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TITLE 785. OKLAHOMA WATER RESOURCES BOARD
CHAPTER 45. OKLAHOMA'S WATER QUALITY STANDARDS

Introduction:
This document contains the Oklahoma Water Quality Standards promulgated by the Oklahoma Water Resources Board including all amendments which are effective as of September 11, 2017. This document was prepared by Oklahoma Water Resources Board staff as a convenience to the reader, and is not a copy of the official Title 785 of the Oklahoma Administrative Code. The rules in the official Oklahoma Administrative Code control if there are any discrepancies between the Code and this document.

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SUBCHAPTER 1. GENERAL PROVISIONS

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785:45-1-1. Purpose

(a) The Oklahoma Water Resources Board's statutory authority and responsibility concerning establishment of standards of quality of waters of the state are provided for under 82 O.S., §1085.30. Under this statute the Oklahoma Water Resources Board is authorized to promulgate rules *which establish classifications of uses of waters of the state, criteria to maintain and protect such classifications, and other standards or policies pertaining to the quality of such waters* [82:1085.30(A)]. These Standards are designed to maintain and protect the quality of the waters of the state.

(b) The Standards specify numerical and narrative criteria to protect beneficial uses designated for certain waters of the State. Beneficial use designations can be found in Appendix A of this Chapter for listed surface waters and in 785:45-5-3 for unlisted surface waters. The numerical and narrative criteria assigned to protect surface water beneficial uses are shown in Subchapter 5 of this Chapter. Classifications for groundwater can be found in Subchapter 7 and Appendix D of this Chapter. Narrative criteria to protect groundwater are shown in Subchapter 7 of this Chapter. The criteria that are the standards for a specific water of the State are the most stringent assigned to its designated beneficial uses. Since these criteria will protect the most sensitive use assigned, they will protect all designated uses. The purpose of the Standards is to promote and protect as many beneficial uses as are attainable and to assure that degradation of existing quality of waters of the State does not occur.

785:45-1-2. Definitions

The following words and terms, when used in this Chapter, shall have the following meaning unless the context clearly indicates otherwise:

"Abatement" means reduction of the degree or intensity of pollution.

"Acute test failure" means greater than or equal to 50% mortality to appropriate test species at or below the critical effluent dilution after a 48 hour test as provided in OAC 252:690-3-29.

"Acute toxicity" means greater than or equal to 50% lethality to appropriate test organisms in a test sample.

"Alpha particle" means a positively charged particle emitted by certain radioactive materials. It is the least penetrating of the three common types of radiation (alpha, beta and gamma) and usually is not dangerous to plants, animals or humans.

"Ambient" means surrounding, especially of or pertaining to the environment about an entity, but undisturbed and unaffected by it.

"Aquifer" means a formation that contains sufficient saturated, permeable material to yield significant quantities of water to wells and springs. This implies an ability to store and transmit water; unconsolidated sands and gravels are typical examples.

"Aquifer Storage and Recovery Activities" ("ASR") means activities that exclusively include activities for the storage of water in and recovery of water from an aquifer pursuant to a site-specific aquifer storage and recovery plan authorized by 82 O.S. § 1020.2A. Activities not conducted pursuant to a site-specific aquifer storage and recovery plan shall not be considered ASR activities. For purposes of this chapter, ASR activities also shall not include groundwater recharge or augmentation through a natural connection with a farm pond or other impoundment otherwise authorized by law.

"Artificial Aquifer Recharge" means activities with the primary purpose of recharging or augmenting an aquifer with no intention of recovering such water for future use. For purposes of this chapter, Artificial Aquifer Recharge activities shall not include activities specifically authorized pursuant to 82 O.S. § 1020.2(G) or stormwater runoff management practices otherwise authorized by law.

"Assimilative capacity" means the amount of pollution a waterbody can receive and still maintain the water quality standards designated for that waterbody.
"Attainable uses" means the best uses achievable for a particular waterbody given water of adequate quality. The process of use attainability analysis can, and in certain cases must, be used to determine attainable uses for a waterbody.
"Background" means the ambient condition upstream or upgradient from a facility, practice or activity which has not been affected by that facility, practice or activity.
"BCF" means bioconcentration factor.
"Beneficial uses" means a classification of the waters of the State, according to their best uses in the interest of the public.
"Benthic macroinvertebrates" means invertebrate animals that are large enough to be seen by the unaided eye, can be retained by a U. S. Standard No. 30 sieve, and live at least part of their life cycles within or upon available substrate in a body of water or water transport system.
"Best Available Technology" means the best proven technology, treatment techniques or other economically viable means which are commercially available.
"Best management practices" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state or United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
"Beta particle" means a negatively charged elementary particle emitted by radioactive decay that may cause skin burns. It is easily stopped by a thin sheet of metal.
"Bioconcentration factor" means the relative measure of the ability of a contaminant to be stored in tissues and thus to accumulate through the food chain and is shown as the following formula: BCF = Tissue Concentration divided by Water Concentration.
"BMPs" means best management practices.
"Board" means Oklahoma Water Resources Board.
"BOD" means biochemical oxygen demand.
"Carcinogenic" means cancer producing.
"Chronic test failure" means the statistically significant difference (at the 95% confidence level) between survival, reproduction or growth of the test organism at or below the chronic critical dilution after completion of a 7 day test as provided in OAC 252:690-3-29, or other test as approved by the permitting authority and the EPA Regional Administrator, and a control.
"Chronic toxicity" means a statistically significant difference (at the 95% confidence level) between longer-term survival and/or reproduction or growth of the appropriate test organisms in a test sample and a control. Teratogenicity and mutagenicity are considered to be effects of chronic toxicity.
"Coliform group organisms" means all of the aerobic and facultative anaerobic gram-negative, non-spore-forming rod shaped bacteria that ferment lactose broth with gas formation within 48 hours at 35°C.
"Color" means true color as well as apparent color. True color is the color of the water from which turbidity has been removed. Apparent color includes not only the color due to substances in solution (true color), but also that color due to suspended matter.
"Conservative element" means a substance which persists in the environment, having characteristics which are resistant to ordinary biological or chemical degradation or volatilization.
"Conservation plan" means, but is not limited to, a written plan which lists activities, management practices and maintenance or operating procedures designed to promote natural resource conservation and is intended for the prevention and reduction of pollution of waters of the state.

"Critical dilution" means, for chronic whole effluent toxicity testing, an effluent dilution expressed as a percentage representative of the dilution afforded a wastewater discharge according to the appropriate Q*-dependent chronic mixing zone equation.
"Critical temperature" means the higher of the seven-day maximum temperature likely to occur with a 50% probability each year, or 29.4°C (85°F).
"Criterion" means a number or narrative statement assigned to protect a designated beneficial use.
"CWAC" means Cool Water Aquatic Community.
"Degradation" means any condition caused by the activities of humans which result in the prolonged impairment of any constituent of the aquatic environment.
"Designated beneficial uses" means those uses specified for each waterbody or segment whether or not they are being attained.
"Dissolved oxygen" means the amount of oxygen dissolved in water at any given time, depending upon the water temperature, the partial pressure of oxygen in the atmosphere in contact with the water, the concentration of dissolved organic substances in the water, and the physical aeration of the water.
"DO" means dissolved oxygen.
"DRASTIC" means that standardized system developed by the United States Environmental Protection Agency for evaluating groundwater vulnerability to pollution, based upon consideration of depth to water (D), net recharge (R), aquifer media (A), soil media (S), topography (T), impact of the vadose zone media (I), and hydraulic conductivity (C) of the aquifer.
"EPA" means the United States Environmental Protection Agency.
"Ephemeral stream" means an entire stream which flows only during or immediately after a rainfall event, and contains no refuge pools capable of sustaining a viable community of aquatic organisms.
"Epilimnion" means the uppermost homothermal region of a stratified lake.
"Eutrophication" means the process whereby the condition of a waterbody changes from one of low biologic productivity and clear water to one of high productivity and water made turbid by the accelerated growth of algae.
"Existing beneficial uses" means those uses listed in Title 40 CFR §131.3 actually attained by a waterbody on or after November 28, 1975. These uses may include public water supplies, fish and wildlife propagation, recreational uses, agriculture, industrial water supplies, navigation, and aesthetics.
"Existing point source discharge(s)" means, for purposes of 785:45-5-25, point source discharges other than stormwater which were/are in existence when the ORW, HQW, or SWS, or SWS-R designation was/is assigned to the water(s) which receive(s) the discharge. The load from a point source discharge which is subject to the no increase limitation shall be based on the permitted mass loadings and concentrations, as appropriate, in the discharge permit effective when the limitation was assigned. Publicly owned treatment works may use design flow, mass loadings or concentration as appropriate if those flows, loadings or concentrations were approved as a portion of Oklahoma's Water Quality Management Plan prior to the application of the ORW, HQW, SWS or SWS-R limitation.
"Fecal coliform" means a group of organisms common to the intestinal tracts of humans and of animals. The presence of fecal coliform bacteria in water is an indicator of pollution and of potentially dangerous bacterial contamination.
"Fresh groundwater" means groundwater with naturally-occurring concentrations of total dissolved solids less than 10,000 mg/L, or with levels of total dissolved solids of 10,000 or more mg/L caused by human activities.
"Geometric mean" means the nth root of the product of the samples.

"Groundwater" *means waters of the state under the surface of the earth regardless of the geologic structure in which it is standing or moving outside the cut bank of any definite stream.* [82: 1020.1(A)]

"Groundwater basin" means a distinct underground body of water overlain by contiguous land and having substantially the same geological and hydrological characteristics and yield capabilities". [82: 1020.1(C)]

"HLAC" means Habitat Limited Aquatic Community.

"HQW" means High Quality Water.

"HUC" means hydrologic unit code utilized by the United States Geologic Survey and other federal and state agencies as a way of identifying all drainage basins in the United States in a nested arrangement from largest to smallest, consisting of a multi-digit code which identifies each of the levels of classification within two-digit fields.

"Intolerant climax fish community" means habitat and water quality adequate to support game fishes or other sensitive species introduced or native to the biotic province or ecological region, which require specific or narrow ranges of high quality environmental conditions.

"Lake" means:

(A) An impoundment of waters of the state over 50 acre-feet in volume which is either:

(i) owned or operated by federal, state, county, or local government or

(ii) appears in Oklahoma's Clean Lakes Inventory.

(B) Surface impoundments which are used as a treatment works for the purpose of treating stabilizing or holding wastes are excluded from this definition.

"LC50" means lethal concentration and is the concentration of a toxicant in an external medium that is lethal to fifty percent of the test animals for a specified period of exposure.

"Long-term average flow" means an arithmetic average stream flow over a representative period of record.

"MDL" means the Method Detection Limit and is defined as the minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero (0). MDL is dependent upon the analyte of concern.

"Mixing zone" means when a liquid of a different quality than the receiving water is discharged into the receiving water, a mixing zone is formed. Concentration of the liquid within the mixing zone decreases until it is completely mixed with receiving water. A regulatory mixing zone is described in 785:45-5-26.

"Narrative criteria" means statements or other qualitative expressions of chemical, physical or biological parameters that are assigned to protect a beneficial use.

"Natural source" means source of contamination which is not human induced.

"NLW Impairment Study" means a scientific process of surveying the chemical, physical and biological characteristics of a nutrient threatened reservoir to determine whether the reservoir's beneficial uses are being impaired by human-induced eutrophication.

"Non-conservative element" means a substance which undergoes significant short-term degradation or change in the environment other than by dilution.

"Nonpoint source" means a source of pollution without a well defined point of origin.

"Normal stream flow conditions" means flow corresponding to low gradient areas in the hydrograph.

"NTU" means Nephelometric Turbidity Unit, which is the unit of measure using the method based upon a comparison of the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension (formazin). The higher the intensity of scattered light, the higher the turbidity.

"Numerical criteria" means concentrations or other quantitative measures of chemical, physical or biological parameters that are assigned to protect a beneficial use.

"Numerical standard" means the most stringent of the numerical criteria assigned to the beneficial uses for a given stream.

"Nutrient impaired reservoir" means a reservoir with a beneficial use or uses determined by an NLW Impairment Study to be impaired by human-induced eutrophication.
"Nutrient-limited watershed" means a watershed of a waterbody with a designated beneficial use which is adversely affected by excess nutrients as determined by Carlson's Trophic State Index (using chlorophyll-a) of 62 or greater, or is otherwise listed as "NLW" in Appendix A of this Chapter.
"Nutrients" means elements or compounds essential as raw materials for an organism's growth and development; these include carbon, oxygen, nitrogen and phosphorus.
"ORW" means Outstanding Resource Water.
"OWRB" means Oklahoma Water Resources Board.
"PCBs" means polychlorinated biphenyls.
"Picocurie" means that quantity of radioactive material producing 2.22 nuclear transformations per minute.
"Point source" means any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, well, discrete fissure, container, rolling stock or concentrated animal feeding operation from which pollutants are or may be discharged. This term does not include return flows from irrigation agriculture.
"Pollutant" means any material, substance or property which may cause pollution.
"Pollution" *means contamination or other alteration of the physical, chemical or biological properties of any natural waters of the State, or such discharge of any liquid, gaseous or solid substance into any waters of the State as will or is likely to create a nuisance or render such waters harmful, or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life"*. [82: §1084.2(1)]
"Polychlorinated biphenyls" means a group of organic compounds (206 possible) which are constructed of two phenyl rings and more than one chlorine atom.
"PQL" means Practical Quantitation Limit and is defined as 5 times the MDL. The PQL represents a practical and routinely achievable detection limit with high confidence.
"Put and take fishery" means the introduction of a fish species into a body of water for the express purpose of sport fish harvest where existing conditions preclude a naturally reproducing population.
"Q*" means dilution capacity.
"Salinity" means the concentration of salt in water.
"Sample standard" means the arithmetic mean of historical data from October 1976 to September 1983 except as otherwise provided in Appendix F of this Chapter, plus two standard deviations of the mean.
"Seasonal base flow" means the sustained or fair-weather runoff, which includes but is not limited to groundwater runoff and delayed subsurface runoff.
"Seasonal seven-day, two-year low flow" means the 7-day low flow of a stream likely to occur with a 50% probability for a season with the applicable dates in Table 1 of Appendix G of OAC 785:45.
"Seasonal 7Q2" means the seasonal seven-day, two-year low flow.
"Sensitive representative species" means *Ceriodaphnia dubia, Daphnia magna, Daphnia pulex, Pimphales promelas* (Fathead minnow), *Lepomis macrochirus* (Bluegill sunfish), or other sensitive organisms indigenous to a particular waterbody.
"SWS" means Sensitive Public and Private Water Supply.
"SWS-R" means waterbodies classified as sensitive public and private water supplies that may be augmented with reclaimed water for the purpose of indirect potable reuse.
"Seven-day, two-year low flow" means the 7-day low flow of a stream likely to occur with a 50% probability each year.
"7Q2" means the seven-day, two-year low flow.

"Standard deviation" means a statistical measure of the dispersion around the arithmetic mean of the data.
"Standard Methods" means the publication "Standard Methods for the Examination of Water and Wastewater", published jointly by the American Public Health Association, American Water Works Association, and Water Environment Federation.
"Standards", when capitalized, means this Chapter, which constitutes the Oklahoma Water Quality Standards described in 82 O.S. §1085.30. Whenever this term is not capitalized or is singular, it means the most stringent of the criteria assigned to protect the beneficial uses designated for a specified water of the State.
"Storm water" means storm water runoff, snow melt runoff, and surface runoff and drainage.
"Subwatershed" means a smaller component of the larger watershed.
"Synergistic effect" means the presence of cooperative pollutant action such that the total effect is greater than the sum of the effects of each pollutant taken individually.
"Thermal pollution" means degradation of water quality by the introduction of heated effluent and is primarily a result of the discharge of the cooling waters from industrial processes, particularly from electrical power generation.
"Thermal stratification" means horizontal layers of different densities produced in a lake caused by temperature.
"Variance" means a temporary (not to exceed three years) exclusion of a specific numerical criterion for a specific discharge to a specific waterbody.
"Warm Water Aquatic Community" means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality and habitat are adequate to support intolerant climax fish communities and includes an environment suitable for the full range of warm water benthos.
"Wastes" *means industrial waste and all other liquid, gaseous or solid substances which may pollute or tend to pollute any waters of the state".* [82 O. S. §1084.2(2)]
"Waterbody" means any specified segment or body of waters of the state, including but not limited to an entire stream or lake or a portion thereof.
"Water quality" means physical, chemical, and biological characteristics of water which determine diversity, stability, and productivity of the climax biotic community or affect human health.
"Waters of the state" *means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this State or any portion thereof* [82:1084.2(3)].
"Watershed" means the drainage area of a waterbody including all direct or indirect tributaries.
"WWAC" means Warm Water Aquatic Community.
"Yearly mean standard" means the arithmetic mean of historical data from October 1976 to September 1983 except as otherwise provided in Appendix F of this Chapter, plus one standard deviation of the mean. The moving yearly mean standard is an average of the last five years of available data.
"Zone of passage" means a three dimensional zone expressed as a volume in the receiving stream through which mobile aquatic organisms may traverse the stream past a discharge without being affected by it. A regulatory zone of passage is described in 785:45-5-26.

785:45-1-3. Adoption and Enforceability of the Standards
(a) The Oklahoma Water Quality Standards are adopted and promulgated as rules by the Oklahoma Water Resources Board pursuant to the procedures specified in the Oklahoma Administrative Procedures Act, 75 O.S., § 250 et. seq., and the procedures and substantive law provided in 82 O.S., §1085.30, and are fully enforceable under the laws of Oklahoma.
(b) All *waters of the state*, as defined in 82 O.S. §1084.2(3), are protected by these Standards.

(c) Oklahoma Water Quality Standards adopted and promulgated by the Oklahoma Water Resources Board shall be applicable to all activities which may affect the water quality of waters of the state and *shall be utilized by all appropriate state environmental agencies in implementing their respective duties to abate and prevent pollution to waters of the state.* [82: 1085.2(15)]

785:45-1-4. Testing Procedures

All methods of sample collection, preservation, and analysis used in applying any of the standards shall be in accordance with "The Guidelines Establishing Test Procedures for the Analysis of Pollutants" as provided by 40 Code of Federal Regulations, Part 136 (40 CFR Part 136); "Methods of Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms", "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", "Test Methods for Escherichia coli and Enterococci in Water by the Membrane Filter Procedure", or other procedures approved by the Department of Environmental Quality's Laboratory Certification Program and the EPA Region 6 Regional Administrator.

785:45-1-5. Revision Procedures

(a) Any person may petition the Board, under 785:1-5-4, to modify or repeal any criterion or beneficial use designation.

(b) The petitioner, through objective and acceptable scientific studies, data and other information, shall be required to show that the requested modification or repeal will be in accordance with the requirements of applicable State and Federal law regarding water quality and in the best interest of the State.

(c) Procedures required by applicable State and Federal law for revising the designated beneficial uses and criteria or water quality shall be followed in any revision which is the subject of the petition.

785:45-1-6. Errors and Separability

(a) Errors resulting from inadequate and erroneous data or human or clerical oversight will be subject to correction by the Oklahoma Water Resources Board.

(b) The discovery of such errors does not render the remaining and unaffected Standards invalid.

(c) If any provision of these Standards, or the application of any provision of these Standards to any person or circumstances is held to be invalid, the application of such provisions to other persons and circumstances and the remainder of the Standards shall not be affected thereby.

SUBCHAPTER 3. ANTIDEGRADATION REQUIREMENTS

Section

785:45-3-1. Purpose of Antidegradation Policy Statement
785:45-3-2. Applications of Antidegradation Policy

785:45-3-1. Purpose; Antidegradation Policy Statement

(a) Waters of the state constitute a valuable resource and shall be protected, maintained and improved for the benefit of all the citizens.

(b) It is the policy of the State of Oklahoma to protect all waters of the state from degradation of water quality, as provided in OAC 785:45-3-2 and Subchapter 13 of OAC 785:46.

785:45-3-2. Applications of Antidegradation Policy

(a) **Application to Outstanding Resource Waters (ORW).** Certain waters of the state constitute an outstanding resource or have exceptional recreational and/or ecological

significance. These waters include streams designated "Scenic River" or "ORW" in Appendix A of this Chapter, and waters of the State located within watersheds of Scenic Rivers. Additionally, these may include waters located within National and State parks, forests, wilderness areas, wildlife management areas, and wildlife refuges, and waters which contain species listed pursuant to the federal Endangered Species Act as described in 785:45-5-25(c)(2)(A) and 785:46-13-6(c). No degradation of water quality shall be allowed in these waters.

