

SUBCHAPTER 7. GROUNDWATER QUALITY STANDARDS (Draft Revision)

Section

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785:45-7-1. Scope and Applicability; Purpose

(a) The provisions of this Subchapter apply only to fresh groundwater.

(b) The purposes of the rules in this Subchapter are to protect beneficial uses and classifications of groundwater, to assure that degradation of the existing quality of groundwater does not occur, and to provide minimum standards for remediation when groundwater becomes polluted by humans.

(c) Implementation provisions for groundwater quality standards are located in 785:46:13.

785:45-7-2. Groundwater Quality Antidegradation Policy ~~Criteria for Groundwater Protection and Corrective Actions~~

~~(a) **Criteria for protection of groundwater quality.**~~

~~(1) The groundwaters of the state shall be maintained to prevent alteration of their chemical properties by harmful substances not naturally found in groundwater.~~

~~(2) Protective measures adequate to preserve and protect background quality of the groundwater and existing and designated groundwater basin classifications shall be maintained at all times. Protective measures shall also be sufficient to minimize the impact of pollutants on groundwater quality. The concentration of any synthetic substance or any substance not naturally occurring in that location shall not exceed the PQL in an unpolluted groundwater sample using laboratory technology. If the concentration found in the test sample exceeds the PQL, or if other substances in the groundwater are found in concentrations greater than those found in background conditions, that groundwater shall be deemed to be polluted and corrective action may be required.~~

~~(3) Measures to prevent noncompliance with this Section caused by any person shall be the responsibility of each state environmental agency within their jurisdictional areas of environmental responsibility. Such measures shall be prescribed in the Water Quality Standards Implementation Plan of each such agency. When regulating activities that have the potential to contaminate groundwater from the surface, state environmental agencies shall consider the vulnerability level of an affected hydrogeologic basin (for example, more stringent measures such as siting limitations, lagoon liners, or additional monitoring wells may be required to protect groundwater in hydrogeologic basins with High or Very High vulnerability levels).~~

(a) The groundwaters of the state of Oklahoma are an important and valuable resource that shall be maintained and protected.

(b) Beneficial uses shall be maintained and protected and human degradation of groundwater quality that would cause or contribute to the nonattainment of beneficial uses shall not be allowed.

(c) Whenever existing groundwater quality exceeds the level necessary for beneficial uses to be maintained and protected, the existing groundwater quality shall be maintained and protected, unless it is demonstrated to the state that any lowering of groundwater quality:

- (1) After an analysis of alternatives, is necessary to accommodate important economic and social development and is in the public interest; and
- (2) Protective measures sufficient to protect beneficial uses shall be maintained at all times.
- (d) In certain groundwaters, whenever existing groundwater quality exceeds the level necessary for beneficial uses to be maintained and protected, the existing groundwater quality shall be maintained and protected.
 - (1) Special Source Groundwaters
 - (A) Special source groundwaters are defined as groundwaters where exceptional water quality exists, where there is an irreplaceable source of water, where it is necessary to maintain an outstanding resource, or where the quality of the groundwater may be important for maintaining a uniquely designated characteristic of certain surface waters, as defined i-iv below:
 - i. All groundwater likely to influence the quality of waters designated "Scenic River" in Appendix A of this Chapter and their watersheds; and
 - ii. All groundwater likely to influence the quality of waters located within the boundaries of the areas described in Appendix B of this Chapter; and
 - iii. All groundwater likely to influence the quality of waters designated as "HQW" in Appendix A of this Chapter; and
 - iv. All groundwater likely to influence the quality of waters located within the boundaries of a State approved source water protection area for public water supply.
 - (B) Groundwaters designated as special source groundwaters are prohibited from receiving any discrete discharge(s), surface water from constructed infiltration basins, or surface application of waste, unless the activity maintains or improves existing water quality.
 - (C) Discharges proximate and/or adjacent groundwaters to special source groundwaters shall take into consideration the requirement to maintain or improve existing water quality in special source groundwaters and shall ensure that any activity provides for the maintenance or improvement of water quality in special source groundwaters

