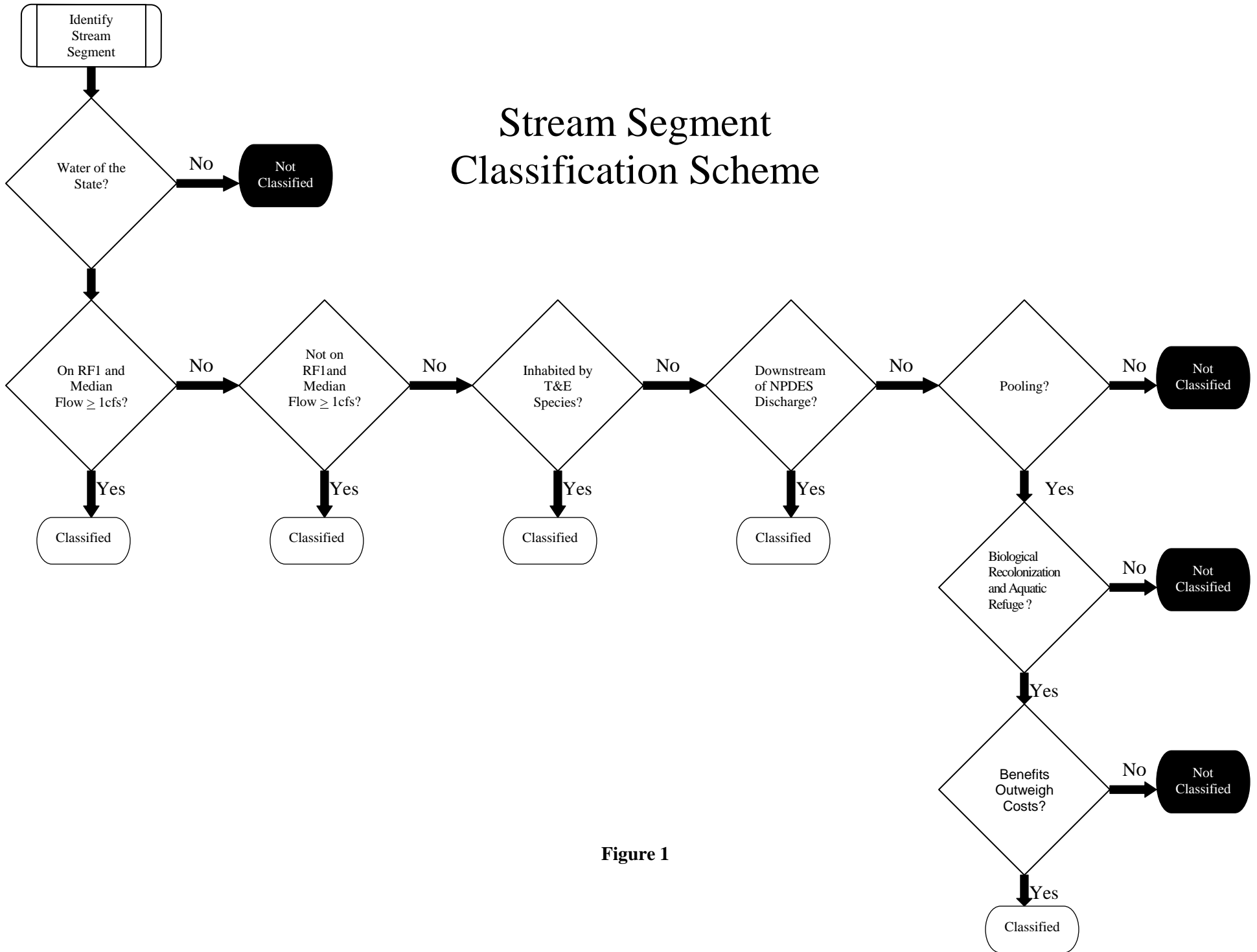


Figure 1

## II. Designated Uses

Applicable Regulations: K.A.R. 28-16-28d(b)  
K.A.R. 28-16-28d(c)

The Department will assign designated uses to state surface waters by conducting a use attainability analysis following the standardized procedures ~~developed by the Department's Bureau of Environmental Field Services~~. Another party, following the Department's standardized procedure, may also conduct a use attainability analysis. If conducted by another party, the use attainability analysis must be submitted to the Department for review and approval.

### A. Agricultural Water Supply Use

Surface waters used for agricultural purposes.

1. Livestock watering. Surface waters may be used for consumption of water by livestock.
2. Irrigation. Surface waters may be withdrawn and used for application onto cropland.

### B. Aquatic Life Support Use

Waters used for the maintenance of the ecological integrity of streams, lakes and wetlands including the aquatic, semi-aquatic, or terrestrial species dependent on surface water for survival.