(b) **Application to High Quality Waters (HQW).** It is recognized that certain waters of the state possess existing water quality which exceeds those levels necessary to support propagation of fishes, shellfishes, wildlife, and recreation in and on the water. These high quality waters shall be maintained and protected.

(c) **Application to Sensitive Public and Private Water Supplies (SWS) and SWS-R.** It is recognized that certain public and private water supplies possess conditions that make them more susceptible to pollution events and require additional protection. These sensitive water supplies shall be maintained and protected.

(d) **Application to beneficial uses**. No water quality degradation which will interfere with the attainment or maintenance of an existing or designated beneficial use shall be allowed.

(e) **Application to improved waters.** As the quality of any waters of the state improve, no degradation of such improved waters shall be allowed.

SUBCHAPTER 5. SURFACE WATER QUALITY STANDARDS

Part 1. GENERAL PROVISIONS

Section

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Part 5. SPECIAL PROVISIONS

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785:45-5-29. Delineation of NLW Areas

PART 1. GENERAL PROVISIONS

785:45-5-1. Declaration of Policy; Authority of Board

(a) **General policy to protect, maintain and improve water quality.** Title 82 of the Oklahoma Statutes, Section 1084.1, provides as follows: *Whereas the pollution of the waters of this state constitutes a menace to public health and welfare, creates public nuisances, is harmful to wildlife, fish and aquatic life, and impairs domestic, agricultural, industrial, recreational and other legitimate beneficial uses of water, it is hereby declared to be the public policy of this state to conserve and utilize the waters of the state and to protect, maintain and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and aquatic life and for domestic, agricultural, industrial, recreational and other legitimate beneficial uses...*

(b) **Board authority to promulgate Standards.**

(1) Title 82 of the Oklahoma Statutes, Section 1085.30 provides that the Board *is authorized to adopt, amend and otherwise promulgate rules to be known as "Oklahoma Water Quality Standards" which establish classifications of uses of waters of the state, criteria to maintain and protect such classifications, and other standards or policies pertaining to the quality of such waters. The...Standards shall, at a minimum, be designed to maintain and protect the quality of the waters of the state.*

(2) *Wherever the Board finds it is practical and in the public interest to do so, the rules may be amended to upgrade and improve progressively the quality of waters of the state.*

(3) *The Board may also amend* the *Standards to downgrade a designated use of any waters of this state which is not an existing use, may establish subcategories of a use or may provide for less stringent criteria or other provisions thereof only in those limited circumstances permissible under the Federal Water Pollution Control Act as amended or federal rules which implement said act.* Provided, *the Board may amend the...Standards to downgrade a designated use, establish subcategories of a use or may provide for less stringent criteria or other provisions thereof only to the extent as will maintain or improve the existing uses and the water quality of the water affected*. *Provided* further*, the Board shall not modify the...Standards applicable to scenic river areas as such areas are described by Section 1452 of* Title 82 of the Oklahoma Statutes, *to downgrade a designated use, establish a subcategory of a use or provide for less stringent criteria or other provisions thereof.*

785:45-5-2. Beneficial Uses: Existing and Designated

(a) Beneficial uses are designated for all waters of the state. Such uses are protected through the restrictions imposed by the antidegradation policy statement, narrative criteria and numerical standards. Some uses require higher quality water than others. When multiple uses are assigned to the same waters, all such uses shall be protected. Beneficial uses are also protected by permits or other authorizations issued to meet these Standards for point sources and through practical management or regulatory programs for nonpoint sources. The criteria to protect the beneficial uses designated in 785:45-5-3 or in Appendix A of this Chapter for certain surface waters of the state are described in sections 785:45-5-10 through 785:45-5-20 of this Chapter.

(b) Beneficial uses designated in 785:45-5-3 or in Appendix A of this Chapter for certain surface waters of the state may be downgraded to a lower use or removed entirely, or subcategories of such designated uses may be established, if:

(1) the use, despite being designated, is not a use which is or has been actually attained in the water body on or after November 28, 1975; and

(2) for the use of Fish and Wildlife Propagation, Primary Body Contact Recreation or Secondary Body Contact Recreation, or any subcategory of such use or uses, it is

demonstrated to the satisfaction of the Board and the U.S. E.P.A. that attaining the designated use is not feasible because:

(A) naturally occurring pollutant concentrations prevent the attainment of the use, or

(B) natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met, or

(C) human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place, or

(D) dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use, or

(E) physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses, or

(F) controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act as amended would result in substantial and widespread economic and social impact; and

(3) such downgrade, removal, or establishment of a subcategory will maintain or improve the quality of water affected.

785:45-5-3. Beneficial Uses: Default Designations

(a) **Surface waters excluding lakes.**

(1) For those surface waters of the state not listed in Appendix A of this Chapter, excluding lakes, the following beneficial uses are designated:

(A) Irrigation Agriculture subcategory of the beneficial use classification Agriculture (see 785:45-5-13),

(B) Aesthetics (see 785:45-5-19),

(C) The Warm Water Aquatic Community subcategory of the beneficial use classification Fish and Wildlife Propagation (see 785:45-5-12(c)), and

(D) Primary Body Contact Recreation (see 785:45-5-16).

(2) The beneficial uses described in 785:45-5-10 (Public and Private Water Supplies), 785:45-5-11 (Emergency Public and Private Water Supplies), 785:45-5-12(b) (the Habitat Limited Aquatic Community subcategory of the beneficial use classification Fish and Wildlife Propagation), and 785:45-5-17 (Secondary Body Contact Recreation) shall be designated only following use attainability analyses.

(3) Beneficial use determinations that follow use attainability analyses are subject to administrative rulemaking proceedings including the public hearing process.

(b) **Lakes.**

(1) For lakes, including those listed in Appendix A of this Chapter, the following beneficial uses are designated:

(A) The Warm Water Aquatic Community subcategory of the beneficial use classification Fish and Wildlife Propagation (see 785:45-5-12(c));

(B) Irrigation Agriculture subcategory of the beneficial use classification Agriculture (see 785:45-5-13);

(C) Primary Body Contact Recreation (see 785:45-5-16); and

(D) Aesthetics (see 785:45-5-19).

(2) The beneficial use of Public and Private Water Supplies (see 785:45-5-10) is specifically designated for certain lakes as provided in Appendix A of this Chapter. For all other lakes, the beneficial uses designated in this paragraph take control over the uses

designated for stream segments which include descriptions of lakes or portions thereof identified in Appendix A of this Chapter.

785:45-5-4. Applicability of narrative and numerical criteria

(a) For purposes of permitting discharges for attainment of numerical criteria or establishing site specific criteria, streamflows of the greater of 1.0 cfs or 7Q2 shall be used to determine appropriate permit conditions unless otherwise provided in OAC 785:45 or 785:46.

(b) When numerical criteria do not apply, water column conditions including dissolved oxygen concentrations, organoleptic compounds, nutrients, and oil and grease shall be maintained to prevent nuisance conditions caused by man's activities.

(c) Narrative criteria listed in this Chapter shall be maintained at all times and apply to all surface waters of the State.

(d) If more than one narrative or numerical criteria is assigned to a stream, the most stringent shall be maintained.

(e) A temporary variance may be granted at the sole discretion of the Oklahoma Water Resources Board in limited circumstances only for specific numerical criteria listed in Table 2 of Appendix G of this Chapter addressing water column numerical criteria to protect human health for the consumption of fish flesh and water, for specific numerical criteria listed in Appendix G Table 2 addressing numerical criteria for toxic substances, and for specific numerical criteria listed in Appendix G Table 2 addressing water column numerical criteria to protect human health for the consumption of fish flesh only.

(1) **General requirements and time limits for variance.** A variance or exception to listed numeric criteria may only be granted by the Board so long as the applicant complies with all procedural and application requirements, demonstrates to the satisfaction of the Board that the necessary conditions specified in 785:45-5-4(e)(4) exist, and that the variance will not otherwise be contrary to law or inconsistent with the Board's statutory duties. Variances shall be allowed only in very limited situations. In no circumstances shall a variance be granted which exceeds three (3) years in duration and no renewal shall be allowed.

(2) **Applications and related requirements.** A variance may only be considered and granted upon application of a person for discharge from a specific facility to a specific stream segment(s). All applications for a variance must contain or include as attachments at the time of filing, at a minimum, all written documentation which supports a finding that the necessary conditions listed in 785:45-5-4(e)(4) exist, a description of the specific numerical criterion for which the variance is requested, the legal description of the stream segment(s) which would receive the discharge and the location of any other affected waters, and such other information as the Board may specify as necessary for adequate review of the application. A fee, as set forth in Chapter 5 of this Title, shall be submitted with the application for variance.

(3) **Procedure and scope of variance.**

(A) A variance may be granted only by the Oklahoma Water Resources Board, shall be restricted to those listed numerical criteria for which an application is filed, and shall apply only to the specific facility and specific stream segment(s) which receives the discharge.

(B) The applicant for a variance must prepare a public notice whose contents shall reflect the nature of the variance applied for and such other information as the Board may deem appropriate, and shall state the date, time and location of public hearing on the application. Such notice, after submission to and approval by the Board, shall be published at the expense of the applicant once a week for two consecutive weeks, minimum seven day interval, in a newspaper(s) having general circulation in the county(ies) in which the discharge is located. The Board may require additional

publication of the notice in additional counties or publications at the applicant's expense. Proof of publication shall be provided as directed by the Board.

(C) The applicant shall deliver or mail such public notice to all persons who are on a standing list for receiving notice of such applications for variances. Such standing list shall be established and maintained by the Board and shall include the Office of the Attorney General, the chief executive of each affected municipality and county, all persons who shall request to receive such notices, and such other persons as may be specified by the Board.

(D) An administrative hearing shall be held not earlier than twenty-one days following the last publication or mailing of notice. At the hearing, the burden of proof shall be upon the applicant to produce evidence which demonstrates to the satisfaction of the Board that all conditions and requirements of these rules and applicable law are met. All interested persons may present oral or written comments prior to or at the hearing on the application, as specified in the notice.

(4) **Conditions for variance.**

(A) A variance shall be effective only after approval by the U. S. Environmental Protection Agency.

(B) A variance may be granted by the Board only if the following additional conditions are met:

(i) The granting of a variance will not result in the violation of any other OWQS, including those specified for ORW, HQW or other classes of waters; and

(ii) New or previously unavailable information regarding toxicity, bioavailability, persistence or degradation of a specific pollutant refutes the scientific basis for the effective numerical criterion; or

(iii) Non-attainment of a numerical criterion is documented in the stream segment which is the subject of the variance application or in close proximity upstream of such segment, and there is no increase in the concentration of the pollutant which is the subject of the variance outside the mixing zone or at some point downstream of the facility following complete mixing if appropriate relative to the concentration upstream of the facility, and

(I) non-attainment is demonstrated to be the result of natural source concentrations of that pollutant in the water column, sediment or aquatic life, or

(II) non-attainment is the result of human caused conditions which cannot be remedied or would cause more environmental damage if corrected than if left in place.

(f) Schedules for compliance with the Oklahoma Water Quality Standards may be granted to persons or facilities discharging wastes into waters of the state unless such discharge creates an actual or potential hazard to the public health in accordance with 82 O.S. §1085.30(D).

(g) Site-specific criteria that have been derived for certain waterbodies and conditions are promulgated in Appendix E of this chapter. These site-specific criteria supersede other numeric criteria promulgated elsewhere in this chapter if it is shown to the satisfaction of the Board that properties of the discharge or the circumstances surrounding the development of the site-specific criteria have not significantly changed since the promulgation of those site-specific criteria. Such criteria and the conditions around which they were derived, including but not limited to local environmental factors and effluent characteristics, shall be re-evaluated by the permit holder with each subsequent discharge permit renewal application or major modification request to determine if any significant changes have affected the propriety of the site-specific criteria.

PART 3. BENEFICIAL USES AND CRITERIA TO PROTECT USES

785:45-5-9. General Narrative Criteria

(a) **Minerals.** Increased mineralization from elements such as, but not limited to, calcium, magnesium, sodium and their associated anions shall not impair any beneficial use. Derivations of certain historic concentrations can be found in Appendix F of this Chapter.

(b) **Solids (suspended and/or settleable).** The surface waters of the state shall be maintained so as to be essentially free of floating debris, bottom deposits, scum, foam and other materials, including suspended substances of a persistent nature, from other than natural sources.

(c) **Taste and Odor.** Taste and odor producing substances from other than natural origin shall not interfere with the production of a potable water supply by modern treatment methods or produce abnormal flavors, colors, tastes and odors in fish flesh or other edible wildlife, or result in offensive odors in the vicinity of the water, or otherwise impair any beneficial use.

(d) **Nutrients.** Nutrients from point source discharges or other sources shall not cause excessive growth of periphyton, phytoplankton, or aquatic macrophyte communities which impairs any existing or designated beneficial use.

785:45-5-10. Public and Private Water Supplies

The following criteria apply to surface waters of the state having the designated beneficial use of Public and Private Water Supplies:

(1) **Raw water numerical criteria.** For surface water designated as public and private water supplies, the numerical criteria for substances identified under the "Public and Private Water Supply (Raw Water)" column in Table 2 of Appendix G of this Chapter shall not be exceeded. Raw water numerical criteria are considered long-term average standards. For purposes of permitting discharges for attainment of these standards, the permitting authority shall use long-term average receiving stream flows and complete mixing of effluent and receiving water to determine appropriate permit limits.

(2) **Radioactive materials.**

(A) There shall be no discharge of radioactive materials in excess of the criteria found in Title 10 Code of Federal Regulations Part 20, Appendix B, Table 2.

(B) The concentration of gross alpha particles shall not exceed the criteria specified in (i) through (iv) of this subparagraph, or the naturally occurring concentration, whichever is higher.

(i) The combined dissolved concentration of Radium-226 and Radium-228, and Strontium-90, shall not exceed 5 picocuries/liter, and 8 picocuries/liter, respectively.

(ii) Gross alpha particle concentrations, including Radium-226 but excluding radon and uranium, shall not exceed 15 picocuries/liter.

(iii) The gross beta concentration shall not exceed 50 picocuries/liter.

(iv) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in waters having the designated use of Public and Private Water supply shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.

(3) **Coliform bacteria.**

(A) The bacteria of the total coliform group shall not exceed a monthly geometric mean of 5,000/100 ml at a point of intake for public or private water supply.

(B) The geometric mean will be determined by multiple tube fermentation or membrane filter procedures based on a minimum of not less than five (5) samples taken over a period of not more than thirty (30) days.

(C) Further, in no more than 5% of the total samples during any thirty (30) day period shall the bacteria of the total coliform group exceed 20,000/100 ml.

(D) In cases where both public and private water supply and primary body contact recreation uses are designated, the primary body contact criteria will apply.

(4) **Oil and grease (petroleum and non-petroleum related).** For Public and Private Water Supplies, surface waters of the State shall be maintained free from oil and grease and taste and odors.

(5) **General criteria.**

(A) The quality of the surface waters of the state which are designated as public and private water supplies shall be protected, maintained, and improved when feasible, so that the waters can be used as sources of public and private raw water supplies.

(B) These waters shall be maintained so that they will not be toxic, carcinogenic, mutagenic, or teratogenic to humans.

(6) **Water column criteria to protect for the consumption of fish flesh and water.**

(A) Surface waters of the State with the designated beneficial use of Public and Private Water Supply shall be protected to allow for the consumption of fish, shellfish and water.

(B) The water column numerical criteria to protect human health for the consumption of fish flesh and water for the substances identified in Table 2 of Appendix G of this Chapter shall be as prescribed under the "Fish Consumption and Water" column in Table 2 of Appendix G in all surface waters designated with the beneficial use of Public and Private Water Supply. Water column numerical criteria to protect human health for the consumption of fish flesh and water are considered long-term average standards. For purposes of permitting discharges for attainment of these standards, the permitting authority shall use long-term average receiving stream flows and complete mixing of effluent and receiving water to determine appropriate permit limits. Water column criteria to protect human health for the consumption of fish flesh only may be found in the column "Fish Consumption" in Table 2 of Appendix G of this Chapter.

(7) **Chlorophyll-a numerical criterion for certain waters.** The long-term average concentration of chlorophyll-a at a depth of 0.5 meters below the surface shall not exceed 0.010 milligrams per liter in Wister Lake, Tenkiller Ferry Reservoir, nor any waterbody designated SWS or SWS-R in Appendix A of this Chapter. Wherever such criterion is exceeded, numerical phosphorus or nitrogen criteria or both may be promulgated.

(8) Phosphorus numerical criterion applicable to certain waters. The long-term average total phosphorus concentration at a depth of 0.5 meters below the surface shall not exceed 0.0168 milligrams per liter in Lake Eucha and 0.0141 milligrams per liter in Spavinaw Lake.

785:45-5-11. Emergency Public and Private Water Supplies

(a) During emergencies, those waters designated Emergency Public and Private Water Supplies may be put to use.

(b) Each emergency will be handled on a case-by-case basis, and be thoroughly evaluated by the appropriate State agencies and/or local health authorities.

785:45-5-12. Fish and Wildlife Propagation

(a) **List of subcategories.** The narrative and numerical criteria in this section are designed to maintain and protect the beneficial use classification of "Fish and Wildlife Propagation". This classification encompasses several subcategories which are capable of sustaining different climax communities of fish and shellfish. These subcategories are Habitat Limited Aquatic Community, Warm Water Aquatic Community, Cool Water Aquatic Community (Excluding Lake Waters), and Trout Fishery (Put and Take).

(b) **Habitat Limited Aquatic Community subcategory.**

(1) Habitat limited aquatic community means a subcategory of the beneficial use "Fish and Wildlife Propagation" where the water chemistry and habitat are not adequate to support a "Warm Water Aquatic Community" because:

(A) Naturally occurring water chemistry prevents the attainment of the use; or

(B) Naturally occurring ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of a sufficient volume of effluent to enable uses to be met; or

(C) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(D) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(E) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of the "Warm Water Aquatic Community" beneficial use.

(2) Habitat Limited Aquatic Community may also be designated where controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act as amended, which would be necessary to meet standards or criteria associated with the beneficial use subcategories of Cool Water Aquatic Community or Warm Water Aquatic Community, would result in substantial and widespread economic and social impact.

(c) **Warm Water Aquatic Community subcategory.** Warm Water Aquatic Community means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality and habitat are adequate to support climax fish communities.

(d) **Cool Water Aquatic Community subcategory.** Cool Water Aquatic Community means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality, water temperature and habitat are adequate to support cool water climax fish communities and includes an environment suitable for the full range of cool water benthos. Typical species may include smallmouth bass, certain darters and stoneflies.

(e) **Trout Fishery subcategory.** Trout Fishery (Put and Take) means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality, water temperature and habitat are adequate to support a seasonal put and take trout fishery. Typical species may include trout.

(f) **Criteria used in protection of Fish and Wildlife Propagation.** The narrative and numerical criteria to maintain and protect the use of "Fish and Wildlife Propagation" and its subcategories shall include:

(1) **Dissolved oxygen.**

(A) Dissolved oxygen (DO) criteria are designed to protect the diverse aquatic communities of Oklahoma.

(B) Allowable loadings designed to attain these dissolved oxygen criteria are provided as follows:

(i) For streams with sufficient historical data, the allowable load shall be based on meeting the dissolved oxygen concentration standard at the seven-day, two-year low flow and the appropriate seasonal temperatures prescribed in Table 1 of Appendix G of this Chapter.

(ii) For streams lacking sufficient historical data, or when the appropriate flow is less than one (1) cubic foot per second (cfs), the allowable load shall be based on meeting the dissolved oxygen concentration standard at one (1) cfs and the appropriate seasonal temperature.

(iii) Provided, for streams designated in OAC 785:45 Appendix A as HLAC or WWAC which have sufficient historical data as determined by the permitting authority, the allowable BOD load may be based upon meeting the dissolved oxygen

concentration standard at the applicable seasonal temperature and corresponding seasonal seven-day, two-year low flow.

(iv) Provided further, in stream segments where dams or other structures have substantially affected the historic flow regime of the stream segment, including but not limited to the portions of the Verdigris and Arkansas Rivers constituting the McClellan-Kerr Arkansas River Navigation System, a properly designed and implemented site-specific hydrologic study approved by the permitting authority and the Board may be used to determine the appropriate regulatory low flow. In such circumstances, the allowable BOD load may be based upon meeting the dissolved oxygen concentration standard at the applicable seasonal temperature and the site-specific regulatory low flow.