785:45-7-3. Groundwater Classifications, Beneficial Uses and Vulnerability Levels

- (a) **Classifications.** Classification of all groundwater shall be designated as follows:
 - (1) ~~(Class I) RESERVED (Special Source Groundwater): Special source groundwaters are defined as groundwaters where exceptional water quality exists, where there is an irreplaceable source of water, where it is necessary to maintain an outstanding resource or where the groundwater is ecologically important. Special source groundwaters are considered to be very vulnerable to contamination. This classification shall include:~~
 - ~~(A) All groundwater located underneath the watersheds of waterbodies designated "Scenic River" in Appendix A of this Chapter;~~
 - ~~(B) Special source groundwater located underneath located within the boundaries of the areas described in Appendix B of this Chapter; and~~
 - ~~(C) All groundwater located underneath lands located within the boundaries of a State approved wellhead or source water protection area for public water supply.~~
 - (2) **Class II (General Use Groundwater) (Class II):** These are groundwaters which have good quality due to natural conditions capable of being used as a drinking water supply with

~~no treatment or with conventional treatment methods, which have the potential to be used for other beneficial uses and which~~ and generally have a mean concentration of ~~T~~total ~~D~~dissolved ~~S~~solids of less than 3,000 milligrams per liter.

(3) ~~Class III (Limited Use Groundwater)~~ (Class III): These are groundwaters which have poor quality due to natural conditions ~~and, which could require extensive treatment for use as a source of drinking water, and which~~ generally have a mean concentration of ~~Total~~total ~~D~~dissolved ~~S~~solids of greater than or equal to 3000 milligrams per liter but less than 5000 milligrams per liter.

(4) ~~Class IV (Highly Mineralized Treatable Groundwater)~~ (Class IV): These are groundwaters which have very poor quality due to natural conditions ~~and, which would require extensive treatment for use as a source of drinking water, and which~~ generally have a mean concentration of ~~T~~total ~~D~~dissolved ~~S~~solids of greater than or equal to 5000 milligrams per liter but less than 10,000 milligrams per liter.

(b) **Beneficial uses.** This subsection lists the various beneficial uses of groundwater and designates certain beneficial uses for certain classifications of groundwater.

(1) **List of beneficial uses for groundwater.**

(A) ~~Public and Private Water Supply.~~ The beneficial use designation of ~~Public and Private~~ Water Supply refers to those groundwaters capable of delivering suitable quantities of ~~fresh~~ groundwater for municipal ~~or domestic~~ consumption whether or not treatment is required.

(B) Domestic Untreated Water Supply. The beneficial use designation of Domestic Untreated Water Supply refers to those groundwaters capable of delivering suitable quantities of untreated groundwater for domestic consumption.

(BC) Agriculture. The beneficial use designation of Agriculture refers to that groundwater which is or could be used for irrigation or livestock watering.

(CD) Industrial and Municipal Process and Cooling Water. The beneficial use designation of Industrial and Municipal Process and Cooling Water refers to that groundwater that is or could be used for a municipal or industrial process or cooling function.

(2) **Beneficial use designations.**

(A) The beneficial uses for General Use Groundwater (Class II)~~Class I and Class II groundwater,~~ not identified in Appendix H of this Chapter, shall be Domestic Untreated Water Supply, Public and Private Water Supply, Agriculture, and Industrial and Municipal Process and Cooling Water.

(B) The beneficial uses for Limited Use Groundwater (Class III) and Highly Mineralized Treatable Groundwater (Class IV)~~Class III and Class IV groundwater,~~ not identified in Appendix H of this Chapter, shall be Agriculture and Industrial and Municipal Process and Cooling Water.

(C) The beneficial uses for any groundwater identified in Appendix H of this Chapter shall be as designated in that appendix.