1. Special Aquatic Life Use. Surface waters that contain unique habitats or biota that are not commonly found in the state. Surface waters that contain populations of threatened or endangered species will be designated as special aquatic life use waters listed in rules and regulations by the Kansas Department of Wildlife and Parks or the United States Fish and Wildlife Service. The Kansas Department of Wildlife and Parks and the United States Fish and Wildlife Service will be consulted in order to determine the presence of threatened and endangered species.

If the receiving stream is designated as a special aquatic life use water, the permit limits derived will maintain existing uses and where attained, designated uses.

If the receiving surface water is designated by the State as critical habitat for threatened or endangered species, the permit limits derived will maintain water quality considered acceptable for continued propagation of the species and maintenance of its habitat.

2. Expected Aquatic Life Use. Surface waters that contain habitats or biota found commonly in the state.

3. Restricted Aquatic Life Use. Surface waters that contain biota in limited abundance or diversity due to the physical quality or availability of habitat compared to more productive habitats in adjacent waters.

**C. Domestic Water Supply Use**

Surface waters that are used, after appropriate treatment, for a potable water resource. As used in these regulations, "point of diversion" is the location of a surface water intake structure used for domestic water supply or at the point of water removal from the alluvial aquifer by a well utilizing "groundwater under the influence of surface water" as defined under K.A.R. 28-15-11(cc).

**D. Food Procurement Use**

Surface waters that are used for obtaining edible aquatic or semi-aquatic life for human consumption.

**E. Groundwater Recharge Use**

Surface waters used for replenishing useable groundwater resources.

**F. Industrial Water Supply Use**

Surface water used for non-potable purposes including cooling or process water.

**G. Recreational Use**

Surface water used for primary or secondary contact recreation.

1. Primary Contact Recreation. Primary contact recreational use is evaluated differently for each of two main categories of waters: 1) classified surface waters other than classified stream segments, and 2) classified stream segments. For each category, the determining factor for primary contact recreation is body immersion in the water to the extent that some inadvertent ingestion of water is probable.

The primary contact recreation season is from April 1 through October 31 of each year.

a. Classified Surface Waters Other Than Classified Stream Segments. Uses supported in this category include boating, mussel harvesting, swimming, skin diving, water skiing, and wind surfing. The three subcategories of primary contact recreational use for classified surface waters other than classified streams segments are:

i. "Primary contact recreational use: swimming beach" applies to those classified surface waters other than classified stream segments that have posted public swimming areas. During the non-recreational season, the secondary contact recreational use: public access criteria will apply.

ii. "Primary contact recreational use: public access" applies to those classified surface waters other than classified stream segments where full body contact may occur and is by law or written permission of the landowner open to and accessible by the public. During the non-recreational season, the secondary contact recreational use: public access criteria will apply.



iii. “Primary contact recreational use: restricted access” applies to those classified surface waters other than classified stream segments where full body contact may occur and is not open to and accessible by the public under Kansas law. During the non-recreational season, the secondary contact recreational use: restricted access criteria will apply.

b. Classified Stream Segments. The three subcategories of primary contact recreational use for classified stream segments are:

i. “Primary contact recreational use: class A” applies to those classified stream segments that have been designated as public swimming areas. Uses supported in this category include activities such as; kayaking, mussel harvesting, swimming, skin diving, water skiing, and wind surfing. During the non-recreational season, the secondary contact recreational use: class A criteria will apply.

ii. “Primary contact recreational use: class B” applies to classified stream segments where moderate full body contact from activities that include kayaking, mussel harvesting, swimming, skin diving, water skiing, and wind surfing shall occur. A classified stream segment under this classification must be by law or written permission of the landowner open to and accessible by the public. During the non-recreational season, the secondary contact recreational use: class A criteria will apply.

iii. “Primary contact recreational use: class C” applies to classified stream segments supporting boating, mussel harvesting, swimming, skin diving, water skiing, wind surfing, wading, or fishing and has infrequent full body contact under Kansas’s law, a classified stream segment in this classification is not open to and accessible by the public. During the non-recreational season, the secondary contact recreational use: class B criteria will apply.

2. Secondary Contact Recreational Use. There are two categories for secondary contact recreational use: 1) classified surface waters other than classified stream segments and 2) classified stream segments. The determining factor for secondary contact recreational use is a lack of body immersion to the extent ingestion of surface water is not probable.