(C) Except for naturally occurring conditions the dissolved oxygen criteria are as set forth in Table 1 of Appendix G of this Chapter. Additionally;

(i) For streams, no more than two DO samples shall exhibit a DO concentration of less than 2.0 mg/L in any given year.

(ii) For lakes, no more than 50% of the water volume shall exhibit a DO concentration less than 2.0 mg/L. If no volumetric data is available, then no more than 70% of the water column at any given sample site shall exhibit a DO concentration less than 2.0 mg/L. If a lake specific study including historical analysis demonstrates that a different percent volume or percent water column than described above is protective of the WWAC use, then that lake specific result takes precedence.

(2) **Temperature.**

(A) At no time shall heat be added to any surface water in excess of the amount that will raise the temperature of the receiving water more than 2.8°C outside the mixing zone.

(B) The normal daily and seasonal variations that were present before the addition of heat from other than natural sources shall be maintained.

(C) In streams, temperature determinations shall be made by averaging representative temperature measurements of the cross sectional area of the stream at the end of the mixing zone.

(D) In lakes, the temperature of the water column and/or epilimnion, if thermal stratification exists, shall not be raised more than 1.7°C above that which existed before the addition of heat of artificial origin, based upon the average of temperatures taken from the surface to the bottom of the lake, or surface to the bottom of the epilimnion if the lake is stratified.

(E) No heat of artificial origin shall be added that causes the receiving stream water temperature to exceed the maximums specified below:

(i) The critical temperature plus 2.8°C in warm water and habitat limited aquatic community streams and lakes except in the segment of the Arkansas River from Red Rock Creek to the headwaters of Keystone Reservoir where the maximum temperature shall not exceed 34.4°C.

(ii) 28.9°C in streams designated cool water aquatic community.

(iii) 20°C in streams designated trout fishery (put and take).

(F) Water in privately-owned reservoirs used in the process of cooling water for industrial purposes is exempt from these temperature restrictions, provided the water released from any such lake or reservoir into a stream system shall meet the water quality standards of the receiving stream.

(3) **pH (hydrogen ion activity).** The pH values shall be between 6.5 and 9.0 in waters designated for fish and wildlife propagation; unless pH values outside that range are due to natural conditions.

(4) **Oil and grease (petroleum and non-petroleum related).**

(A) All waters having the designated beneficial use of any subcategory of fish and wildlife propagation shall be maintained free of oil and grease to prevent a visible sheen of oil or globules of oil or grease on or in the water.

(B) Oil and grease shall not be present in quantities that adhere to stream banks and coat bottoms of water courses or which cause deleterious effects to the biota.

(5) **Biological criteria.**

(A) Aquatic life in all waterbodies with the beneficial use designation of Fish and Wildlife Propagation (excluding waters designated "Trout, put-and-take") shall not exhibit degraded conditions as indicated by one or both of the following:

(i) Comparative regional reference data from a station of reasonably similar watershed size or flow, habitat type and Fish and Wildlife beneficial use subcategory designation or

(ii) By comparison with historical data from the waterbody being evaluated.

(B) Compliance with the biological criteria to protect Fish and Wildlife Propagation set forth in this paragraph shall be based upon measures including, but not limited to, diversity, similarity, community structure, species tolerance, trophic structure, dominant species, indices of biotic integrity (IBI's), indices of well being (IWB's), or other measures.

(6) **Toxic substances (for protection of fish and wildlife).**

(A) Surface waters of the state shall not exhibit acute toxicity and shall not exhibit chronic toxicity outside the chronic regulatory mixing zone. Acute test failure and chronic test failure shall be used to determine discharger compliance with these narrative aquatic life toxics criteria. The narrative criterion specified in this subparagraph (A) which prohibits acute toxicity shall be maintained at all times and shall apply to all surface waters of the state. The narrative criterion specified in this subparagraph (A) which prohibits chronic toxicity shall apply at all times outside the chronic regulatory mixing zone and within the zone of passage to all waters of the state except:

(i) When a discharge into surface waters designated with the Fish and Wildlife Propagation beneficial use complies with and meets the discharge permit limitations but the flow immediately upstream from the discharge is less than one (1) cubic foot per second or when the flow falls below the seven-day, two-year low-flow, whichever is larger. For purposes of the permitting process, the regulatory low flow shall be the larger of one (1) cubic foot per second or the seven-day, two-year low flow; and

(ii) To streams listed as ephemeral in Appendix A.

(B) Procedures to implement these narrative criteria are found in OAC 785:46 Subchapter 3.

(C) Toxicants for which there are specific numerical criteria are listed in Table 2 of Appendix G of this Chapter.

(D) For toxicants not specified in Table 2 of Appendix G of this Chapter, concentrations of toxic substances with bio-concentration factors of 5 or less shall not exceed 0.1 of published LC50 value(s) for sensitive representative species using standard testing methods, giving consideration to site specific water quality characteristics.

(E) Concentrations of toxic substances with bio-concentration factors greater than 5 shall not exceed 0.01 of published LC50 value(s) for sensitive representative species using standard testing methods, giving consideration to site-specific water quality characteristics.

(F) Permit limits to prevent toxicity caused by discharge of chlorine and ammonia are determined pursuant to the narrative criteria contained within (A) and (B) of this paragraph.

(G) The acute and chronic numerical criteria listed in the "Fish and Wildlife Propagation" column in Table 2 of Appendix G of this Chapter apply to all waters of the state designated with any of the beneficial use sub-categories of Fish and Wildlife Propagation. The numerical criteria which prohibit acute toxicity apply outside the acute regulatory mixing zone.

(i) The numerical criteria specified in Table 2 of Appendix G which prohibit chronic toxicity shall apply at all times outside the chronic regulatory mixing zone and within the zone of passage to all waters of the state except:

(I) When a discharge into surface waters designated with the Fish and Wildlife Propagation beneficial use complies with and meets the discharge permit limitations but the flow immediately upstream from the discharge is less than one (1) cubic foot per second or when the flow falls below the seven-day, two-year low-flow, whichever is larger. For purposes of the permitting process, the regulatory low flow shall be the larger of one (1) cubic foot per second or the seven-day, two-year low flow; and

(II) To streams listed as ephemeral in Appendix A.

(ii) Equations are presented in Table 2 of Appendix G for those substances whose toxicity varies with water chemistry.

(H) For purposes of assessment per OAC 785:46-15-5, the conversion factors identified in Table 3 of Appendix G of this Chapter may be used to convert the total recoverable metals criteria set forth in Table 2 of Appendix G into dissolved metals values. Such dissolved metals values may be determined by multiplying the total recoverable numerical criteria in OAC 785:45 Appendix G, Table 2 by the conversion factors identified in Table 3 of Appendix G.

(7) **Turbidity.**

(A) Turbidity from other than natural sources shall be restricted to not exceed the following numerical limits:

(i) Cool Water Aquatic Community/Trout Fisheries: 10 NTUs;

(ii) Lakes: 25 NTUs; and

(iii) Other surface waters: 50 NTUs.

(B) In waters where background turbidity exceeds these values, turbidity from point sources shall be restricted to not exceed ambient levels.

(C) Numerical criteria listed in (A) of this paragraph apply only to seasonal base flow conditions.

(D) Elevated turbidity levels may be expected during, and for several days after, a runoff event.

(8) **Sediments.** Concentrations or loads of suspended or bedded sediments that are caused by human activity shall not impair the Fish and Wildlife Propagation use or any subcategory thereof.

785:45-5-13. Agriculture

(a) **General.** The surface waters of the State shall be maintained so that toxicity does not inhibit continued ingestion by livestock or irrigation of crops.

(b) **Definitions.** The following words and terms, when used in this Section, shall have the following meaning unless the context clearly indicates otherwise:

(1) "Long-term average concentration" means the arithmetic mean of at least ten samples taken across at least twelve months.

(2) "Short-term average concentration" means the arithmetic mean of all samples taken during any 30-day period.

(c) **Subcategories of the Agriculture beneficial use.**

(1) The narrative and numerical criteria stated or referenced in this section and in Appendix F of this chapter are designed to maintain and protect the beneficial use classification of "Agriculture". This classification encompasses two subcategories which are capable of sustaining different agricultural applications. These subcategories are Irrigation Agriculture and Livestock Agriculture.

(2) Irrigation Agriculture means a subcategory of the Agriculture beneficial use requiring water quality conditions that are dictated by individual crop tolerances.

(3) Livestock Agriculture is a subcategory of the Agriculture beneficial use requiring much less stringent protection than crop irrigation.

(4) If a waterbody is designated in Appendix A of this Chapter with the Agriculture beneficial use but does not have a designation of a subcategory thereof, the criteria for Irrigation Agriculture shall be applicable.

(d) **Highly saline water.** Highly saline water should be used with best management practices as outlined in "Diagnosis and Reclamation of Saline Soils," United States Department of Agriculture Handbook No. 60 (1958).

(e) **General criteria for the protection of Irrigation Agriculture.** This subsection prescribes general criteria to protect the Irrigation Agriculture subcategory. For chlorides, sulfates and total dissolved solids at 180°C (see Standard Methods), the arithmetic mean of the concentration of the samples taken for a year in a particular segment shall not exceed the historical "yearly mean standard" determined from the table in Appendix F of this Chapter. For permitting purposes, the long-term average concentration shall not exceed the yearly mean standard. Yearly mean standards shall be implemented by the permitting authority using the greater of 1.47 cfs or long-term average flows and complete mixing of effluent and receiving water. For permitting purposes, the short term average concentration shall not exceed the sample standard. Sample standards shall be implemented by the permitting authority using the greater of 1.0 cfs or short term average flows and complete mixing of effluent and receiving water. The data from sampling stations in each segment are averaged, and the mean chloride, sulfate, and total dissolved solids at 180°C are presented in Appendix F of this Chapter. Segment averages shall be used unless more appropriate data are available.

(f) **Historic concentrations.** The table in Appendix F of this Chapter contains statistical values from historical water quality data of mineral constituents. In cases where mineral content varies within a segment, the most pertinent data available should be used.

(g) **Criteria to protect Irrigation Agriculture subcategory.** For the purpose of protecting the Irrigation Agriculture subcategory, neither long-term average concentrations nor short term average concentrations of minerals shall be required to be less than 700 mg/L for TDS, nor less than 250 mg/L for either chlorides or sulfates.

(h) **Criteria to protect Livestock Agriculture subcategory.** For the purpose of protecting the Livestock Agriculture subcategory, neither long-term average concentrations nor short term average concentrations of minerals shall be required to be less than 2500 mg/L for TDS.

(i) **Support tests.** For purposes of assessment, listing and reporting under sections 303(d) and 305(b) of the federal Clean Water Act as amended, the procedure for determining use support of the Agriculture beneficial use or any subcategory thereof with respect to TDS, chlorides and sulfates shall be as follows:

(1) The Agriculture beneficial use designated for a waterbody shall be deemed to be fully supported with respect to TDS or chlorides or sulfates if both the mean of all sample concentrations calculated for that parameter from that waterbody do not exceed the yearly mean standard prescribed in OAC 785:45 Appendix F or site specific criteria prescribed in OAC 785:45 Appendix E, and no more than 10% of the sample concentrations from that waterbody exceed the sample standard prescribed in OAC 785:45 Appendix F or site specific criteria prescribed in OAC 785:45 Appendix E.

(2) The Agriculture beneficial use designated for a waterbody shall be deemed to be not supported with respect to TDS or chlorides or sulfates if either the mean of all sample concentrations calculated for that parameter from that waterbody exceeds the yearly mean standard prescribed in OAC 785:45 Appendix F or site specific criteria prescribed in OAC 785:45 Appendix E, or greater than 10% of the sample concentrations from that waterbody exceed the sample standard prescribed in Appendix F or site specific criteria prescribed in OAC 785:45 Appendix E. Provided, if the sample concentrations are each less than 700 mg/L for TDS, or less than 250 mg/L for either chlorides or sulfates, then the Agriculture beneficial use shall be deemed to be fully supported for that parameter.

785:45-5-14. Hydroelectric Power Generation [REVOKED]

785:45-5-15. Industrial and Municipal Process and Cooling Water [REVOKED]

785:45-5-16. Primary Body Contact Recreation

(a) Primary Body Contact Recreation involves direct body contact with the water where a possibility of ingestion exists. In these cases the water shall not contain chemical, physical or biological substances in concentrations that are irritating to skin or sense organs or are toxic or cause illness upon ingestion by human beings.

(b) In waters designated for Primary Body Contact Recreation the following limits for bacteria set forth in (c) of this section shall apply only during the recreation period of May 1 to September 30. The criteria for Secondary Body Contact Recreation will apply during the remainder of the year.

(c) Compliance with 785:45-5-16 shall be based upon meeting the requirements of one of the options specified in (1) or (2) of this subsection (c) for bacteria. Upon selection of one (1) group or test method, said method shall be used exclusively over the time period prescribed therefore. Provided, where concurrent data exist for multiple bacterial indicators on the same waterbody or waterbody segment, no criteria exceedances shall be allowed for any indicator group.

(1) Escherichia coli (E. coli): The E. coli geometric mean criterion is 126/100 ml. For swimming advisory and permitting purposes, E. coli shall not exceed a monthly geometric mean of 126/100 ml based upon a minimum of not less than five (5) samples collected over a period of not more than thirty (30) days. For swimming advisory and permitting purposes, no sample shall exceed a 75% one-sided confidence level of 235/100 ml in lakes and high use waterbodies and the 90% one-sided confidence level of 406/100 ml in all other Primary Body Contact Recreation beneficial use areas. These values are based upon all samples collected over the recreation period. For purposes of sections 303(d) and 305(b) of the federal Clean Water Act as amended, beneficial use support status shall be assessed using only the geometric mean criterion of 126/100 milliliters compared to the geometric mean of all samples collected over the recreation period.

(2) Enterococci: The Enterococci geometric mean criterion is 33/100 ml. For swimming advisory and permitting purposes, Enterococci shall not exceed a monthly geometric mean of 33/100 ml based upon a minimum of not less than five (5) samples collected over a period of not more than thirty (30) days. For swimming advisory and permitting purposes, no sample shall exceed a 75% one-sided confidence level of 61/100 ml in lakes and high use waterbodies and the 90% one-sided confidence level of 108/100 ml in all other Primary Body Contact Recreation beneficial use areas. These values are based upon all samples collected over the recreation period. For purposes of sections 303(d) and 305(b) of the federal Clean Water Act as amended, beneficial use support status shall be assessed using only the geometric mean criterion of 33/100 milliliters compared to the geometric mean of all samples collected over the recreation period.

785:45-5-17. Secondary Body Contact Recreation

(a) The water quality requirements for Secondary Body Contact Recreation are usually not as stringent as for Primary Body Contact Recreation.

(b) The Secondary Body Contact Recreation beneficial use is designated where ingestion of water is not anticipated.

(c) Associated activities may include boating, fishing or wading.

(d) Waters so designated shall be maintained to be free from human pathogens in numbers which may produce adverse health effects in humans.

785:45-5-18. Navigation

This beneficial use is generally more dependent upon quantity than quality of water.

785:45-5-19. Aesthetics

(a) To be aesthetically enjoyable, the surface waters of the state must be free from floating materials and suspended substances that produce objectionable color and turbidity.

(b) The water must also be free from noxious odors and tastes, from materials that settle to form objectionable deposits, and discharges that produce undesirable effects or are a nuisance to aquatic life.

(c) The following criteria apply to protect this use:

(1) **Color.** Surface waters of the state shall be virtually free from all coloring materials which produce an aesthetically unpleasant appearance.

(2**)** **Nutrients; numerical criterion applicable to waters designated Scenic Rivers.** The thirty (30) day geometric mean total phosphorus concentration in waters designated "Scenic River" in Appendix A of this Chapter shall not exceed 0.037 mg/L. The criterion stated in this subparagraph applies in addition to, and shall be construed so as to be consistent with, any other provision of this Chapter which may be applicable to such waters. Such criterion became effective July 1, 2002 and shall be implemented as authorized by state law through Water Quality Standards Implementation Plans and other rules, permits, settlement agreements, consent orders, compliance orders, compliance schedules or voluntary measures designed to achieve full compliance with the criterion in the stream by June 30, 2012.

785:45-5-20. Fish Consumption

(a) **General.** The surface waters of the state shall be maintained so that toxicity does not inhibit ingestion of fish and shellfish by humans. The numerical criteria and values for substances listed in the column "Fish Consumption" in Table 2 of Appendix G of this Chapter shall apply to surface waters designated as Warm Water Aquatic Community, Cool Water Aquatic Community, or Trout Fishery.

(b) **Water column criteria to protect for the consumption of fish flesh.** The water column numerical criteria (total recoverable) identified in the "Fish Consumption" column in Table 2 of Appendix G protect human health for the consumption of fish, shellfish and aquatic life. Water column numerical criteria to protect human health for human consumption of fish flesh are considered long-term average standards. For purposes of permitting discharges for attainment of these standards, the permitting authority shall use long-term average receiving stream flows and complete mixing of effluent and receiving water to determine appropriate permit limits.

(c**)** **Fish tissue levels.** Surface waters of the state shall be maintained to prevent bio-concentration of toxic substances in fish, shellfish, or other aquatic organisms to levels that become a risk to human health.

PART 5. SPECIAL PROVISIONS

785:45-5-25. Implementation Policies for the Antidegradation Policy Statement

(a) The following provisions set forth exceptions to the limitations stated in 785:45-5-25(c) for additional protection of certain waters of the state:

(1) The limitations contained in 785:45-5-25(c)(1) for additional protection of Outstanding Resource Waters shall apply to all discharges from point sources except such limitations do not apply to discharges of stormwater from temporary construction activities. Discharges of stormwater from point sources existing as of June 25, 1992, whether or not such stormwater discharges were permitted as point sources prior to June 25, 1992, are also excepted from the 785:45-5-25(c)(1) rule prohibiting any new point source discharges, but such stormwater discharges are prohibited from increased load of any pollutant.

(2) The limitations for additional protection of Appendix B Waters (785:45-5-25(c)(2)), High Quality Waters (785:45-5-25(c)(3)), Sensitive Public and Private Water Supplies (785:45-5-25(c)(4)), and SWS-R waterbodies (785:45-5-25(c)(8)) shall apply to discharges from all point sources except point source discharges of stormwater.

(b) For purposes of 785:45-5-25, the term "specified pollutants" means:

(1) Oxygen demanding substances, measured as Carbonaceous Biochemical Oxygen Demand (CBOD) and/or Biochemical Oxygen Demand (BOD);

(2) Ammonia Nitrogen and/or Total Organic Nitrogen;

(3) Phosphorus;

(4) Total Suspended Solids (TSS);

(5) Such other substances as may be determined by the Oklahoma Water Resources Board.

(c) The following limitations for additional protection apply to various waters of the state:

(1) **Outstanding Resource Waters (ORW).**

(A) Outstanding Resource Waters (ORW) are those waters of the state which constitute outstanding resources or are of exceptional recreational and/or ecological significance as described in 785:45-3-2(a).

(B) The following waterbodies are prohibited from having any new point source discharge(s) of any pollutant or increased load of any pollutant from existing point source discharge(s):

(i) Waterbodies designated "ORW" and/or "Scenic River" in Appendix A of this Chapter;

(ii) Waterbodies located within the watersheds of waterbodies designated "Scenic River" in Appendix A of this Chapter; and

(iii) Waterbodies located within the boundaries of Appendix B areas which are specifically designated "ORW" in Appendix A of this Chapter.

(2) **Appendix B Waters.**

(A) Appendix B waters are those waters of the state which are located within the boundaries of areas listed in Appendix B of this Chapter, including but not limited to the National and State parks, forests, wilderness areas, wildlife management areas, and wildlife refuges. Appendix B also may include those areas which are inhabited by federally listed, threatened or endangered species, and other appropriate areas.

(B) Only those Appendix B waters specifically designated "ORW" in Appendix A of this Chapter shall be afforded the limitations for additional protection described in 785:45-5-25(c)(1)(B).

(C) New discharges or increased loading from existing discharges to Appendix B waters may be allowed under such conditions that ensure that the recreational and ecological significance of these waters will be maintained.

(D) Discharges or other activities associated with those waters listed in Appendix B, Table 2 containing federally listed threatened or endangered species may be restricted through agreements between appropriate regulatory agencies and the United States Fish and Wildlife Service.

(3) **High Quality Waters (HQW).**

(A) High Quality Waters (HQW) are those waters of the state whose historic water quality and physical habitat provide conditions suitable for the support of sensitive and intolerant climax communities of aquatic organisms whether or not that waterbody currently contains such a community, support high levels of recreational opportunity, and are designated "HQW" waters in Appendix A of this Chapter. These waters will generally have higher quality habitat, a more diverse and more intolerant biotic community and, as a result, may provide more ecological refuges and recreational opportunities than other waters in the same ecoregion with similar chemistry and physical conditions.