(D) The beneficial use for groundwater which is used for ~~domestic water supply~~ purposes on or after July 1, 2000, has a mean concentration of Total Dissolved Solids of less than ~~3~~5000 milligrams per liter, and has not been determined by any state environmental agency to be not suitable for human consumption, shall be Public Water Supply and or Domestic Untreated Water Supply~~Public and Private Water Supply.~~

(E) A beneficial use designation for groundwater may be amended or removed only after a demonstration to the satisfaction of the Board that meets one of the following tests:

(i) The designated use does not exist due to a condition that was not caused by humans, and treatment using Best Available Technology will not achieve the designated use, or

- (ii) The designated use does not exist due to a condition that is attributable to irreversible impacts caused by humans, and the remedy would cause substantial and widespread economic and social impact.
- (F) Groundwater which has had a beneficial use designation amended or removed pursuant to (E) of this paragraph shall be identified in Appendix H of this Chapter.
- (c) **Vulnerability level.** Groundwater in certain hydrogeologic basins is further classified according to its vulnerability to contamination as determined by DRASTIC. Such vulnerability levels of hydrogeologic basins shall be identified as Very Low, Low, Moderate, High, and Very High as prescribed in Table 1 of Appendix D of this Chapter. The vulnerability level may vary within each hydrogeologic basin, depending on site-specific hydrogeologic factors.
- (d) **Nutrient-vulnerable groundwater.** Certain specified groundwaters shall be further subject to designation in Table 2 of Appendix D of this Chapter as nutrient-vulnerable groundwater.

785:45-7-4. Criteria for groundwater quality protection

- (a) Groundwaters of the state support many different beneficial uses. The criteria below do not require improvement over naturally occurring background concentrations. When naturally occurring background concentrations exceed the criterion for a given parameter, the naturally occurring background concentration may be utilized as a criterion, if suitable. If a given parameter has more than one criterion associated with it, the most stringent criteria shall apply to ensure beneficial use protection.
- (b) The following criteria apply to all groundwaters for the protection of beneficial uses. Where specific numeric criteria for any constituent of concern have not been adopted, narrative criteria may be translated, in a scientifically defensible manner, into numeric endpoints applicable in state environmental agency regulatory and or corrective action programs.
- (1) Microorganisms. In groundwaters with the designated or existing use of Public Water Supply and Domestic Untreated Water Supply microorganisms shall not exceed the limits specified in 40 CFR 141.63 and 40 CFR 141.70-73. These provisions are incorporated by reference into this rule; this incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect.
- (2) Taste and Odor. Groundwaters shall be free from taste and odor producing substances, in concentrations that cause nuisance or adversely affect any beneficial use.
- (3) Chemical Constituents. Groundwaters shall not contain chemical constituents in concentrations that adversely affect any beneficial use.
- (4) Radioactivity. At a minimum, groundwaters designated Public Water Supply and Domestic Untreated Water Supply shall not contain concentrations of radionuclides in excess of limits specified in 40 CFR 141.66. This provision is incorporated by reference into this rule; this incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect.
- (5) Toxicity. Groundwaters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with any beneficial use(s). This criterion applies regardless of whether the toxicity is caused by a single substance or the interactive

effect of multiple substances or the mobilization and or transformation of a substance due to changes in physiochemical properties within the aquifer.

(6) Geochemical and Physical Composition. The geochemical and physical composition of groundwaters shall not be altered such that mobilization of any introduced or in-situ contaminants, natural or non-natural, occurs and impairs any beneficial use.

(7) Minerals. Increased mineralization, in comparison to existing water quality, from elements such as, but not limited to, calcium, magnesium, sodium and their associated anions shall not impair any beneficial use.

(c) For artificial recharge and or aquifer storage and recovery activities, the criteria below and presented in Tables 1 and 2 shall also apply to ensure the protection of the public water supply and the domestic untreated water supply beneficial uses. Artificial recharge and or aquifer storage and recovery activities shall not cause or contribute to a condition of pollution or nuisance or result in nonattainment of any applicable groundwater quality standard.

(1) Chemical Constituents. At a minimum, groundwaters shall not contain concentrations of chemical constituents in excess of the maximum contaminant limits specified in the following provisions:

- (A) Organic Contaminants in 40 CFR 141.61(a)
- (B) Synthetic Organic Contaminants in 40 CFR 141.61(c)
- (C) Inorganic Contaminants in 40 CFR 141.62(b)
- (D) Disinfection Byproducts in 40 CFR 141.64
- (E) Disinfectants in 40 CFR 141.65(a)

These provisions are incorporated by reference into this rule; this incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect.