The secondary contact recreational use standards apply year round to surface waters designated for secondary contact recreational use.

a. Classified Surface Waters Other Than Classified Stream Segments. This use shall include wading, fishing, trapping, and hunting. The two subcategories of secondary contact recreational use for classified surface waters other than classified streams segments are:

i. “Secondary contact recreational use: public access” applies to classified surface waters other than a classified stream segments that are by law or written permission of the landowner open to and accessible by the public.

ii. “Secondary contact recreational use: restricted access” applies to classified surface waters other than a classified stream segments that by law are not open to and accessible by the public.

b. **Classified Stream Segments.** Secondary contact recreational uses for classified stream segments are capable of supporting the recreational activities of wading, fishing, canoeing, motor boating, rafting or other types of boating. There two classes of secondary contact recreational use for classified stream segments are:

i. “Secondary contact recreational use: class A” applies to classified stream segments that are by law or written permission of the landowner open to and accessible by the public.

ii. “Secondary contact recreational use: class B” applies to classified stream segments that by law are not open to and accessible by the public.

If opposite sides of a classified stream segment have differing public access status, the designated use of the entire classified stream segment will be the assigned the highest attainable recreational use. Assignment of the higher use, however, does not grant *de facto* public access to both sides of such segment.

Neither primary nor secondary contact recreational use designations will apply to stream segments where the natural, ephemeral, intermittent or low flow conditions or water levels prevent primary or secondary recreational activities.

### III. Criteria

#### A. Background Concentrations

Applicable regulation: K.A.R. 28-16-28e(b)(9)  
K.A.R. 28-16-28e-~~(e)(3)(B)(d)(3)(B)~~

In surface waters where naturally occurring concentrations of elemental substances such as chlorides or sulfates exceed the numeric criteria given in Tables 1a, 1b, and 1c in the Kansas Surface Water Quality Standards: Tables of Numeric Criteria, the newly established numeric criteria will be the background concentration in the receiving water. Background concentrations applied as criteria will be determined only for those substances incorporated into surface waters that are released from geologic deposits and formations as a result of erosional processes or groundwater intrusions.

The background concentration of a receiving water may be established using data from STORET or data from other data bases with adequate and documented quality assurance procedures acceptable to KDHE. The background concentration will be determined using existing instream chemical parameter measurements and stream flow measurements. In instances where background concentration is approximately proportional to the flow, the background concentration will be determined using the mean concentration of instream measurements. Only those measurements gathered when stream flow is at or below 50<sup>th</sup> percentile of all stream flow values will be used to determine background concentrations. A minimum of five data points will be required to make a background concentration determination. If sufficient data is not available, then the background concentration will be established through monitoring. Samples will be collected in upstream areas representative of the receiving water, including various habitat types, and unaffected by the discharge being permitted, or other identifiable anthropogenic

influences. Samples from streams will be collected as close as possible to low flow conditions. Samples from lakes will be collected outside of the regulatory mixing zone. The mean of at least five concentration observations is required to establish the background concentration. Hardness and pH data will also be gathered if the criterion is hardness or pH dependent. In instances where background concentration is not proportional to flow, a scientifically based analysis approved by the department will be required.

### **B. Site-Specific Criteria**

Applicable regulation: K.A.R. 28-16-28f(f)

A site-specific criteria determination can change the water quality aquatic life criteria for a parameter(s) in a given stream segment. A change in criteria based on a site-specific determination will not be granted to allow technology-based limits to be exceeded. The discharger requesting a site-specific determination from the criteria set via K.A.R. 28-16-28e must specifically state, in writing to KDHE, the parameters for which a site-specific determination is being sought. The request must include the scope, content and time frame for a study to gather data in support of the site-specific determination being requested. The site-specific determination study must be conducted in accordance with one of the three methods outlined in USEPA's Interim Guidance on Determination and Use of Water Effect Ratios for Metals, EPA-823-B-94-001, or other acceptable methods (background concentration determination or winter time ammonia criteria). The study may also provide supporting data establishing the chemical, physical and biological condition of the receiving water, including the number, diversity, and health of the biological resources in the stream. Studies to make a site-specific determination may also use guidelines provided in EPA's Technical Support Document for Water Quality-based Toxics Control.

To conduct a site-specific determination study, KDHE will require persons skilled in developing the necessary information needed to make a determination conduct the study. Such skills will include appropriate techniques for conducting the approved EPA methods and relevant biological studies. KDHE approval of the scope, content, and time frame of the study is required.

KDHE will conduct a forum for the public to participate in the establishment of site-specific aquatic life criteria. KDHE will invite interested parties, regional experts, and the general public to assist in the construction of the scope and content of any studies used for support or development of site-specific criteria. The public will also be invited to comment on proposed criteria through the public notice process and if deemed necessary, through a public hearing.

Normally, KDHE will allow 12 months to gather the necessary data and three additional months to assimilate and present the report. This time frame may be extended or reduced based upon the complexity of the study; weather induced delays and other contingencies outside the control of the discharger. During this time, monitoring requirements will be placed in the permit for the parameters, which will be affected by the site-specific determination. The requirements in the original permit issued prior to allowing the site-specific criteria study will remain in effect until the permit is renewed or until a final decision is made on the site-specific criteria request.