(B) All waterbodies designated with the limitation indicated by the letters "HQW" in Appendix A are prohibited from having any new point source discharge(s) of any pollutant or increased load or concentration of specified pollutants from existing point source discharge(s), provided however that new point source discharge(s) or increased load of specified pollutants described in 785:45-5-25(b) may be approved by the permitting authority in those circumstances where the discharger demonstrates to the satisfaction of the permitting authority that the a new point source discharge or increased load from an existing point source discharge will result in maintaining or improving the level of water quality which exceeds that necessary to support recreation and propagation of fishes, shellfishes, and wildlife of the direct receiving water and downstream waterbodies designated HQW. As specified in 785:45-3-2(b) and (d), no discharge of any pollutant to a water designated HQW may lower existing water quality.

(C) Waters designated HQW after July 1, 2007 will demonstrate (1) 95% of water quality measurements for multiple parameters from metals, organics and general physicochemical water quality descriptors better than the promulgated criteria in Appendix G of this chapter at multiple stations on the segment, (2) an unimpaired biological community as determined by the application of Appendix C of Title 785 Chapter 46, and (3) significant local support for promulgation of the HQW designation.

(4) **Sensitive Public and Private Water Supplies (SWS).**

(A) Waters designated "SWS" are those waters of the state which constitute sensitive public and private water supplies as a result of their unique physical conditions and are listed in Appendix A of this Chapter as "SWS" waters. These are waters (a) currently used as water supply reservoirs, (b) that generally possess a watershed of less than approximately 100 square miles or (c) as otherwise designated by the Board.

(B) New point source discharges of any pollutant after June 11, 1989, and increased load of any specified pollutant from any point source discharge existing as of June 11, 1989, shall be prohibited in any waterbody or watershed designated in Appendix A of this Chapter with the limitation "SWS". Any discharge of any pollutant to a waterbody designated "SWS" which would, if it occurred, lower existing water quality shall be prohibited, provided however that new point source discharge(s) or increased load of specified pollutants described in 785:45-5-25(b) may be approved by the permitting authority in those circumstances where the discharger demonstrates to the satisfaction of the permitting authority that a new point source discharge or increased load from an existing point source discharge will result in maintaining or improving the water quality of both the direct receiving water and any downstream waterbodies designated SWS.

(5) **Prioritization of limitations.** In situations where more than one beneficial use limitation exists for a waterbody, the more stringent limitation shall apply.

(6) **Non-Point source discharges or runoff.** Best management practices for control of non-point source discharges or runoff should be implemented in watersheds of waterbodies designated "ORW", "HQW", "SWS" or “SWS-R” in Appendix A of this Chapter and/or located within areas listed in Appendix B provided however that development of conservation plans shall be required in sub-watersheds where discharges or runoff from non-point sources are identified as causing, or significantly contributing to, degradation in a waterbody designated "ORW".

(7) **Culturally Significant Waters (CSW).**

(A) Waters designated as CSW in Appendix A of this Chapter are those identified by recognized Tribal authorities as critical to maintaining the waters' utility for cultural, historic, recreational or ceremonial uses and which may require more stringent protection measures to protect human health or aquatic life or both.

(B) All activities associated with a CSW may require consultation with the duly authorized Tribal authority to assure that the proposed activity is consistent with applicable Tribal environmental laws.

(8) **Sensitive Public and Private Water Supplies with Reuse (SWS-R).**

(A) Waters designated "SWS-R" are those waters of the state which constitute sensitive public and private water supplies that may be augmented with reclaimed municipal water for the purpose of indirect potable reuse (IPR). SWS-R waterbodies are identified in Appendix A of this Chapter. These are waters currently used as water supply reservoirs, that generally possess a watershed of less than approximately 100 square miles, or as otherwise designated by the Board.

(B) New point source discharges of any pollutant after June 11, 1989, and increased load of any specified pollutant from any point source discharge existing as of June 11, 1989, shall be prohibited in any waterbody or watershed designated in Appendix A of this Chapter with the limitation "SWS-R" except as outlined in 8(C) below.

(C) New point source municipal wastewater discharges or increased loading from existing point source municipal wastewater discharges to a SWS-R waterbody or watershed shall achieve a minimum level of effluent quality that is attainable using demonstrated treatment technologies or other alternatives. Approaches for required technology-based limitations and or other alternatives are outlined in 785:46-13-4(e). A discharge to a SWS-R waterbody may be permitted provided:

(i) A determination of the waterbody’s assimilative capacity for all applicable narrative and numeric criteria shall be the responsibility of the discharger;

(ii) If assimilative capacity exists for any applicable narrative or numeric criteria, the discharger shall document what portion, if any, of the assimilative capacity is reasonable to maintain. If it is proposed that it is not reasonable to maintain any, or a portion, of the assimilative capacity, a report consistent with all 40 CFR 131.12(a)(2) requirements describing the available assimilative capacity and providing justification for consuming all or a portion of the assimilative capacity shall be submitted by the discharger to the State for review;

(iii) The State may approve both the determination of assimilative capacity and the proposed consumption of any, or all, of the assimilative capacity if it is found to be necessary based on the aforementioned report and consistent with the requirements described in 40 CFR 131.12(a)(2);

(iv) All existing and designated beneficial uses of the receiving waterbody and downstream waterbodies shall be maintained; and,

(v) The discharge shall not impair human health even during drought of record conditions.

(D) SWS-R waterbodies, with permitted discharge, shall be technically evaluated by permitted parties at least once every five years to determine the attainment or nonattainment of beneficial uses. Technical evaluation reports, including all data and information necessary to allow independent analysis, shall be submitted to the permitting authority for review. If the report documents nonattainment of a beneficial use(s) resulting from the discharge, the permitting authority shall consider actions including, but not limited to, additional permit requirements, cessation of the discharge, and or a recommendation to OWRB to revoke the SWS-R waterbody classification.

(d) The thirty (30) day geometric mean total phosphorus concentration in waters designated "Scenic River" in Appendix A of this Chapter shall not exceed 0.037 mg/L. This subsection (d) applies in addition to, and shall be construed so as to be consistent with, any other provision of this Chapter which may be applicable to such waters. Such criterion became effective July 1, 2002 and shall be implemented as authorized by state law through Water Quality Standards Implementation Plans and other rules, permits, settlement agreements, consent orders, compliance orders, compliance schedules or voluntary measures designed to achieve full compliance with the criterion in the stream by June 30, 2012.

785:45-5-26. Mixing Zones and Zones of Passage

(a) **Mixing zones.**

(1) In streams, the chronic regulatory mixing zone extends downstream a distance equivalent to thirteen (13) times the width of the water within the receiving stream at the point of effluent discharge and encompasses 25% of the total stream flow of the 7Q2 or 1 cfs, whichever is larger, immediately downstream of the point of effluent discharge.

(2) The acute regulatory mixing zone is encompassed by the R = 0.01 (cfs^{-1}) isopleth. R is the ratio of concentration to wasteload.

(3) Acute toxicity within the mixing zone is prohibited.

(4) Mixing zones in lakes shall be designated on a case-by-case basis.

(5) The water quality in a portion of the mixing zone may be unsuitable for certain beneficial uses.

(6) Where overlapping mixing zones occur because of multiple outfalls, the total length of the chronic regulatory mixing zone will extend thirteen (13) stream widths downstream from the downstream discharge point.

(b) **Zones of passage.**

(1) All discharges permitted for any criteria listed for protection of fish and wildlife propagation shall be regulated to insure that a zone of passage shall be maintained within the stream at the outfall and adjacent to the mixing zone that shall be no less than seventy-five percent (75%) of the volume of flow.

(2) Water quality standards shall be maintained throughout the zone of passage.

(3) Zones of passage in lakes shall be designated on a case-by-case basis.

785:45-5-27. Site-Specific Criteria [REVOKED]

785:45-5-28. Implementation Policy for Total Phosphorus Criterion [EXPIRED]

AGENCY NOTE: [1]This emergency rule expired on 7-14-03. While this emergency rule was not directly superseded by a permanent rule at Section 785:45-5-28, its substance was amended and promulgated in permanent amendments codified at Section 785:45-5-19(c)(2)(B) and Section 785:45-5-25(d), which became effective 7-1-03. For the official text of the emergency rule that was in effect from 5-6-02 through 7-14-03, see 19 Ok Reg 1589.

785:45-5-29. Delineation of NLW Areas

(a) **Scope and applicability.** This Section prescribes in greater detail than OAC 785:45 Appendix A the spatial limitations for nutrient-limited watershed areas. The "NLW" designations in OAC 785:45 Appendix A are independent of and have no bearing on other designations such as those for beneficial uses or anti-degradation limitations.

(b) **List and descriptions of Nutrient-Limited Watersheds.** This subsection describes all areas which are nutrient limited watersheds and subject to the "NLW" designation. These are the only areas which are subject to limitations applicable to nutrient limited watersheds.

(1) **Spiro Lake**. The nutrient limited watershed area for Spiro Lake is the entire watershed and drainage area of Spiro Lake, including all direct and indirect tributaries.

(2) **Clinton Lake.** The nutrient limited watershed area for Clinton Lake is the entire watershed and drainage area of Clinton Lake, including all direct and indirect tributaries.

(3**)** **Hobart Lake.** The nutrient limited watershed area for Hobart Lake is the entire watershed and drainage area of Hobart Lake, including all direct and indirect tributaries.

(4) **Lake Overholser.** The nutrient limited watershed area for Lake Overholser is the entire watershed and drainage area of Lake Overholser up to but not including Canton Reservoir, and includes direct and indirect tributaries in HUCs 11100301080 (excluding downstream from Lake Overholser), 11100301070, and 11100301060.

(5) **Lake Carl Etling.** The nutrient limited watershed area for Lake Carl Etling is the entire watershed and drainage area of Lake Carl Etling, including South Carrizo Creek and all direct and indirect tributaries.

(6) **Fort Gibson Reservoir.** The nutrient limited watershed area for Fort Gibson Reservoir is the entire watershed and drainage area of Fort Gibson Reservoir up to but not including Lake Hudson, and includes direct and indirect tributaries in HUCs 11070209120 (excluding downstream from Fort Gibson Reservoir), 11070209100, and 11070209090.

(7) **Spavinaw Lake.** The nutrient limited watershed area for Spavinaw Lake is the entire watershed and drainage area of Spavinaw Lake, including Spavinaw Creek and all direct and indirect tributaries.

(8) **Eucha Lake.** The nutrient limited watershed area for Eucha Lake is the entire watershed and drainage area of Eucha Lake, including Spavinaw Creek and Beaty Creek and Brush Creek and all direct and indirect tributaries.

(9) **Lake Claremore.** The nutrient limited watershed area for Lake Claremore is the entire watershed and drainage area of Lake Claremore, including all direct and indirect tributaries.

(10) **Hulah Reservoir.** The nutrient limited watershed area for Hulah Reservoir is the entire watershed and drainage area of Hulah Reservoir, including all direct and indirect tributaries in the HUC 11070106020.

(11) **Wister Reservoir.** The nutrient limited watershed area for Wister Reservoir is the entire watershed and drainage area of Wister Reservoir, including the Poteau River upstream from Wister Reservoir and all direct and indirect tributaries and Fourche Maline Creek and all direct and indirect tributaries.

(12) **Taylor (Marlow) Lake near Rush Springs.** The nutrient limited watershed area for Taylor Lake is the entire watershed and drainage area of Taylor Lake, including all direct and indirect tributaries.

(13) **Fort Cobb Lake.** The nutrient limited watershed area for Fort Cobb Lake is the entire watershed and drainage area of both Fort Cobb Lake and Crowder Lake, including all direct and indirect tributaries in the HUCs 11130302130 and 11130302120.

(14) **Vanderwork Lake.** The nutrient limited watershed area for Vanderwork Lake is the entire watershed and drainage area of Vanderwork Lake, including all direct and indirect tributaries.

(15) **Elk City Lake.** The nutrient limited watershed area for Elk City Lake is the entire watershed and drainage area of Elk City Lake, including all direct and indirect tributaries.

(16) **Ozzie Cobb Lake.** The nutrient limited watershed area for Ozzie Cobb Lake is the entire watershed and drainage area of Ozzie Cobb Lake, including Rock Creek and all direct and indirect tributaries.
(17) **Great Salt Plains Reservoir.** The nutrient limited watershed area for Great Salt Plains Reservoir is the entire watershed and drainage area of the Great Salt Plains Reservoir, including Clay Creek and the Salt Fork of the Arkansas River and all direct and indirect tributaries.
(18) **Fort Supply Reservoir.** The nutrient limited watershed area for Fort Supply Reservoir is the entire watershed and drainage area of Fort Supply Reservoir, including Wolf Creek and all direct and indirect tributaries.
(19) **Tenkiller Reservoir.** The nutrient limited watershed area for Tenkiller Reservoir is the entire watershed and drainage area of Tenkiller Reservoir, including the Illinois River and Caney Creek and all direct and indirect tributaries.
(20) **Lake Thunderbird.** The nutrient limited watershed area for Lake Thunderbird is the entire watershed and drainage area of Lake Thunderbird, including Little River above Lake Thunderbird and all direct and indirect tributaries.
(21) **Lake Chickasha.** The nutrient limited watershed area for Lake Chickasha is the entire watershed and drainage area of Lake Chickasha, including Stinking Creek and Spring Creek above Lake Chickasha and all direct and indirect tributaries.

SUBCHAPTER 7. GROUNDWATER QUALITY STANDARDS

Section
785:45-7-1. Scope and Applicability; Purpose
785:45-7-2. Groundwater Quality Antidegradation Policy
785:45-7-3. Groundwater Classifications, beneficial uses and vulnerability levels
785:45-7-4. Criteria for Groundwater Quality Protection
785:45-7-5. Corrective Action

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) OWRB's Implementation provisions for groundwater quality standards are located in 785:46-13.

785:45-7-2. Groundwater Quality Antidegradation Policy

(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 in i-iv below:

(i) All groundwater likely to influence the quality of waters designated as a "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 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**

(2) **General Use Groundwater (Class II):** These are groundwaters which have good quality due to natural conditions and generally have a mean concentration of total dissolved solids of less than 3,000 milligrams per liter.

(3) **Limited Use Groundwater (Class III):** These are groundwaters which have poor quality due to natural conditions and generally have a mean concentration of total dissolved solids of greater than or equal to 3000 milligrams per liter but less than 5000 milligrams per liter.

(4) **Highly Mineralized Treatable Groundwater (Class IV):** These are groundwaters which have very poor quality due to natural conditions and generally have a mean concentration of total dissolved 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 Water Supply.** The beneficial use designation of Public Water Supply refers to those groundwaters capable of delivering suitable quantities of groundwater for municipal 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.

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

(D) **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), not identified in Appendix H of this Chapter, shall be Domestic Untreated Water Supply, Public 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), 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 water supply purposes on or after July 1, 2000, has a mean concentration of total dissolved solids of less than 5,000 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.

(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 except those groundwaters specifically referenced in 785:45-7-4(c).

(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.

(3) Protective measures shall also be sufficient to minimize the impact of pollutants on groundwater quality.

(4) 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.

(c) For artificial aquifer recharge and or aquifer storage and recovery activities, the criteria below and presented in Tables 1 and 2 of Appendix I shall apply to ensure the protection of beneficial uses, as specified. 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.** Groundwaters shall not contain chemical constituents in concentrations that adversely affect any beneficial use. At a minimum, groundwaters with the designated beneficial uses of public water supply and domestic untreated water supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels 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)

(2) **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. At a minimum, groundwaters with the designated beneficial uses of public water supply and domestic untreated water supply shall not exceed limits specified in Table 1 of Appendix I of this chapter.

(3) **Secondary Contaminants.** At a minimum, groundwaters with the designated beneficial uses of public water supply and domestic untreated water supply shall not exceed the criteria limits presented in Table 2 of Appendix I of this chapter and consistent with 40 CFR 143.3.

(4) **Microorganisms.** Groundwaters with the designated beneficial uses 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.

(5) **Taste and Odor.** Groundwaters shall be free from taste and odor producing substances, in concentrations that cause nuisance or adversely affect any beneficial use.

(6) **Radioactivity**. At a minimum, groundwaters with the designated beneficial uses of public water supply and domestic untreated water supply shall not contain concentrations of radionuclides in excess of limits specified in 40 CFR 141.66.
(7) **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.
(8) **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.

(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, 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) shall be considered. When regulating groundwater quality activities that have the potential to cause or contribute to impairment of a surface water beneficial use, provisions to prevent the impairment of any surface water beneficial use shall be included.

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).

APPENDIX A. DESIGNATED BENEFICIAL USES OF SURFACE WATERS

(a) **Introduction.** The Tables in the following Appendices A.1 through A.7 identify certain waterbodies throughout the state of Oklahoma and designate beneficial uses for those waterbodies. The waterbodies are identified by their name (e.g., "Horse Creek") or other description (e.g., "Tributary of Lebos Creek at Sec. 2, T2N, R 26W, IM", "Red River from the Arkansas State Line to the Kiamichi River") and a Waterbody ID Number. The Waterbody ID numbers are used in the State of Oklahoma "Water Quality Assessment Integrated Report" published by the Oklahoma Department of Environmental Quality. The first digit of the Waterbody ID number indicates the basin number; the next three digits indicate the major drainage segment within that basin; the next two digits indicate the subdivision of the major drainage segment, the next two digits indicate a smaller section of that six digit basin, and the last four digits represent a hydrologic sequence of waterbodies, going from the most downstream point in the eight-digit watershed up to the furthest upstream point in the watershed. In some cases, two additional digits are added to indicate further delineations within the waterbody segment. Not all waterbodies have a Waterbody ID number, primarily due to limited resources and need. Where a specific Waterbody ID has not been assigned, the six-digit Water Quality Management Segment is listed until such time as the waterbody is assigned a specific Waterbody ID number. The Tables in Appendices A.1 through A.7 also set forth columns to show the beneficial uses or subcategories of uses which are designated for each identified waterbody.

(b) **Beneficial Use Designations.** Designations of beneficial uses for a waterbody are reflected in the Tables in Appendices A.1 through A.7 by the presence of the following codes or a dot ("•") in the columns to the right of the waterbody name. An empty space in a column means that column's beneficial use or subcategory thereof is not designated for that waterbody.

(1) **EWS** - Emergency Water Supply beneficial use
(2) **PPWS** - Public and Private Water Supply beneficial use
(3) **F&W Prop** - Fish and Wildlife Propagation beneficial use
  (A) **WWAC** - Warm Water Aquatic Community subcategory
  (B) **HLAC** - Habitat Limited Aquatic Community subcategory
  (C) **CWAC** - Cool Water Aquatic Community subcategory
  (D) **Trout** - Trout Fishery (put and take) subcategory
(4) **Ag** - Agriculture beneficial use
(5) **Rec** - Recreation beneficial use
  (A) **PBCR** - Primary Body Contact beneficial use
  (B) **SBCR** - Secondary Body Contact beneficial use
(6) **Nav** - Navigation beneficial use
(7) **Aes** - Aesthetics beneficial use

A dot ("•") used in a column indicates that the beneficial use in that column's heading is designated for that waterbody without a more specific subcategory or other designation.

The criteria to protect the beneficial uses are provided in Subchapter 5 and Appendix G of this Chapter.

(c) **Limitations for Additional Protection.**

(1) Limitations for additional protection are described in 785:45-5-25.

(2) Waterbodies that are subject to limitations for additional protection in 785:45-5-25 are identified by the designation of any of the following codes in the "Limitations" column to the right of the waterbody's name:

  (A) "**ORW**" - indicates waters designated Outstanding Resource Waters;
  (B) "**HQW**" - indicates waters designated High Quality Waters; and
  (C) "**SWS**" - indicates waters designated Sensitive Public and Private Water Supplies.

(D) **“SWS-R**” means waterbodies classified as sensitive public and private water supplies that may be augmented with reclaimed municipal water for the purpose of indirect potable reuse.

(d) **Remarks used in Appendices A.1 through A.7.** The presence of any of the following footnotes in the "Remarks" column to the right of a waterbody's name denotes special circumstances which are applicable to that waterbody.

(1) A footnote (1) excludes the Scenic River designation from that portion of Lee Creek necessary for a dam to be built in the State of Arkansas with a crest elevation of no more than the 420 foot MSL elevation according to plans, specifications and conditions contained in U.S. Army Corps of Engineer Permit WD-050-03-3541 and in the Federal Energy Regulatory Commission License for Project No. 5251-002, which were approved by the U.S. Environmental Protection Agency. Changes in water quality caused by the impoundment of water by said dam shall not constitute a violation of Oklahoma's Water Quality Standards.