(2) Toxicity. At a minimum, groundwaters shall not exceed limits specified in Table 1 of this subchapter.

Table 1. Numerical criteria to protect the Public Water Supply and Domestic Untreated Water Supply beneficial uses.

<u>Parameter</u>	<u>CAS #</u>	<u>Criteria</u> <u>(ug/L, unless otherwise noted)</u>
<u>Nickel</u>	<u>7440020</u>	<u>140</u>
<u>Acrolein</u>	<u>107028</u>	<u>3.5</u>
<u>Acrylonitrile</u>	<u>107131</u>	<u>0.65</u>
<u>Aldrin</u>	<u>309002</u>	<u>0.021</u>
<u>Chloroform</u>	<u>67663</u>	<u>70</u>
<u>4,4"-DDD</u>	<u>72548</u>	<u>1.5</u>
<u>4,4'-DDT</u>	<u>50293</u>	<u>1</u>
<u>Dichlorobromomethane</u>	<u>75274</u>	<u>5.6</u>
<u>Dieldrin</u>	<u>60571</u>	<u>0.022</u>
<u>Perchlorate</u>	<u>7601-90-3</u>	<u>4.9</u>
<u>Phenol</u>	<u>108952</u>	<u>4,200</u>

Bis(2-ethylhexyl)phthalate (BEHP)	117817	25
Butylbenzyl phthalate	85687	1,400
Diethyl Phthalate	84662	5,600
Dimethyl Phthalate	131113	70,000
Di-n-Butyl Phthalate	84742	700

(3) Secondary Contaminants. At a minimum, groundwaters shall not exceed the criteria limits presented in Table 2 of this subchapter and consistent with 40 CFR 143.3. This provision for the parameters listed below is incorporated by reference into this rule; this incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect.

Table 2. Secondary drinking water contaminants and associated criteria as listed in 40 CFR 143.3.

Parameter	Criteria
Aluminum	0.05 mg/L
Color	15 color units
Corrosivity	Non-corrosive
Copper	1.0 mg/L
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 TON (threshold odor number)
pH	6.5 – 8.5
Silver	0.1 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Total Dissolved Solids (TDS)	500 mg/L
Zinc	5.0 mg/L

(d) Measures to prevent noncompliance with this Section caused by any person, or activity, shall be the responsibility of each state environmental agency within their jurisdictional areas of environmental responsibility. Such measures shall be prescribed in the Water Quality Standards Implementation Plan of each such agency. When regulating activities that have the potential to contaminate groundwater from the surface, state environmental agencies shall consider the vulnerability level of an affected hydrogeologic basin (for example, more stringent measures such as siting limitations, lagoon liners, or additional monitoring wells may be required to protect groundwater in hydrogeologic basins with High or Very High vulnerability levels). When regulating groundwater quality activities that have the potential to cause or contribute to impairment of a surface water beneficial use, state environmental agencies shall include provisions to prevent the impairment of any surface water beneficial use.

785:45-7-5. Corrective Action

(a) Groundwater that has been polluted as a result of human activities shall be restored to a quality that will support the beneficial uses designated in OAC 785:45-7-3 for that

groundwater, or as otherwise specified in a site-specific remediation plan approved by an agency of competent jurisdiction.

(b) Measures to remedy, control or abate groundwater pollution caused by any person shall be the responsibility of each state environmental agency within its jurisdictional areas. Such measures shall be prescribed in the Water Quality Standards Implementation Plan of each such agency. When regulating activities that have the potential to contaminate groundwater from the surface, state environmental agencies shall consider the vulnerability level of an affected hydrogeologic basin (for example, more stringent measures such as siting limitations, lagoon liners, or additional monitoring wells may be required to protect groundwater in hydrogeologic basins with High or Very High vulnerability levels).

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