The decision and appropriate permit modifications will be public noticed and subject to review and appeal. If the request to change the site-specific criteria is not granted and the permittee is unable to meet the required limitations, the permit will be modified with a schedule of compliance.

### **C. Naturally Occurring Conditions for Low Dissolved Oxygen (DO) Criterion in Streams**

Applicable regulation: Kansas Surface Water Quality Standards: Tables of Numeric Criteria 1g

Some conditions that occur naturally can cause low dissolved oxygen levels in streams. Typically, the incidence of low dissolved oxygen occurs in the summer when water temperatures are high (reducing the ability of water to retain dissolved oxygen) and stream flows are low (reducing the ability of the stream to re-aerate itself or flush or dilute any oxygen-demanding substances present in the water). At times, the introduction of natural organic materials such as during periods of leaf fall can cause low dissolved oxygen levels in some segments of streams. Additionally, ground water reaching the surface through springs and seeps may have low dissolved oxygen. Digressions from the dissolved oxygen criterion under the above conditions should be excluded for the purposes of Section 303(d) of the Federal Clean Water Act.

Natural conditions contributing to the local digression of low dissolved oxygen should be documented during the field site visit. Factors including flow conditions, ambient air and water temperatures, presence of allochthonous organic matter from wildlife or riparian vegetation, dystrophic inputs to the stream from wetland areas and extended days of cloud cover should be noted at the time of sampling. Additionally, observations and samplings of the resident aquatic life community, including fish, mussels, macroinvertebrates and other shellfish should be made at the time of deficient oxygen to ascertain possible stress on the biota or lack thereof. These ancillary data and information will be used in the Section 303(d) listing and assessment process to determine whether the incident of low dissolved oxygen can be discounted.

### **D. Duration and Frequency**

Applicable regulation: K.A.R. 28-16-28e(c)

**Effective Frequency and Durations of Criteria Digressions for Indicating Impairment by Pollutants\***

<b><u>Designated Use</u></b> ----- <b><u>Pollutant Class</u></b>	<b><u>Recreation</u></b>	<b><u>Acute Aquatic Life Support</u></b>	<b><u>Chronic Aquatic Life Support</u></b>	<b><u>Domestic, Irrigation &amp; Stockwater Water Supply</u></b>	<b><u>Food Procurement</u></b>
Unionized Ammonia		Greater than 1 per 3 years on average	Greater than 1 per 3 years on average		
Pesticides (Priority Pollutants**)		Greater than 1 per 3 years on average	Greater than 1 per 3 years on average	Annual average concentration for domestic drinking water supply use	Greater than 1 over past 10 years
Pesticides (Non-Priority Pollutants, e.g., Atrazine, Alachlor)		Greater than 1 per 3 years on average	More than 10% of samples collected between March and October thru binomial analysis	Annual average concentration for domestic drinking water supply use	Greater than 1 over past 10 years
Organics (e.g., benzene, PCBs, phenols, toluene)		Greater than 1 per 3 years on average	Greater than 1 per 3 years on average	Greater than 1 over past 10 years	Greater than 1 over past 10 years
Metals		Greater than 1 per 3 years on average	Greater than 1 per 3 years on average; Chronic criteria applied to samples taken under stable flow conditions	Greater than 1 over past 10 years	Greater than 1 over past 10 years
Total Selenium		Greater than 1 per 3 years on average	Greater than 1 per 3 years on average; For natural background concentrations, median over past 10 years	Greater than 1 over past 10 years	Greater than 1 over past 10 years
Nitrate (plus Nitrite)				Greater than 1 over past 10 years	
Chlorophyll-a				Average of 4 or more samples over past 12 years for domestic water supply	
Salts (e.g., chloride, sulfate, fluoride, boron)		Greater than 1 per 3 years on average	More than 10% of samples thru binomial analysis; For natural background concentrations, median over past 10 years	More than 10% of samples thru binomial analysis; For natural background concentrations, median over past 10 years	
E coli Bacteria	Geometric mean of five samples collected within 30 days				
Dissolved Oxygen		Greater than 1 per 3 years on average			
pH			More than 10% of samples thru binomial analysis		
Temperature		Greater than 1 per 3 years on average			
Radionuclides				Greater than 1 over past 10 years	

\*For the purposes of assessment under Section 303(d) of the Clean Water Act, this table displays the thresholds of frequency for pollutant concentrations that exceed the numeric criteria contained within the Surface Water Quality Standards to indicate impairment of the designated uses assigned to waters of the state. Typical ambient sampling implies duration of one hour for acute criteria, 4 days for chronic criteria at stable flow and 70 years for water supply or food procurement as a lifetime average.

\*\*Priority Pollutants – A set of 126 chemical pollutants EPA regulates, and for which EPA has published analytical test methods.