(2) The remark "CSW" designates those waters identified as Culturally Significant Waters.

(3) The remark "NLW" designates a nutrient-limited watershed. Specific delineations of nutrient-limited watersheds are provided in 785:45-5-29.

(4) A footnote (4) designates those streams for which further investigations are pending. Beneficial use designations for those streams are provided in Subchapter 5 of this Chapter.

APPENDIX A.1
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 1, Middle Arkansas River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Arkansas River from mouth of Canadian River to the mouth of the Verdigris River including Webbers Falls Reservoir	120400010260, 120400010010, 120400010070, 121500010005	EWS	WWAC	●	PBCR	●	●		
Dirty Creek	120400020010	PPWS	WWAC	●	PBCR		●		
Tributary of Dirty Creek at SW 1/4, Sec. 31, T12N, R21E, IM	120400020015_00		HLAC	●	SBCR		●		
South Fork of Dirty Creek	120400020030		WWAC	●	PBCR		●		
East Pourum Creek at NE SE SE, Sec. 2, T10N,R19E, IM	120400020060		HLAC	●	SBCR		●		
Georges Fork	120400020110	EWS	WWAC	●	PBCR		●		
Tributary of Georges Fork at SE 1/4, Sec. 35, T12N, R19E, IM (Howland Creek)	120400020120_00	EWS	HLAC	●	SBCR		●		
Warner (Connors) Lake	120400020140	PPWS	WWAC	●	PBCR		●		
Tributary of Dirty Creek at SE 1/4, Sec. 1, T12N, R18E, IM	120400020250		WWAC	●	PBCR		●		
Lower Illinois River from headwater of Robert S. Kerr Reservoir to Tenkiller Dam	121700010010	PPWS	Trout	●	PBCR	●	●	HQW	
Upper Illinois River from Tenkiller Dam, including Tenkiller Lake upstream to Barren Fork confluence	121700020300_00, 121700020020, 121700020220	PPWS	CWAC	●	PBCR		●	HQW	NLW
Cato Creek	121700020090	PPWS	WWAC	●	PBCR		●		
Terrapin Creek	121700020130	PPWS	WWAC	●	PBCR		●		
Caney Creek	121700040010,	PPWS	CWAC	●	PBCR		●		
Negro Jake (Hollow) Creek	121700040020		CWAC		PBCR		●		
Park Hill Branch	121700020270		WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Barren Fork from mouth upstream to Hwy. 59	121700020310, 121700050010, 121700050170_00	PPWS	CWAC	●	PBCR		●	ORW	Scenic River
North Mining Camp (Hollow) Creek	121700050040		CWAC		PBCR		●		
Tyner Creek	121700050090	PPWS	CWAC	●	PBCR		●	ORW	
Dennison Hollow	121700050110	PPWS	CWAC	●	PBCR		●	ORW	
Peacheater Creek	121700050120	PPWS	CWAC	●	PBCR		●	ORW	
Scraper Hollow	121700050130	PPWS	CWAC	●	PBCR		●	ORW	
England Hollow	121700050140	PPWS	CWAC	●	PBCR		●	ORW	
Green Creek	121700050150	PPWS	CWAC	●	PBCR		●	ORW	
Shell Branch	121700050180	PPWS	CWAC	●	PBCR		●	ORW	
(East) Peavine Creek	121700050190		CWAC		PBCR		●		
Barren Fork from Hwy. 59 to Arkansas State Line	121700050170_10	PPWS	CWAC	●	PBCR		●	ORW	
Evansville Creek	121700050200	PPWS	CWAC	●	PBCR		●	ORW	
Upper Illinois River upstream of Barren Fork confluence	121700020300_10, 121700030010, 121700030080, 121700030280, 121700030350	PPWS	CWAC	●	PBCR		●	ORW	Scenic River
Luna (Branch) Creek	121700030260		CWAC		PBCR		●		
Winset Hollow Creek	121700030230	PPWS	WWAC	●	PBCR		●		
Steely Hollow Creek	121700030120		CWAC		PBCR		●		
Tahlequah Creek (Town Branch)	121700030020, 121700030040	PPWS	CWAC	●	PBCR		●	ORW	
Flint Creek	121700030290, 121700060010_00, 121700060010_10	PPWS	CWAC	●	PBCR		●	ORW	Scenic River
Sager Creek	121700060080	PPWS	CWAC	●	PBCR		●	ORW	
Ballard Creek	121700030370	PPWS	CWAC	●	PBCR		●	ORW	
Tributary of Arkansas River at Sec. 7, T12N, R21E, IM	120400010035_00		WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Greenleaf Creek including Greenleaf Lake and Watershed	120400010110, 120400010120, 120400010130, 120400010140, 120400010150, 120400010160, 120400010170, 120400010180, 120400010190, 120400010200	PPWS	WWAC	●	PBCR		●	SWS	
Star (Oxbow) Lake	120400010230		WWAC	●	PBCR		●		
Sand Creek	120400010240		HLAC	●	SBCR		●		
Bayou Manard	120400010280	PPWS	WWAC	●	PBCR		●		
Coody Creek	120400010400	PPWS	WWAC	●	PBCR		●		
Grand River Main Stem (Grand Neosho River) from mouth to Kansas State Line, including Lake Hudson and (Grand) Lake O' the Cherokees but excluding Fort Gibson Lake	121600010010, 121600010040, 121600010280, 121600020010, 121600020020, 121600020140, 121600020170, 121600030020, 121600030030, 121600030040, 121600040010, 121600040120, 121600040220	PPWS	WWAC	●	PBCR		●		
Fort Gibson Lake	121600010050, 121600010200	PPWS	WWAC	●	PBCR		●		NLW
Ranger Creek	121600010060	PPWS	WWAC	●	PBCR		●		
Fourteen Mile Creek	121600010100	PPWS	CWAC	●	PBCR		●	HQW	
Black Bird Creek	121600010130	PPWS	CWAC	●	PBCR		●		
Double Springs Creek	121600010090	PPWS	WWAC	●	PBCR		●		
Clear Creek	121600010210	PPWS	CWAC	●	PBCR		●		
Spring Creek	121600010290	PPWS	CWAC	●	PBCR		●	HQW	
Snake Creek	121600010330		CWAC	●	PBCR		●	HQW	
Little Spring Creek	121600010340	PPWS	CWAC	●	PBCR		●	HQW	
Double Spring Creek	121600010390	PPWS	CWAC	●	PBCR		●		
Chouteau Creek	121600010430	PPWS	WWAC	●	PBCR		●		
Tributary of Chouteau Creek at SE 1/4, Sec.13, T20N, R18E, IM	121600010435_00		WWAC	●	SBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Chouteau Creek at SE 1/4, Sec. 29, T20N, R19E, IM	121600010432_00		HLAC	●	SBCR		●		
Pryor Creek downstream from the road crossing in Sec. 30, T21N, R19E, IM	121610000010, 121610000050_00		WWAC	●	PBCR		●		
Pryor Creek upstream from the road crossing in Sec. 30, T21N, R19E, IM to the road crossing in Sec. 12, T21N, R18E, IM	121610000050_10	PPWS	WWAC	●	PBCR		●		
Pryor Creek upstream from the road crossing in Sec. 12, T21N, R18E, IM	121610000090_00, 121610000090_10		WWAC	●	SBCR		●		
Crutchfield Branch	121600010440		WWAC	●	PBCR		●		
W.R. Holway Reservoir	121600020050	PPWS	WWAC	●	PBCR		●		
Saline Creek	121600020030	PPWS	CWAC	●	PBCR		●	HQW	
Little Saline Creek	121600020070	PPWS	CWAC	●	PBCR		●	HQW	
Horse Creek	121600030160	EWS	WWAC	●	PBCR		●		
Little Horse Creek	121600030190		WWAC		PBCR		●		
Spavinaw Creek below Spavinaw Lake dam	121600020150_00	PPWS	CWAC	●	PBCR		●		
Spavinaw Lake and watershed upstream of Spavinaw Lake dam	121600050020, 121600050030, 121600050040, 121600050050, 121600050060,	PPWS	CWAC	●	PBCR		●	SWS	NLW
Eucha Lake and watershed	121600050060, 121600050070, 121600050080, 121600050090, 121600050100, 121600050110, 121600050120, 121600050130, 121600050150, 121600050170, 121600050180, 121600050190, 121600050200, 121600050210, 121600050220	PPWS	CWAC	●	PBCR		●	SWS	NLW
Brush Creek	121600050140	PPWS	CWAC	●	PBCR		●	HQW	
Beaty Creek	121600050160	PPWS	CWAC	●	PBCR		●	HQW	
Rock Creek	121600020180	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Big Cabin Creek downstream from the road crossing in Sec. 10, T24N, R20E, IM	121600020190, 121600060010, 121600060060_00	PPWS	WWAC	●	PBCR		●		
Mustang Creek	121600060040		WWAC	●	PBCR		●		
Big Cabin Creek upstream from the road crossing in Sec. 10, T24N, R20E, IM to the road crossing in Sec. 8, T26N, R20E, IM	121600060060_10, 121600060220, 121600060300_00		WWAC	●	SBCR		●		
Little Cabin Creek	121600060080		WWAC	●	PBCR		●		
Bull Creek	121600060200		WWAC		PBCR		●		
Big Cabin Creek upstream from the road crossing in Sec. 8, T26N, R20E, IM	121600060300_10		WWAC	●	PBCR		●		
Drowning Creek	121600030090	PPWS	CWAC	●	PBCR		●		
Tributary of Muskrat Creek (Hollow) in Sec.36, T23N, R 23E, IM (Jay Creek)	121600030120_00		HLAC	●	SBCR		●		
Honey Creek	121600030445	PPWS	CWAC	●	PBCR		●	HQW	
Elm Creek	121600030310	PPWS	CWAC	●	PBCR		●		
Whitewater Creek	121600030320	PPWS	CWAC	●	PBCR		●		
Cave Springs Branch	121600030340	PPWS	CWAC	●	PBCR		●	HQW	
Elk River	121600030440	PPWS	CWAC	●	PBCR		●		
(Council) Hollow Creek	121600030490	PPWS	CWAC	●	PBCR		●		
Sycamore Creek	121600030510	PPWS	CWAC	●	PBCR		●		
Brush Creek	121600030520	PPWS	CWAC	●	PBCR		●		
Lost Creek	121600030560	PPWS	CWAC	●	PBCR		●		
Spring River	121600070010	PPWS	CWAC	●	PBCR		●		
Shawnee Branch	121600070020	PPWS	CWAC	●	PBCR		●		
Flint Branch	121600070040	PPWS	CWAC	●	PBCR		●		
Warren Branch	121600070050	PPWS	CWAC	●	PBCR		●	HQW	
Devil's Hollow	121600070070	PPWS	CWAC	●	PBCR		●		
Five Mile Creek	121600070110	PPWS	CWAC	●	PBCR		●		
Hudson Creek	121600040040		WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Hudson Creek at SE 1/4, Sec. 30, T27N, R23E, IM	121600040043_00		HLAC	●	SBCR		●		
Tar Creek	121600040060		HLAC		SBCR				
Verdigris River from its mouth to Oologah Lake Dam	121500010010, 121500010060, 121500010200, 121500020010, 121500020120, 121500020260, 121500030010_00, 121500030010_10	PPWS	WWAC	●	PBCR	●	●		
Tributary of Verdigris River at SW 1/4, Sec. 20, T16N, R19E, IM(Okay Creek)	121500010280		HLAC	●	SBCR		●		
Coal Creek (near Wagoner)	121500010100	PPWS	WWAC	●	PBCR		●		
Tributary of Verdigris River at SE 1/4, Sec. 34, T17N, R17E, IM(Strawberry Creek)	121500010170		HLAC	●	SBCR		●		
Coal Creek	121500010270	PPWS	WWAC	●	PBCR		●		
Inola Creek	121500020110		WWAC	●	PBCR		●		
Pea Creek	121500020100		WWAC	●	PBCR		●		
Adams Creek	121500020150	PPWS	WWAC	●	PBCR		●		
Salt Creek	121500020270		WWAC	●	SBCR		●		
Tributary of Salt Creek at NW 1/4, Sec. 1, T19N, R15E, IM	121500020275_00		HLAC	●	SBCR		●		
Dog Creek downstream from Lake Claremore	121500020360, 121500040010	PPWS	WWAC	●	PBCR		●		
Cat Creek	121500020390	EWS	WWAC	●	PBCR		●		
Tributary of Cat Creek at NW 1/4, Sec. 21, T21N, R16E, IM	121500	EWS	HLAC	●	SBCR		●		
Lake Claremore and Watershed	121500040010, 121500040020, 121500040030	PPWS	WWAC	●	PBCR		●	SWS	NLW
Chambers Creek	121500	EWS	HLAC	●	SBCR		●		
Mossy Creek	121500020430	EWS	HLAC	●	SBCR		●		
Spunky Creek	121500020480, 121500020470		WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Spunky Creek at Sec. 6, T19N, R15E	121500020500_00		HLAC	●	SBCR		●		
Tributary of Verdigris River at Sec. 28, T20N, R15E, IM	121500020465_00		HLAC	●	SBCR		●		
Bird Creek	121300010010, 121300020010. 121300030010	PPWS	WWAC	●	PBCR		●		
Mingo Creek	121300010030	EWS	WWAC	●	PBCR		●		
Unnamed tributary of Mingo Creek	121300010035_00	EWS	HLAC	●	SBCR		●		
Elm Creek	121300010020		WWAC		PBCR		●		
Owasso Creek	121300010055_00		HLAC	●	SBCR		●		
Tributary of Owasso Creek at SE1/4, Sec. 31, T21N, R14E, IM	121300010057_00		HLAC	●	SBCR		●		
Ranch Creek	121300010060		WWAC		PBCR		●		
Lake Yahola and Watershed	121300010130	PPWS	WWAC	●	PBCR		●	SWS	
Flat Rock Creek	121300010120		WWAC	●	SBCR		●		
Tributary of Flat Rock Creek at SE 1/4, Sec. 18, T20N, R13E, IM (Dirty Butter Creek)	121300010140		HLAC	●	SBCR		●		
Delaware Creek	121300010150	PPWS	WWAC	●	PBCR		●		
Hominy Creek downstream from Skiatook Lake	121300040010, 121300040070	PPWS	WWAC	●	PBCR		●		
Hominy Creek upstream from and including Skiatook Lake	121300040070, 121300040080, 121300040280	PPWS	WWAC	●	PBCR		●	SWS	
Claremore Creek	121300040320	PPWS	WWAC	●	PBCR		●		
Hominy Municipal Lake and Watershed	121300040320, 121300040330	PPWS	WWAC	●	PBCR		●	SWS	
Candy Creek	121300020080	PPWS	WWAC	●	PBCR		●		
Pecan Hollow Creek	121300020090	PPWS	WWAC	●	PBCR		●	SWS	
Avant Public Utility Lake	121300020100	PPWS	WWAC	●	PBCR		●		
Waxoma Lake	121300020190	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Bird Creek at Sec. 19, T24N, R11E, IM	121300030070_00		HLAC	●	SBCR		●		
Birch Creek downstream from Birch Reservoir	121300030020	PPWS	WWAC	●	PBCR		●		
Birch Reservoir and Watershed	121300030020, 121300030030, 121300030040, 121300030050	PPWS	WWAC	●	PBCR		●	SWS	
Tributary of Birch Creek at Sec. 14, T24N, R9E, IM	121300030055_00		HLAC	●	SBCR		●	SWS	
Clear Creek	121300030200	PPWS	WWAC	●	PBCR		●		
Pawhuska Lake	121300030230	PPWS	WWAC	●	PBCR		●		
Bluestem Lake and Watershed	121300030280, 121300030290, 121300030300, 121300030310	PPWS	WWAC	●	PBCR		●	SWS	
Tributary of Verdigris River at Sec. 11, T21N, R15 E, IM (Keetonville Creek)	121500030050		HLAC	●	SBCR		●		
Caney River from the mouth to the Kansas State Line	121400010010, 121400020010, 121400030010	PPWS	WWAC	●	PBCR		●		
Hulah Lake and watershed	121400030010, 121400030020, 121400030030, 121400030040, 121400030050, 121400030060, 121400030080, 121400030090, 121400030100, 121400030110, 121400030120, 121400030130, 121400030140, 121400030150, 121400030160, 121400030170, 121400030180, 121400030190, 121400030200	PPWS	WWAC	●	PBCR		●		NLW
Rabb Creek	121400010090	PPWS	WWAC	●	PBCR		●		
Nellie Bly Creek	121400010180	PPWS	WWAC	●	PBCR		●		
Hogshooter Creek	121400010300		WWAC		PBCR		●		
Keeler Creek	121400010320		WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Keeler Creek at NW 1/4 Sec. 19, T25N, R13E, IM (East Keeler Creek)	121400010322		HLAC	●	SBCR		●		
Sand Creek	121400040010	PPWS	WWAC	●	PBCR		●		
Buck Creek	121400040050	PPWS	WWAC	●	PBCR		●		
Coon Creek	121400020040	PPWS	WWAC	●	PBCR		●		
Deer Creek	121400020050		WWAC	●	PBCR		●		
Lake Hudson on Butler Creek	121400020090	PPWS	WWAC	●	PBCR		●		
Little Caney River including Copan Lake and Watershed	121400020140, 121400050010, 121400050020, 121400050030, 121400050040, 121400050050, 121400050060, 121400050070, 121400050080	PPWS	WWAC	●	PBCR		●	SWS	
Pond Creek	121400030090	PPWS	WWAC	●	PBCR		●		
Buck Creek	121400030170	PPWS	WWAC	●	PBCR		●		
Fourmile Creek	121500030070		WWAC	●	PBCR		●		
Verdigris River from and including Oologah Lake to the Kansas State Line	121510010010, 121510010020, 121510020010	PPWS	WWAC	●	PBCR	●	●		
Blue Creek	121510010030	PPWS	WWAC	●	PBCR		●		
Spencer Creek including Chelsea Reservoir and Watershed	121510010040, 121510010060	PPWS	WWAC	●	PBCR		●	SWS	
Lightning Creek	121510010130	PPWS	WWAC	●	PBCR		●		
Salt Creek	121510010190	PPWS	WWAC	●	PBCR		●		
Big Creek	121510030010	PPWS	WWAC	●	PBCR		●		
California Creek	121510020050	PPWS	WWAC	●	PBCR		●		
Tributary to Oologah Lake NW 1/4, Sec. 5, T26N, R16E, IM (Delaware Creek)	121510020060	EWS	HLAC	●	SBCR		●		
Snow Creek	121510020250	PPWS	WWAC	●	PBCR		●		
Onion Creek	121510020340	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Arkansas River from mouth of Verdigris River to Keystone Dam	120410010010, 120410010080_00, 120410010080_10, 120420010010_00, 120420010010_10, 120420010130	EWS	WWAC	●	PBCR	●	●		
Pecan Creek	120410010030	PPWS	WWAC	●	PBCR		●		
Cloud Creek	120410010100, 120410020010	PPWS	WWAC	●	PBCR		●		
Ash Creek	120410010110	PPWS	WWAC	●	PBCR		●		
Mountain Creek including Bixhoma Lake	120410010180	PPWS	WWAC	●	PBCR		●		
Snake Creek	120410010220	PPWS	WWAC	●	PBCR		●		
Rock Creek	120410030020	PPWS	WWAC	●	PBCR		●		
Lake Boren	120410030080	PPWS	WWAC	●	PBCR		●		
Posey Creek	120420010030		WWAC	●	PBCR		●		
Polecat Creek downstream from Heyburn Lake	120420020050_00, 120420020050_10, 120420020290		WWAC	●	PBCR		●		
Coal Creek downstream from Sec. 35, T18N, R12E, IM	120420020030_00	PPWS	WWAC	●	PBCR		●		
Coal Creek upstream from Sec. 35, T18N, R12E, IM	120420020030_10	PPWS	HLAC	●	PBCR		●		
Rock Creek downstream from Sahoma Lake	120420020060, 120420020120		WWAC	●	PBCR		●		
Country Club Lake (Middle Lake)	120420020090	PPWS	WWAC	●	PBCR		●		
Sapulpa Lake	120420020110	PPWS	WWAC	●	PBCR		●		
Childress Creek	120420020160		HLAC	●	SBCR		●		
Jackson Creek	120420020200	PPWS	WWAC	●	PBCR		●		
Little Polecat Creek	120420020260		WWAC	●	SBCR		●		
Sahoma Lake and Watershed	120420020120, 120420020130, 120420020140	PPWS	WWAC	●	PBCR		●	SWS	

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Heyburn Lake and Watershed	120420020290, 120420020300, 120420020310, 120420020320, 120420020330, 120420020340, 120420020350, 120420020360, 120420020370, 120420020380, 120420020390, 120420020400, 120420020410	PPWS	WWAC	●	PBCR		●	SWS	
Shell Creek downstream from Shell Lake	120420010230	PPWS	WWAC	●	PBCR		●		
Shell (Creek) Lake and Watershed	120420010230, 120420010240 120420010250, 120420010260, 120420010270	PPWS	WWAC	●	PBCR		●	SWS	

APPENDIX A.2

Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 2, Lower Arkansas River Basin

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Arkansas River from the Arkansas State Line to the mouth of the Canadian River including R.S. Kerr Reservoir	220200010010, 220200020010, 220200020020	PPWS	WWAC	●	PBCR	●	●		
Lee Creek downstream from the 420 ft. elevation level	220200050010_00	PPWS	CWAC	●	PBCR		●	HQW	HQW
Lee Creek upstream from the 420 ft. elevation level	220200050010_10	PPWS	CWAC	●	PBCR		●	ORW	Scenic River(1)
Webber(s) Creek	220200050020	PPWS	CWAC	●	PBCR		●	ORW	
Briar Creek (Bear Creek)	220200050030	PPWS	CWAC	●	PBCR		●	ORW	
Little Lee Creek	220200050040	PPWS	CWAC	●	PBCR		●	ORW	Scenic River
Jenkins Creek	220200050050	PPWS	CWAC	●	PBCR		●	ORW	
Poteau River downstream from Brazil Creek	220100010010	PPWS	WWAC	●	PBCR		●		
Tributary of Cedar Creek at Sec. 8, T9N, R27E, IM	220100010030		WWAC	●	PBCR		●		
Hoil-Tuska Creek including New Spiro Lake	220100010050	PPWS	WWAC	●	PBCR		●	SWS	NLW
James Fork	220100010070	PPWS	WWAC	●	PBCR		●		
Brazil Creek	220100030010	PPWS	WWAC	●	PBCR		●		
Red Oak Pit	220100	PPWS	WWAC	●	PBCR		●		
Poteau River upstream from Brazil Creek	220100010010, 220100020010_10	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Wister Lake and watershed	220100020010, 220100020020, 220100020030, 220100020040, 220100020050, 220100020070, 220100020080, 220100020090, 220100020100, 220100020110, 220100040010, 220100040020, 220100040030, 220100040040, 220100040050, 220100040060, 220100040070, 220100040080, 220100040090, 220100040110, 220100040120, 220100040160, 220100040170, 220100040180	PPWS	WWAC	●	PBCR		●		NLW
Riddle Creek	220100010120		HLAC	●	SBCR		●		
Tributary of Riddle Creek at SE 1/4 Sec. 4, T07N, R26E, IM (Cameron Creek)	220100010130		HLAC	●	SBCR		●		
Sugarloaf Creek	220100010160	PPWS	WWAC	●	PBCR		●		
Morris Creek	220100010170		WWAC	●	PBCR		●		
Caston Creek	220100010180	PPWS	WWAC	●	PBCR		●		
Coal Creek	220100010200	EWS	WWAC	●	PBCR		●		
Fourche Maline Creek including Lake Wayne Wallace	220100040010, 220100040020, 220100040150	PPWS	WWAC	●	PBCR		●		
Little Fourche Maline Creek	220100040070	PPWS	WWAC	●	PBCR		●		
Red Oak Creek	220100040050		WWAC		PBCR		●		
Bandy Creek	220100040080		WWAC	●	PBCR		●		
Tributary of Bandy Creek at NE 1/4, Sec. 17, T5N, R19E, IM	220100		WWAC	●	SBCR		●		
Lloyd Church Lake and Watershed	220100040090, 220100040100	PPWS	WWAC	●	PBCR		●	SWS	
Tributary to Bandy Creek (Cunneo Bandy)	220100040090	PPWS	WWAC	●	PCBR		●		
Tributary of Fourche Maline Creek at SE 1/4, Sec. 12, T5N, R19E, IM	220100040110		HLAC	●	SBCR		●		
Coon Creek Lake and Watershed	220100040120, 220100040130	PPWS	WWAC	●	PBCR		●	SWS	
Lake Wayne Wallace	220100040150	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Black Fork downstream from Cedar Creek	220100020030, 220100020040	PPWS	WWAC	●	PBCR		●		
Black Fork upstream from Cedar Creek	220100020040	PPWS	CWAC	●	PBCR		●	HQW	
Cedar Creek including Cedar Lake	220100020050, 220100020060	PPWS	WWAC	●	PBCR		●		
Shawnee Creek	220100020070	PPWS	WWAC	●	PBCR		●		
Big Creek	220100020080	PPWS	CWAC	●	PBCR		●		
Tributary of Big Creek at NE 1/4, Sec. 22, T3N, R26E, IM	220100020090	EWS	WWAC	●	PBCR		●		
Oil Branch	220100020100		WWAC	●	PBCR		●		
Garrison Creek	220200050060	PPWS	WWAC	●	PBCR		●		
Unnamed tributary of Garrison Creek at sect.18, T11N, R27E, IM	220200050070_00		HLAC		SBCR		●		
Camp Creek	220200010020	PPWS	CWAC	●	PBCR		●		
Big Skin Bayou Creek	220200010030	PPWS	WWAC	●	PBCR		●		
Muldrow City Lake	220200010025_00	PPWS	WWAC	●	PBCR		●		
Cache Creek	220200010060	PPWS	WWAC	●	PBCR		●		
Onion Creek	220200010100		HLAC	●	SBCR		●		
Sans Bois Creek	220200040010	PPWS	WWAC	●	PBCR		●		
Lake John Wells and Watershed	220200040030	PPWS	WWAC	●	PBCR		●	SWS	
Beaver Creek	220200040060	EWS	WWAC	●	PBCR		●		
Sallisaw Creek downstream from U.S. Hwy. 64	220200030010_10	PPWS	CWAC	●	PBCR		●		
Shilo(h) Branch	220200030020		WWAC	●	PBCR		●		
Tributary of Shilo Branch at SW 1/4, Sec. 1, T11N, R23E, IM	220200030035_00		HLAC	●	SBCR		●		
Little Sallisaw Creek (Cedar Creek)	220200020040	PPWS	WWAC	●	PBCR		●		
Sallisaw Creek upstream from U.S. Hwy 64	220200030010_10, 220200030010_20, 220200030010_30	PPWS	CWAC	●	PBCR		●	HQW	
Stillwell City Lake	220200030120	PPWS	WWAC	●	PBCR		●		
Brushy Creek downstream from Brushy (Creek) Reservoir	220200030030	PPWS	CWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Brushy (Creek) Reservoir and Watershed	220200030030, 220200030040, 220200030050	PPWS	CWAC	●	PBCR		●	SWS	
Greasy Creek	220200030080	PPWS	CWAC	●	PBCR		●		
Vian Creek	220200020130	PPWS	CWAC	●	PBCR		●		
Little Vian Creek	220200020140	PPWS	CWAC	●	PBCR		●		
Canadian River from mouth to Eufaula Lake Dam	220300000010	PPWS	WWAC	●	PBCR	●	●		
Taloka Creek	220300000020	PPWS	WWAC	●	PBCR		●		
Snake Creek	220300000030		WWAC	●	SBCR		●		
Emachaya Creek	220300000040	PPWS	WWAC	●	PBCR		●		
Canadian River including Eufaula Lake (excluding the North Canadian River) to its confluence with Little River	, 220300010020, 220600040050, 220600010060, 220600010119, 220600050010	PPWS	WWAC	●	PBCR		●		
Mud Creek	220600050060	PPWS	WWAC	●	PBCR		●		
Longtown Creek	220600010070	PPWS	WWAC	●	PBCR		●		
Gibson Creek	220600050020		HLAC	●	SBCR		●		
Tributary of Gibson Creek at NW NW Sec.18,T8N,R16E, IM	220600050023_00		HLAC	●	SBCR		●		
Gaines Creek	220600040010	PPWS	WWAC	●	PBCR		●		
Coal Creek	220600020010	PPWS	WWAC	●	PBCR		●		
Talawanda Lakes #1 and #2	220600020050, 220600020060	PPWS	WWAC	●	PBCR		●		
Lake McAlester and Watershed	220600020020, 220600020030	PPWS	WWAC	●	PBCR		●	SWS	
Deer Creek	220600020080		WWAC	●	PBCR		●		
Sandy Creek	220600020090		WWAC	●	SBCR		●		
Tributary of Sandy Creek at NW 1/4, Sec. 3, T5N, R14E, IM	220600020093_00		WWAC	●	SBCR		●		
Tributary of Coal Creek at SW NW SW Sec. 18, T5N, R12E, IM	220600		HLAC	●	SBCR		●		
Ash Creek	220600050040	PPWS	WWAC	●	PCBR		●		
Mud Creek	220600050060		WWAC	●	PBCR		●		
Brushy Creek	220600030010	PPWS	WWAC	●	PBCR		●		
Blue Creek	220600030020	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Peaceable Creek	220600030050	PPWS	WWAC	●	PBCR		●		
Chun Creek upstream from Sec. 15, T4N, R14E, IM	220600030060_10	EWS	WWAC	●	SBCR		●		
Tributary of Chun Creek at SW 1/4, Sec. 16, T4N, R14E, IM	220600030065_00		HLAC	●	SBCR		●		
Chun Creek in and downstream from Sec. 15, T4N, R14E, IM	220600030060_00	EWS	WWAC	●	PBCR		●		
Bull Creek downstream from Brown Lake	220600030080		WWAC	●	PBCR		●		
Brown Lake and Watershed	220600030080, 220600030090	PPWS	WWAC	●	PBCR		●	SWS	
Mill Creek	220600010100_10, 220600010100_20	PPWS	WWAC	●	PCBR		●		
Big Creek	220600010170		WWAC	●	PBCR		●		
Unnamed tributary of Canadian River at SE 1/4, Sec. 22, T6N, R10E, IM	220600010128_00		HLAC	●	SBCR		●		

APPENDIX A.3
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 3, Upper Red River Basin

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Lake Texoma	311100010020, 311100010030, 311100010080, 310800010011, 310800010050	PPWS	WWAC	●	PBCR		●		
Glasses Creek including Carter Lake	310800010020, 310080010040	PPWS	WWAC	●	PBCR		●		
Tributary at Old Channel Washita, NE 1/4, Sec. 33, T5S, R7E, IM	310800010055_00	EWS	HLAC	●	SBCR		●		
Pennington Creek	310800010120	PPWS	CWAC	●	PBCR		●	HQW	
Spring Creek	310800010160	PPWS	WWAC	●	PBCR		●		
Mill Creek	310800010190	PPWS	WWAC	●	PBCR		●		
Tributary of Three Mile Creek at SW Sec. 7, T2S, R5E, IM to SE Sec. 12, T2S, R4E	310800010205		HLAC	●	SBCR		●		
Washita River upstream from the headwaters of Lake Texoma including Foss Reservoir	310800010010, 310800020010, 310810010010, 310810020010, 310820010010, 310830010010, 310830020010, 310830030010, 310840010010, 310840010020, 310840020010	PPWS	WWAC	●	PBCR		●		
Cool Creek	310800020010	PPWS	WWAC	●	PBCR		●		
Oil Creek	310800010240	PPWS	WWAC	●	PBCR		●		
Caddo Creek	310800030010	PPWS	WWAC	●	PBCR		●		
Sand Creek	310800030020		WWAC	●	PBCR		●		
Unnamed tributary to Caddo Creek	310800030035		HLAC		SBCR				
Ardmore City Lake	310800030070		WWAC	●	PBCR		●		
Rock Creek downstream from Lake Scott King Dam	310800030100	PPWS	WWAC	●	PBCR		●		
Lake Scott King (Rock Creek Reservoir) including Watershed	310800030100, 310800030110, 310800030120	PPWS	WWAC	●	PBCR		●	SWS	
Lake Jean Neustadt	310800030140	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Hickory Creek downstream from Mountain Lake	310800030190_00	PPWS	WWAC	●	PBCR		●		
Mountain Lake and Watershed	310800030190, 310800030200, 310800030210	PPWS	WWAC	●	PBCR		●	SWS	
Rock Creek including Lake of the Arbuckles	310800020080, 310800020090, 310800020100, 310800020122	PPWS	WWAC	●	PBCR		●	SWS	
Guy Sandy Creek	310800020130	PPWS	WWAC	●	PBCR		●	HQW	
Falls Creek	310800020140	PPWS	WWAC	●	PBCR		●		
Dry Sandy Creek	310800020150	PPWS	WWAC	●	PBCR		●		
Tributary of Dry Sandy Creek at Sec. 7, T1S, R2E, IM	310800020152_00		HLAC	●	SBCR		●		
Honey Creek	310800020160	PPWS	WWAC	●	PBCR		●	HQW	
Chigley Sandy Creek	310800020190	PPWS	WWAC	●	PBCR		●		
Wildhorse Creek	310810010020, 310810030010, 310810040010, 310810040140	PPWS	WWAC	●	PBCR		●		
Sandy Creek	3108100030020	PPWS	WWAC	●	PBCR		●		
Rock Creek	310810030040	PPWS	WWAC	●	PBCR		●		
Elmore City Lake	310810030060	PPWS	WWAC	●	PBCR		●		
Salt Creek	310810030080	PPWS	WWAC	●	PBCR		●		
Black Bear Creek downstream from Lake Fuqua	310810040030, 310810040040	PPWS	WWAC	●	PBCR		●		
Lake Fuqua and Watershed	310810040030, 310810040040, 310810040050	PPWS	WWAC	●	PBCR		●	SWS	
Duncan Lake and Watershed	310810040070, 310810040080, 310810040090	PPWS	WWAC	●	PBCR		●	SWS	
Clear Creek downstream from Clear Creek Lake	310810040130	PPWS	WWAC	●	PBCR		●		
Clear Creek Lake and Watershed	310810040110, 310810040120, 310810040130	PPWS	WWAC	●	PBCR		●	SWS	
Lake Humphreys and Watershed	310810040140, 310810040150, 310810040160	PPWS	WWAC	●	PBCR		●	SWS	
Kickapoo Sandy Creek	310810010050	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Turkey Sandy Creek	310810010060		WWAC	●	PBCR		●		
Tributary of Turkey Sandy Creek at SE 1/4, Sec. 26, T2N, R1E, IM	310810010062_00		WWAC	●	PBCR		●		
W. Sandy Creek (upper) upstream from Sec. 34, T2N, R1E, IM	310810010065_10		HLAC	●	SBCR		●		
W. Sandy Creek (lower) downstream from Sec. 27, T2N, R1E, IM	310810010065_00		WWAC	●	PBCR		●		
Red Branch	310810010070		WWAC	●	SBCR		●		
Rush Creek downstream from U.S. Hwy. 77 near Pauls Valley	310810010090_00		WWAC	●	SBCR		●		
Rush Creek upstream from U.S. Hwy. 77 near Pauls Valley	310810010090_10, 310810050010		WWAC	●	PBCR		●		
Taylor (Marlow) Lake near Rush Springs	310810050060	PPWS	WWAC	●	PBCR		●		NLW
Cherokee Sandy Creek	310810010100	PPWS	WWAC	●	PBCR		●		
R. C. Longmire Lake	310810010186		WWAC	●	PBCR		●		
Peavine Creek	310810010120	PPWS	WWAC	●	PBCR		●		
Washington Creek	310810010170, 310810010190	PPWS	WWAC	●	PBCR		●		
Pauls Valley Lake and Watershed	310810010170, 310810010180, 310810010190	PPWS	WWAC	●	PBCR		●	SWS	
Owl Creek	310810010200		WWAC	●	PBCR		●		
Wiley Post Memorial Lake	310810010220	PPWS	WWAC	●	PBCR		●		
Beef Creek	310810010230	EWS	HLAC	●	SBCR		●		
Tributary of Beef Creek at SE 1/4, Sec.15, T4N, R2W, IM	310810010232_00	EWS	HLAC	●	SBCR		●		
Finn Creek	310810020020	PPWS	WWAC	●	PBCR		●		
Criner Creek	310810020050	PPWS	WWAC	●	PBCR		●		
Colbert Creek	310810020160	PPWS	WWAC	●	PBCR		●		
Roaring Creek	310810020170	PPWS	WWAC	●	PBCR		●		
East Roaring Creek	310810020180		WWAC		PBCR		●		
Laflin Creek	310810020200	PPWS	WWAC	●	PBCR		●		
Winter Creek	310810020220	PPWS	WWAC	●	PBCR		●		
Little Washita River	310820020010	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Lake Burtschi	310800020070		WWAC	●	PBCR		●		
Gladys Creek downstream from U.S. Hwy. 277	310820020150_00		HLAC	●	SBCR		●		
Gladys Creek upstream from U.S. Hwy. 277	310820020150_10	PPWS	WWAC	●	PBCR		●		
Bitter Creek	310820010030	PPWS	WWAC	●	PBCR		●		
East Fork of Bitter Creek	310820010040	PPWS	WWAC	●	PBCR		●		
West Fork of Bitter Creek	310820010060	PPWS	WWAC	●	PBCR		●		
Tributary of Washita River at NE 1/4, Sec. 35, T7N, R7W, IM	310820		HLAC	●	SBCR		●		
Ionine Creek	310820010160	PPWS	WWAC	●	PBCR		●		
Jack Hollow Creek	310820010170	PPWS	WWAC	●	PBCR		●		
Spring Creek including Lake Chickasha	310830040010, 310830040020	PPWS	WWAC	●	PBCR		●		NLW
Stinking Creek	310830040030	PPWS	WWAC	●	PBCR		●		
Delaware Creek	310830010030		WWAC	●	SBCR		●		
Sugar Creek	310830050010		WWAC	●	SBCR		●		
Tributary of Sugar Creek at NW 1/4, Sec. 29, T11N, R11W, IM	310830		HLAC	●	SBCR		●		
Cobb Creek downstream from Fort Cobb Reservoir	310830060010	PPWS	WWAC	●	PBCR		●		
Fort Cobb Lake and Watershed including Crowder Lake and watershed	310830060010, 310830060020, 310830060030, 310830060040, 310830060050, 310830060060, 310830060070, 310830060080, 310830060090, 310830060100, 310830060110, 310830060120, 310830060130, 310830060140	PPWS	WWAC	●	PBCR		●	SWS	NLW
Lake Creek	310830060040	PPWS	WWAC	●	PBCR		●	SWS	
Stinking Creek	310830020020	PPWS	WWAC	●	PBCR		●		
Rainy Mountain Creek downstream from S.H. 9	310830020060_00		WWAC	●	PBCR		●		
Rainy Mountain Creek upstream from S.H. 9	310830020060_10		WWAC	●	SBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Oak Creek	310830020090	PPWS	WWAC	●	PBCR		●		
Lake Vanderwork and watershed	310830020100, 310830020110		WWAC	●	PBCR		●		NLW
Two Baby Creek	310830030060		WWAC	●	PBCR		●		
Cavalry Creek	310830030070	PPWS	WWAC	●	PBCR		●		
South Fork of Cavalry Creek	310830030080		WWAC	●	PBCR		●		
N. Cavalry Creek	310830030090	EWS	HLAC	●	SBCR		●		
Tributary to N. Cavalry Creek at NW 1/4, Sec. 11, T9N, R17W, IM	310830030095_00	EWS	HLAC	●	SBCR		●		
Boggy Creek	310830030100		WWAC	●	PBCR		●		
Beaver Creek	310830030190		WWAC	●	SBCR		●		
Barnitz Creek	310830030200	PPWS	WWAC	●	PBCR		●		
East Barnitz Creek	310830030210	PPWS	WWAC	●	PBCR		●		
West Barnitz Creek	310830030230	PPWS	WWAC	●	PBCR		●		
Turkey Creek downstream from Clinton Lake	310830030260		WWAC	●	PBCR		●		
Clinton Lake	310830030280	PPWS	WWAC	●	PBCR		●	SWS	NLW
Oak Creek	310830030310	PPWS	WWAC	●	PBCR		●		
Panther Creek	310840010050	PPWS	WWAC	●	PBCR		●		
Quartermaster Creek	310840010060	PPWS	WWAC	●	PBCR		●		
Tributary of Quartermaster Creek at Sec. 17, T16N, R20W, IM (North Branch)	310840010080		HLAC	●	SBCR		●		
Hay Creek	310840010100	PPWS	WWAC	●	PBCR		●		
White Shield Creek	310840010120		HLAC	●	SBCR		●		
Sandstone Creek	310840020020, 310840020070	PPWS	WWAC	●	PBCR		●		
Dead Indian Creek	310840020120	PPWS	WWAC	●	PBCR		●		
Sergeant Major Creek	310840020140	PPWS	HLAC	●	SBCR		●		
Croton Creek	310840020190	PPWS	WWAC	●	PBCR		●		
Rush Creek	310840020210	PPWS	WWAC	●	PBCR		●		
Buncombe Creek	311100010070	PPWS	WWAC	●	PBCR		●		
Hauani Creek including Hauani Lake	311100010130, 311100010140	PPWS	WWAC	●	PBCR		●		
Hickory Creek	311100020010	PPWS	WWAC	●	PBCR		●		
Anadarche Creek downstream from Lake Murray	311100020020	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Lake Murray and Watershed	311100020020, 311100020030, 311100020040, 311100020050, 311100020060, 311100020070, 311100020080, 311100020090	PPWS	WWAC	●	PBCR		●	SWS	
Red River from headwaters of Lake Texoma to Cache Creek	311100010190, 311200000010	PPWS	WWAC	●	PBCR		●		
Walnut Bayou	311100030010, 311100010250	PPWS	WWAC	●	PBCR		●		
Simon Creek	311100030020	PPWS	WWAC	●	PBCR		●		
Walnut Creek	311100030070	PPWS	WWAC	●	PBCR		●		
Tributary of Walnut Creek at Sec. 28, T4S, R2W, IM	311100030180_00		HLAC	●	SBCR		●		
Healdton Lake	311100030130	PPWS	WWAC	●	PBCR		●		
Whiskey Creek	311100030140		HLAC	●	SBCR		●		
Cottonwood Creek	311100030090	PPWS	WWAC	●	PBCR		●		
Tributary of Cottonwood Creek at Sec. 28, T4S, R1W, IM	311100030190_00		HLAC	●	SBCR		●		
Bull Creek	311100030060		HLAC	●	SBCR		●		
Mud Creek	311100040010	PPWS	WWAC	●	PBCR		●		
Clear Creek	311100040020	PPWS	WWAC	●	PBCR		●		
North Mud Creek	311100040030	PPWS	HLAC	●	PBCR		●		
Tributary of North Mud Creek at SW 1/4, Sec. 34, T4S, R4W, IM	311100040035_00		HLAC	●	SBCR		●		
West Mud Creek	311100040200	PPWS	WWAC	●	PBCR		●		
Negro Creek	311100040100	PPWS	WWAC	●	PBCR		●		
Willow Branch	311100040110	PPWS	WWAC	●	PBCR		●		
Crooked Creek	311100040120	PPWS	WWAC	●	PBCR		●		
Deer Creek	311100040130	PPWS	WWAC	●	PBCR		●		
Comanche Lake	311100040170		WWAC	●	PBCR		●		
Red Creek	311100010290	PPWS	WWAC	●	PBCR		●		
Fleetwood Creek	311100010300	PPWS	WWAC	●	PBCR		●		
Beaver Creek downstream from Waurika Lake	311200000030, 311200000010	PPWS	WWAC	●	PBCR		●		
Cow Creek	311200000060	EWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Dry Creek	311200000080	PPWS	WWAC	●	PBCR		●		
Cotton Creek	311200000090	PPWS	WWAC	●	PBCR		●		
Claridy (Clarity) Creek	311200000110	EWS	WWAC		PBCR		●		
East Cow Creek	311200000100	EWS	HLAC	●	SBCR		●		
Tributary of East Cow Creek SW 1/4, Sec. 15, T1S, R7W, IM	311200000160_00	EWS	HLAC	●	SBCR		●		
Beaver Creek upstream from and including Waurika Lake	311210000010, 311210000020	PPWS	WWAC	●	PBCR		●	SWS	
Walker Creek	311210000030	PPWS	WWAC	●	PBCR		●	SWS	
Little Beaver Creek	311210000050	PPWS	WWAC	●	PBCR		●	SWS	
Stage Stand Creek	311210000060	PPWS	WWAC	●	PBCR		●	SWS	
Hell Creek	311210000080	PPWS	WWAC	●	PBCR		●	SWS	
Ninemile Beaver Creek	311210000130	PPWS	WWAC	●	PBCR		●		
Cache Creek	311300010010	PPWS	WWAC	●	PBCR		●		
West Cache Creek downstream from Panther Creek	311310020010, 311310020020, 311310020140	PPWS	WWAC	●	PBCR		●		
Deep Red Creek including Lake Fredrick	311310030010, 311310030110, 311310030120	PPWS	WWAC	●	PBCR		●		
Pecan Creek	311310020030	PPWS	WWAC	●	PBCR		●		
Little Deep Red Creek	311310030040	PPWS	WWAC	●	PBCR		●		
Jack Creek	311310030030	PPWS	WWAC	●	PBCR		●		
East Jack Creek	311310030070	PPWS	WWAC	●	PBCR		●		
Horse Creek	311310030080	PPWS	WWAC	●	PBCR		●		
Deadman Creek	311310030090	PPWS	WWAC	●	PBCR		●		
Blue Beaver Creek	311310020050, 311310020060	PPWS	WWAC	●	PBCR		●		
Post Oak Creek	311310020070	PPWS	WWAC	●	PBCR		●		
Crater Creek	311310020100	PPWS	WWAC	●	PBCR		●	HQW	
Panther Creek	311310020150	PPWS	WWAC	●	PBCR		●	HQW	
West Cache Creek upstream from Panther Creek	311310020140	PPWS	WWAC	●	PBCR		●	HQW	
East Cache Creek downstream from Lake Ellsworth	311300010020, 311300020010	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Temple Lake (Mooney) and Watershed	311300010040, 311300010050	PPWS	WWAC	●	PBCR		●	SWS	
Walters Lake (Dave Boyer Lake) and Watershed	311300010070, 311300010080	PPWS	WWAC	●	PBCR		●	SWS	
Ninemile Creek	311300020030		WWAC	●	PBCR		●		
Tributary to Ninemile Creek within Sec. 23, T 1 N, R 11 WIM including Comanche Lake	311300020032_00		WWAC		PBCR		●		
Wolf Creek	311300020040	PPWS	WWAC	●	PBCR		●		
Medicine Creek downstream from Lake Lawtonka	311300040010, 311300040060	PPWS	WWAC	●	PBCR		●		
Elmer Thomas Lake and Watershed	311300040040, 311300040050	PPWS	WWAC	●	PBCR		●	SWS	
Lake Lawtonka and Watershed	311300040060, 311300040070, 311300040080, 311300040090, 311300040110_00, 311300040100_00	PPWS	WWAC	●	PBCR		●	SWS	
Lake Ellsworth and Watershed	311300030010, 311300030020, 311300030030, 311300030040, 311300030050, 311300030060, 311300030070, 311300030080	PPWS	WWAC	●	PBCR		●	SWS	
Red River from Cache Creek to North Fork of the Red River	311310010010	EWS	WWAC	●	PBCR		●		
Rabbit Creek	311310010020	PPWS	WWAC	●	PBCR		●		
Tributary of Red River at Sec. 29, T4S, R13W, IM	311310010035_00		HLAC	●	SBCR		●		
Blue Creek	311310010040	PPWS	WWAC	●	PBCR		●		
Suttle Creek	311310010070		WWAC	●	SBCR		●		
Tributary of Suttle Creek at SW 1/4, Sec. 20, T3S, R17W, IM	311310010090_00		HLAC	●	SBCR		●		
North Fork of the Red River including Lugert-Altus Reservoir	311500010020, 311510010010, 311510010020, 311510020010	PPWS	WWAC	●	PBCR		●		
Stinking Creek	311500010050	PPWS	WWAC	●	PBCR		●		
Tributary of Stinking Creek at SE 1/4, Sec. 30, T2N, R19W, IM	311500010055_00	EWS	HLAC	●	SBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Otter Creek	311500010080	PPWS	WWAC	●	PBCR		●		
West Otter Creek downstream from Tom Steed Reservoir	311500020040	PPWS	WWAC	●	PBCR		●		
Tom Steed Reservoir (Mountain Park) and Watershed	311500020040, 311500020050, 311500020060, 311500020070	PPWS	WWAC	●	PBCR		●	SWS	
Glen Creek	311500020070	PPWS	WWAC	●	PBCR		●	SWS	
Elk Creek downstream from the confluence with Little Elk Creek	311500030010, 311500030030_00	PPWS	WWAC	●	PBCR		●		
Elk Creek from headwaters to confluence with Little Elk Creek	311500030030_10		HLAC	●	SBCR		●		
Little Elk Creek downstream from Lake Hobart	311500030040	PPWS	WWAC	●	PBCR		●		
Hobart (Rocky Hobart) Lake	311500030060	PPWS	WWAC	●	PBCR		●	SWS	NLW
Spring Creek	311500030080	PPWS	WWAC	●	PBCR		●		
Elk City Reservoir	311500030120		WWAC	●	PBCR		●		NLW
Elm Fork of the Red River	311800000010	PPWS	WWAC	●	PBCR		●		
Haystack Creek	311800000040	PPWS	WWAC	●	PBCR		●		
Deer Creek	311800000070	PPWS	WWAC	●	PBCR		●		
Fish Creek	311800000130	PPWS	WWAC	●	PBCR		●		
Bull Creek	311800000150	PPWS	WWAC	●	PBCR		●		
North Elm Creek (West Elm Creek)	311800000170	PPWS	WWAC	●	PBCR		●		
Flat Creek	311510010070		WWAC	●	PBCR		●		
Timber Creek	311510010090	PPWS	WWAC	●	PBCR		●		
Sand Creek	311510020040	PPWS	WWAC	●	PBCR		●		
Long Creek	311510020050	PPWS	WWAC	●	PBCR		●		
Turkey Creek	311510020060	PPWS	WWAC	●	PBCR		●		
Starvation Creek	311510020070	PPWS	WWAC	●	PBCR		●		
Buffalo Creek	311510020090	PPWS	WWAC	●	PBCR		●		
Sweetwater Creek	311510020120	PPWS	WWAC	●	PBCR		●		
Red River from confluence of the North Fork of the Red River to Buck Creek	311600010010	EWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Salt Fork of the Red River to the Texas State Line	311600020010	PPWS	WWAC	●	PBCR		●		
Turkey Creek	311600020060	PPWS	WWAC	●	PBCR		●		
Bitter Creek downstream of the boundary of Sections 3 & 2, T1N, R21W, IM	311600020110_00	EWS	WWAC	●	SBCR		●		
Bitter Creek upstream of the boundary of Sections 3 & 2, T1N, R21W, IM	311600020110_05, 311600020110_10	EWS	HLAC	●	SBCR		●		
Gypsum Creek	311600010020	PPWS	WWAC	●	PBCR		●		
Sandy Creek (Lebos)	311600010040	EWS	HLAC	●	SBCR		●		
Lebos Creek	311600010060_00		HLAC	●	SBCR		●		
Tributary of Lebos Creek at Sec. 2, T2N, R26W, IM	311600010065_00		HLAC	●	SBCR		●		
Prairie Dog Town Fork of the Red River from confluence of Buck Creek to 100 degree West Longitude	311600010080	EWS	WWAC	●	PBCR		●		

APPENDIX A.4
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 4, Lower Red River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Red River from the Arkansas State Line to the Kiamichi River	410100010010	PPWS	WWAC	●	PBCR		●		
Norwood Creek	410100010050	PPWS	WWAC	●	PBCR		●		
Waterhole Creek	410100010340	PPWS	WWAC	●	PBCR		●		
Buzzard Creek	410100010450		WWAC	●	PBCR		●		
Tributary of Buzzard Creek at NW 1/4, Sec. 5, T7S, R22E, IM (Millerton Trib)	410100010456_00		HLAC	●	SBCR		●		
Garland Creek	410100010460		WWAC		PBCR				
Tributary of Garland Creek at SE 1/4, Sec. 34, T6S, R21E, IM (Valiant Creek)	410100010470		HLAC	●	SBCR		●		
Little River from the Arkansas State Line to Pine Creek Dam	410200010010, 410200010200, 410210010010, 410210020010	PPWS	CWAC	●	PBCR		●	HQW	
Rock Creek	410200010220	PPWS	CWAC	●	PBCR		●		
Mountain Fork River downstream from U.S. Hwy 70 bridge	410210040010_00	PPWS	CWAC	●	PBCR		●	HQW	
Mountain Fork River upstream from U.S. Hwy 70 bridge to Broken Bow Dam	410210040010_10, 410210040050, 410210050010	PPWS	Trout	●	PBCR		●	HQW	
Upper Mountain Fork River from Dam including Broken Bow Lake to the 600 foot elevation level	410210050010, 410210050020, 410210060010_00	PPWS	CWAC	●	PBCR		●	SWS	
Egypt Creek	410210050140	PPWS	CWAC	●	PBCR		●	SWS	
Otter Creek	410210050190	PPWS	CWAC	●	PBCR		●	SWS	
Panther Creek	410210050360	PPWS	CWAC	●	PBCR		●	ORW	
Buffalo Creek	410210060020	PPWS	CWAC	●	PBCR		●	SWS	
Big Hudson	410210060030		CWAC		PBCR		●		
Mine Creek	410210060060		CWAC	●	PBCR		●		
Upper Mountain Fork River upstream from the 600 foot elevation level	410210060010_10	PPWS	CWAC	●	PBCR		●	ORW	Scenic River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Boktuklo Creek	410210060100	PPWS	CWAC	●	PBCR		●	ORW	
Blue Creek	410210060110	PPWS	CWAC	●	PBCR		●	ORW	
Big Eagle Creek	410210060160	PPWS	CWAC	●	PBCR		●	ORW	
Little Eagle Creek	410210060170	PPWS	CWAC	●	PBCR		●	ORW	
Dry Creek	410210060270		CWAC	●	PBCR		●		
Cucumber Creek	410210060210	PPWS	CWAC	●	PBCR		●	ORW	
Beech Creek	410210060320	PPWS	CWAC	●	PBCR		●	ORW	
Cow Creek	410210060350	PPWS	CWAC	●	PBCR		●	ORW	
Yanubbe Creek	410200010150	PPWS	CWAC	●	PBCR		●		
Tributary of Yanubbe Creek at NE 1/4, Sec. 29, T6S, R25E, IM	410200010155_00		HLAC	●	SBCR		●		
Mud Creek	410200010210	EWS	WWAC	●	SBCR		●		
Tributary of Mud Creek at SE 1/4, Sec. 31, T7S, R24E, IM	410200010218_00		HLAC	●	SBCR		●		
Yashau (Yashoo) Creek	410200010230	PPWS	CWAC	●	PBCR		●		
Lukfata Creek	410210070010	PPWS	CWAC	●	PBCR		●	HQW	
Glover River	410210080010	PPWS	CWAC	●	PBCR		●	HQW	
Cedar Creek	410210080120	PPWS	CWAC	●	PBCR		●	HQW	
Carter Creek	410210080210	PPWS	CWAC	●	PBCR		●	HQW	
Pine Creek	410210080270	PPWS	CWAC	●	PBCR		●	HQW	
West Fork	410210090070	PPWS	CWAC	●	PBCR		●	HQW	
Silver Creek	410210090100		CWAC	●	PBCR		●		
Bluff Creek	410210090160	PPWS	CWAC	●	PBCR		●	HQW	
East Fork	410210090010	PPWS	CWAC	●	PBCR		●	HQW	
Horse Head Creek	410210010060	PPWS	WWAC	●	PBCR		●		
Tributary of Horse Head Creek at Sec. 10, T6S, R22E, IM	410210010065_00		HLAC	●	SBCR		●		
Cypress Creek	410210010070	PPWS	CWAC	●	PBCR		●	HQW	
Little River upstream from and including Pine Creek Lake	410210020010, 410210020140, 410210020020, 410210030010	PPWS	CWAC	●	PBCR		●	HQW	
Pine Creek	410210020030	PPWS	CWAC	●	PBCR		●	HQW	
Terrapin Creek	410210020150	PPWS	CWAC	●	PBCR		●	HQW	

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Houston Creek	410210020210	PPWS	CWAC	●	PBCR		●	HQW	
Caney Creek	410210020240		CWAC	●	PBCR		●		
Cloudy Creek	410210020300	PPWS	CWAC	●	PBCR		●	HQW	
Jack Creek	410210020430	PPWS	CWAC	●	PBCR		●	HQW	
Black Fork	410210030020	PPWS	CWAC	●	PBCR		●	HQW	
Red River upstream from the Kiamichi River to the Blue River	410400010010	PPWS	WWAC	●	PBCR		●		
Kiamichi River including Hugo Lake to U.S. Hwy. 271 Bridge near Clayton	410300010010, 410300020010, 410300020020, 410300030010_00	PPWS	WWAC	●	PBCR		●		
Gates Creek	410300010020, 410300010030	PPWS	CWAC	●	PBCR		●		
Lake Raymond Gary	410300010040		WWAC	●	PBCR		●		
Negro Creek	410300010060		HLAC	●	SBCR		●		
Bird Creek	410300010100	PPWS	WWAC	●	PBCR		●		
Long Creek	410300020080	PPWS	WWAC	●	PBCR		●		
North Fork	410300020060	PPWS	WWAC	●	PBCR		●		
Frazier Creek	410300020130	PPWS	CWAC	●	PBCR		●		
Rock Creek	410300020190	PPWS	CWAC	●	PBCR		●		
Cedar Creek	410300030020	PPWS	CWAC	●	PBCR		●	HQW	
Beaver Creek	410300030200	PPWS	WWAC	●	PBCR		●		
Tenmile Creek	410300030270	PPWS	WWAC	●	PBCR		●		
Buck Creek	410300030420	PPWS	WWAC	●	PBCR		●		
Clayton Lake and Watershed	410300030760, 410300030780	PPWS	WWAC	●	PBCR		●	SWS	
Kiamichi River upstream from U.S. Hwy 271 Bridge near Clayton	410300030010_10, 410300030570, 410310010010, 410310020010	PPWS	WWAC	●	PBCR		●		
Jackfork Creek including Sardis Lake	410310010020 , 410310030020, 410310030100	PPWS	WWAC	●	PBCR		●	SWS	
Buffalo Creek	410310030030	PPWS	WWAC	●	PBCR		●	SWS	
Lake Nanih Waiya	410310010050		WWAC	●	PBCR		●		
Rock Creek	410310010170	PPWS	WWAC	●	PBCR		●		
Lake Ozzie Cobb and watershed	410300020190, 410300020220		WWAC	●	PBCR		●		NLW

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Carl Albert Lake and Watershed	410310010210, 410310010220	PPWS	WWAC	●	PBCR		●	SWS	
Talihina Lake and Watershed	410310010230	PPWS	WWAC	●	PBCR		●	SWS	
Pigeon Creek	410310020110	PPWS	CWAC	●	PBCR		●		
Horse Creek downstream from the borders of Sections 10 & 15, T7S, R17E, IM	410400010040_00	PPWS	WWAC	●	PBCR		●		
Horse Creek upstream from the borders of Sections 10 & 15, T7S, R17E, IM	410400010040_10		WWAC	●	SBCR		●		
Tributary of Horse Creek at NE 1/4, Sec. 4, T7S, R17E, IM	410400010045_00		HLAC	●	SBCR		●		
Unnamed tributary of Red River at SW SE SE Sec. 22, T7S, R17E, IM	410400010090_00		HLAC	●	SBCR		●		
Muddy Boggy Creek	410400010070, 410400050010, 410400050270, 410400060010	PPWS	WWAC	●	PBCR		●		
Tributary of Muddy Boggy Creek at NW 1/4, Sec. 12, T2S, R11E, IM	410400050495_00		HLAC	●	SBCR		●		
Lick Creek	410400010130	PPWS	WWAC	●	PBCR		●		
Clear Boggy Creek	410400020010, 410400030010, 410400030230, 410400040010	PPWS	WWAC	●	PBCR		●		
Mayhew Creek	410400020020		WWAC	●	PBCR		●		
Unnamed tributary to Mayhew Creek at sect. 7, T6S, R14E, IM (Boswell Creek)	410400020025_00		HLAC		SBCR		●		
Caney Creek	410400030020		WWAC	●	SBCR		●		
Delaware Creek	410400030240	PPWS	WWAC	●	PBCR		●		
Sandy Creek	410400030280	PPWS	WWAC	●	PBCR		●		
Tributary of Sandy Creek at SE 1/4, Sec. 14, T2S, R8E, IM (Wapanucka Creek)	410400030290		HLAC	●	SBCR		●		
Wide Springs Branch	410400030320	PPWS	WWAC	●	PBCR		●		
Bois D' Arc Creek	410400020160		WWAC		PBCR		●		
(Byrds) Mill Creek	410400040090	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
McGee Creek including McGee Creek Reservoir	410400070010, 410400070020	PPWS	WWAC	●	PBCR		●	SWS	
North Boggy Creek downstream from Atoka Reservoir	410400050410_00	PPWS	WWAC	●	PBCR		●		
Tributary of North Boggy Creek at NW1/4, Sec. 29, T1S, R12E, IM	410400050415_00		HLAC	●	SBCR		●		
North Boggy Creek upstream from and including Atoka Reservoir	410400080010, 410400080020	PPWS	WWAC	●	PBCR		●	SWS	
Sub Penitentiary Lake (Blue Stem)	410400080060	PPWS	WWAC	●	PBCR		●		
Kiowa City Lake on trib to Buck Creek	410400080200	PPWS	WWAC	●	PBCR		●		
Coal Creek	410400050540	PPWS	WWAC	●	PBCR		●		
Tributary of Brier Creek at Sec. 35, T1N, R10E, IM	410400050585_00		HLAC	●	SBCR		●		
Caney Creek	410400060020	PPWS	WWAC	●	PBCR		●		
Coon Creek	410400060030	PPWS	WWAC	●	PBCR		●		
Coalgate Reservoir and Watershed	410400060030, 410400060040, 410400060050	PPWS	WWAC	●	PBCR		●	SWS	
Caney Boggy Creek	410400060120	PPWS	WWAC	●	PBCR		●		
Sandy Creek	410400030280	PPWS	WWAC	●	PBCR		●		
Little Sandy Creek	410400060270		HLAC	●	SBCR		●		
Town Branch	410400060310_00		HLAC	●	SBCR		●		
Whitegrass Creek	410400010210	PPWS	WWAC	●	PBCR		●		
Blue River downstream from the State Hwy. 48A Bridge	410600010010, 410600010290, 410600020010	PPWS	WWAC	●	PBCR		●		
Tributary of Bokchito Creek at Sec. 22, T6S, R11E, IM	410600010095		HLAC	●	SBCR		●		
Caddo Creek	410600010140		WWAC	●	PBCR		●		
Mineral Bayou	410600010300	EWS	WWAC	●	PBCR		●		
Little Blue River	410600010340	PPWS	WWAC	●	PBCR		●		
Sandy Creek	410600010250	PPWS	WWAC	●	PBCR		●		
Blue River upstream from State Hwy. 48A Bridge to State Hwy. 7 Bridge	410600020010_10	PPWS	Trout	●	PBCR		●	HQW	

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Blue River upstream from State Hwy. 7 Bridge	410700020010_20	PPWS	CWAC	●	PBCR		●	HQW	
Red River upstream from the Blue River to Lake Texoma Dam	410700000010	PPWS	WWAC	●	PBCR		●		
Island Bayou	410700000040	EWS	WWAC	●	SBCR		●		
Sandy Creek	410700000250	PPWS	WWAC	●	PBCR		●		
Tributary of Sandy Creek at Sec. 20, T8S, R8E, IM	410700000250_00		HLAC	●	SBCR		●		

APPENDIX A.5
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 5, Canadian River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
North Canadian River from Canadian River to S.H. 99 bridge	520500010110_10, 520510000010, 520510000110_00	PPWS	WWAC	●	PBCR		●		
Deep Fork of Canadian River downstream from Arcadia Lake	520700010120, 520700020010, 520700030010, 520700040010, 520700050010, 520710010010, 520710020010	PPWS	WWAC	●	PBCR		●		
Wolf Creek downstream from Lake Henryetta	520700010130, 520700010170_00		WWAC	●	PBCR		●		
Coal Creek	520700010140	EWS	WWAC	●	SBCR		●		
Henryetta Lake and Watershed	520700010170_10, 520700010180	PPWS	WWAC	●	PBCR		●	SWS	
Moore Creek	520700010190		WWAC	●	PBCR		●		
Burgess Creek at Montezuma Creek NE 1/4, Sec. 8, T12N, R13E, IM	520700010230	EWS	WWAC	●	PBCR		●		
Cussetah (Cosseetta) Creek	520700010250		WWAC	●	PBCR		●		
Tributary of Cussetah at NE 1/4, Sec. 12, T13N, R13E, IM	520700010310_00		HLAC	●	SBCR		●		
Salt Creek downstream from Okmulgee Lake	520700020020	PPWS	WWAC	●	PBCR		●		
Dripping Springs Lake	520700020060	PPWS	WWAC	●	PBCR		●		
Okmulgee Lake and Watershed	520700020040, 520700020050, 520700020060	PPWS	WWAC	●	PBCR		●	SWS	
Adams Creek including Beggs Lake	520700020080, 520700020110	PPWS	WWAC		PBCR		●		
Flat Rock Creek	520700020090	PPWS	WWAC	●	PBCR		●		
New Beggs Lake	520700020130	PPWS	WWAC	●	PBCR		●		
Tributary of Adams Creek at NW1/4, Sec. 5, T14N, R12E, IM (West Beggs Creek)	520700020100	EWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Little Deep Fork Creek downstream from Sand Creek	520700060010, 520700060100		WWAC	●	PBCR		●		
Brown's Creek	520700060050	PPWS	WWAC		PBCR		●		
Little Deep Fork Creek upstream from Sand Creek to State Hwy. 48 Bridge	520700060130_00	PPWS	HLAC	●	SBCR		●		
Little Deep Fork Creek upstream from State Hwy. 48 Bridge	520700060130_10	PPWS	WWAC	●	PBCR		●		
Catfish Creek	520700060140	PPWS	WWAC	●	PBCR		●		
Tributary of Little Deep Fork Creek at SE 1/4, Sec. 6, T15N, R8E, IM	520700060220_00		HLAC	●	SBCR		●		
Nuyaka Creek	520700020200	PPWS	WWAC	●	PBCR		●		
Buckeye Creek	520700020270, 520700020280	PPWS	WWAC	●	PBCR		●		
Okemah Lake and Watershed	520700020280, 520700020290, 520700020300	PPWS	WWAC	●	PBCR		●	SWS	
Salt Creek	520700030100	PPWS	WWAC	●	PBCR		●		
Camp Creek downstream from Stroud Lake	520700030220	PPWS	WWAC	●	PBCR		●		
Stroud Lake and Watershed	520700030220, 520700030230, 520700030240	PPWS	WWAC	●	PBCR		●	SWS	
Gray Horse Creek	520700040030		HLAC	●	SBCR		●		
Dry Creek	520700040020	PPWS	WWAC	●	PBCR		●		
Chuckaho Creek	520700040060	PPWS	WWAC	●	PBCR		●		
West Beaver Creek	520700040170		WWAC	●	SBCR		●		
Deer Creek	520700040190	PPWS	WWAC	●	PBCR		●		
Robinson Creek	520700040180	PPWS	WWAC	●	PBCR		●		
Prague Lake	520720040025		WWAC	●	PBCR		●		
Quapaw Creek	520700040260	PPWS	WWAC	●	PBCR		●		
Sparks City Lake	520700040280	PPWS	WWAC	●	PBCR		●		
Meeker Lake and Watershed	520700040350, 520700040360, 520700040370	PPWS	WWAC	●	PBCR		●	SWS	
Bellcow Creek including Bellcow Lake	520700050020, 520700050030, 520720050025	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Chandler Lake and Watershed	520700050050, 520700050060, 520700050250	PPWS	WWAC	●	PBCR		●	SWS	
Tributary of Bellcow Creek at Sec. 6, T15N, R3E, IM	520700050260_00		HLAC	●	SBCR		●		
Kickapoo Creek	520700050090	PPWS	WWAC	●	PBCR		●		
East Captain Creek	520700050150	PPWS	WWAC	●	PBCR		●		
Bear Creek	520700050170	PPWS	WWAC	●	PBCR		●		
Smith Creek	520710010020	PPWS	HLAC	●	PBCR		●		
Coon Creek	520710010030		WWAC	●	PBCR		●		
Coffee Creek downstream from the boundaries of Sec. 22 & 23, T14N, R02W, IM	520710010090_00	PPWS	HLAC	●	PBCR		●		
Coffee Creek upstream from the boundaries of Sec. 22 & 23, T14N, R02W, IM	520710010090_10, 520710010100	PPWS	WWAC	●	PBCR		●		
Arcadia Lake and Watershed	520710020010, 520710020020, 520710020030, 520710020040, 520710020050, 520710020060, 520710020070, 520710020080, 520710020090, 520710020100, 520710020110, 520710020120, 520710020130, 520710020140, 520710020150, 520710020160	PPWS	WWAC	●	PBCR		●	SWS	
Bad Creek	520500010170	PPWS	WWAC	●	PBCR		●		
Dustin Lake	520500010152	PPWS	WWAC	●	PBCR		●		
Alabama Creek	520500010200	PPWS	WWAC	●	PBCR		●		
Weleetka Lake and Watershed	520500010210, 520500010220	PPWS	WWAC	●	PBCR		●	SWS	
Wewoka Creek downstream from the boundaries of Secs. 27 & 28, T9N, R6E, IM	520500020010, 520500020240_00	EWS	WWAC	●	PBCR		●		
Sportsman Lake	520500020220	PPWS	WWAC	●	PBCR		●		
Fish Creek	520500020030	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Wewoka Creek at SE NE SW Sec. 27, T9N, R10E, IM (Wetumka Creek)	520500020035		HLAC	●	SBCR		●		
Graves Creek	520500020060	PPWS	WWAC	●	PBCR		●		
Little Wewoka Creek	520500020090	PPWS	WWAC	●	PBCR		●		
Tributary of Wewoka Creek at Sec. 20, T8N, R8E, IM (Oakwood Cemetery Creek)	520500020280		HLAC	●	SBCR		●		
Wewoka Lake and Watershed	520500020170, 520500020180, 520500020190	PPWS	WWAC	●	PBCR		●	SWS	
Wewoka Creek upstream from the boundaries of Sec. 27 & 28, T9N, R6E, IM	520500020240_10	PPWS	HLAC	●	SBCR		●		
Tributary of Wewoka Creek at NW 1/4, Sec. 16, T9N, R5E, IM	520500020290_00		HLAC	●	SBCR		●		
Tributary of North Canadian River at Sec. 22, T10N, R11E, IM	520500		HLAC	●	SBCR		●		
Lake Wetumka	520500010270	PPWS	WWAC	●	PBCR		●		
Flat Rock Creek	520500010280_00	PPWS	WWAC	●	PBCR		●		
Sand Creek	520510000050		HLAC	●	SBCR		●		
Tributary of Sand Creek at SW 1/4, Sec. 34, T11N, R8E, IM	520510000053_00		HLAC	●	SBCR		●		
Boley Creek	520510000055		HLAC	●	SBCR		●		
Turkey Creek	520510000100	PPWS	WWAC	●	PBCR		●		
Tecumseh Lake and Watershed	520510000200, 520510000210, 520510000220	PPWS	WWAC	●	PBCR		●	SWS	
Shan Creek	520510000120		HLAC	●	SBCR		●		
Tributary of Squirrel Creek at SE 1/4 of NW 1/4 of SW 1/4 of Sec. 6, T9N, R4E, IM	520510000390_00		WWAC	●	PBCR		●		
Shawnee Twin Lakes and Watershed	520510000250, 520510000280, 520510000290, 520510000300	PPWS	WWAC	●	PBCR		●	SWS	
North Deer Creek including Wes Watkins Reservoir (N. Deer Creek Lake)	520510000310, 520510000255	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of the North Canadian River at NE 1/4, Sec. 36, T12N, R1E, IM	520510000320_00		HLAC	●	SCBR		●		
Horseshoe Lake	520510000330		WWAC		PBCR		●		
North Canadian River from State Hwy. 99 Bridge to Portland Street Bridge, Oklahoma City	520510000110, 520520000010_40	EWS	WWAC	●	PBCR		●		
Choctaw Creek	520520000030	EWS	HLAC	●	SBCR		●		
Tributary of Choctaw Creek at NW 1/4, Sec. 27, T12N, R1W, IM	520520000035_00		HLAC	●	PBCR		●		
Crutcho Creek from North Canadian River to S.E. 15th Street, Del City	520520000070_00		WWAC	●	PBCR		●		
Soldier Creek	520520000080		WWAC	●	PBCR		●		
Tributary of Soldier Creek at NW 1/4, Sec. 13, T11N, R02W, IM	520520000290		WWAC	●	SBCR		●		
Crutcho Creek upstream from S.E. 15th Street, Del City	520520000070_10, 520520000090		HLAC	●	SBCR		●		
Tributary of Crutcho Creek at SW 1/4, Sec. 16, T11N, R2W, IM	520520000190_00		WWAC	●	PBCR		●		
Cherry Creek	520520000110		HLAC	●	SBCR		●		
Crooked Oak Creek	520520000150	PPWS	WWAC	●	PBCR		●		
North Canadian River from Portland Street Bridge to Canton Lake Dam	520520000010_50, 520520000250, 520530000010	PPWS	WWAC	●	PBCR		●		
Mustang Creek	520520000240		WWAC	●	PBCR		●		
Lake Overholser	520520000260	PPWS	WWAC	●	PBCR		●		NLW
Shell Creek	520530000030	PPWS	WWAC	●	PBCR		●		
Purcell Creek	520530000040	PPWS	WWAC	●	PBCR		●		
Six Mile Creek	520530000050	PPWS	WWAC	●	PBCR		●		
Lake El Reno	520530000080		WWAC	●	PBCR		●		
Unnamed tributary of North Canadian River at Sec. 6, T13N, R10W, IM and NW SE NE 1/4 of Sec. 31, T14N, R10W, IM	520530000200_00		HLAC	●	SBCR		●		
Minnehaha Creek	520530000190	PPWS	WWAC	●	SBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Canadian River from its confluence with Little River to Buckhead Creek	520600010010, 520600020010, 520610010010	PPWS	WWAC	●	PBCR		●		
Little River	520800010010, 520800010090, 520800010130, 520800020010	PPWS	WWAC	●	PBCR		●		
Lake Holdenville and Watershed	520800010030, 520800010040	PPWS	WWAC	●	PBCR		●	SWS	
Bird Creek	520800010050		HLAC	●	SBCR		●		
Tributary of Bird Creek at NW 1/4, Sec. 6, T6N, R9E, IM	520800010150_00		WWAC	●	SBCR		●		
Salt Creek	520800030010	PPWS	WWAC	●	PBCR		●		
Tributary to Salt Creek at NW SW Sec. 33, T8N R5E, IM (Maud Creek)	520800030040_00		WWAC	●	PBCR		●		
Unnamed tributary of Little River at Sec. 33, T8N, R6E, IM	520800010200_00		HLAC	●	SBCR		●		
Lake Thunderbird and Watershed	520810000010, 520810000020, 520810000030, 520810000040, 520810000050, 520810000060, 520810000070, 520810000080, 520810000090, 520810000100, 520810000110, 520810000120, 520810000130, 520810000140, 520810000150, 520810000170, 520810000175, 520810000180	PPWS	WWAC	●	PBCR		●	SWS	NLW
Stanley Draper Lake	520810000130	PPWS	WWAC	●	PBCR		●		
Tributary of Canadian River at SE 1/4, Sec.18, T5N, R7E, IM	520600010120_00		HLAC	●	SBCR		●		
Jumper Creek including Lake Konawa	520600010080, 520600010090, 520600010100	EWS	WWAC	●	PBCR		●		
Canadian Sandy Creek	520600030010	PPWS	WWAC	●	PBCR		●		
Little Sandy Creek	520600030020	PPWS	WWAC	●	PBCR		●		
Spring Brook Creek	520600030030	PPWS	WWAC	●	PBCR		●		
Tributary of Cat Creek at Sec. 7, T6N, R4E, IM	520600020165_00		HLAC	●	SBCR		●		
Pond Creek	520600020190	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Canadian River upstream from its confluence with Buckhead Creek to the US Hwy. 81 bridge	520610010010, 520610020010, 520610020150_00		WWAC	●	PBCR		●		
Buckhead Creek	520610010020	PPWS	WWAC	●	PBCR		●		
Tributary of Canadian River at NE 1/4, Sec. 35, T6N, R1W, IM	520610		HLAC	●	SBCR		●		
Walnut Creek	520610030010		WWAC	●	PBCR		●		
Purcell Lake	520610030040		WWAC	●	PBCR		●		
Bridge Creek at Sec. 22, T9N, R5W, IM	520610030100		WWAC	●	PBCR		●		
Pond Creek (return flow, City of Newcastle)	520610010210	PPWS	WWAC	●	PBCR		●		
Tributary of Pond Creek at NE 1/4, Sec. 14, T9N, R4W, IM (Tim's Creek)	520610010215		HLAC	●	SBCR		●		
Cow Creek	520610010230	PPWS	WWAC	●	PBCR		●		
Dry Creek	520610020070	PPWS	WWAC	●	PBCR		●		
Store Creek	520610020080	PPWS	WWAC	●	PBCR		●		
West Creek	520610020090		HLAC	●	SBCR		●		
Buggy Creek	520610020120	EWS	WWAC	●	PBCR		●		
Tributary of Canadian River at SW 1/4, Sec. 3, T10N, R7W, IM	520610020155_00		HLAC	●	SBCR		●		
Canadian River upstream from US Hwy. 81 bridge	520610020150_10, 520620010010, 520620020010, 520620030010, 520620040010, 520620050010	EWS	WWAC	●	PBCR		●		
Deer Creek	520620060010	PPWS	WWAC	●	PBCR		●		
Little Deep Creek	520620060040		HLAC	●	PBCR		●		
Little Deer Creek	520620060070	PPWS	WWAC	●	PBCR		●		
Horse Creek	520620060080	PPWS	WWAC	●	PBCR		●		
American Horse Lake	520620010100		WWAC	●	PBCR		●		
Tributary of Canadian River at SE 1/4, Sec. 4, T15N, R14W, IM (West Fay Creek)	520620010160		HLAC	●	SBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Squirrel Creek	520620020080	PPWS	WWAC	●	PBCR		●		
Lone Creek	520620030020	PPWS	WWAC	●	PBCR		●		
Trail Creek	520620020090	EWS	HLAC	●	SBCR		●		
Gyp Creek	520620030100	PPWS	WWAC	●	PBCR		●		
Red Creek	520620030110	PPWS	WWAC	●	PBCR		●		
Turkey Creek	520620030130	PPWS	WWAC	●	PBCR		●		
South Turkey Creek	520620030150	PPWS	WWAC	●	PBCR		●		
Hackberry Creek	520620040050	PPWS	WWAC	●	PBCR		●		
Trib to Mosquito Creek downstream from Sec. 31, T19N, R24W, IM	520620050110	PPWS	WWAC	●	PBCR		●		
Trib to Mosquito Creek upstream from Sec. 6, T18N, R24W, IM	520620050120	EWS	HLAC	●	SBCR		●		
Red Bluff Creek	520620050140	PPWS	WWAC	●	PBCR		●		
Commission Creek	520620050160	PPWS	WWAC	●	PBCR				
Lake Lloyd Vincent	520620050200		WWAC	●	PBCR		●		

APPENDIX A.6
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 6, Upper Arkansas River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Arkansas River upstream from and including Keystone Reservoir to Kaw Dam	620900010020, 620900010090, 621200010020, 621200010040, 621200010050, 621200020010	PPWS	WWAC	●	PBCR		●		
Cimarron River upstream from Keystone Reservoir to the Kansas State Line	620900010170, 620900020010, 620900030010, 620910010010, 620910020010, 620920010010, 620920020010, 620920030010	EWS	WWAC	●	PBCR		●		
Buckeye Creek	620900010220		WWAC		PBCR		●		
Tiger Creek	620900010250		WWAC	●	PBCR		●		
Euchee Creek downstream from Sec. 5, T17N, R6E, IM	620900010290_00	EWS	WWAC	●	PBCR		●		
Euchee Creek upstream from Sec. 5, T17N, R6E, IM	620900010290_10	EWS	WWAC	●	SBCR		●		
Cottonwood Creek	620900010310	EWS	WWAC	●	PBCR		●		
Wildhorse Creek	620900010320	EWS	WWAC	●	PBCR		●		
Skull Creek	620900010360	EWS	WWAC	●	PBCR		●		
Salt Creek	620900020020	PPWS	WWAC	●	PBCR		●		
Council Creek	620900020050	PPWS	WWAC	●	PBCR		●		
Big Creek downstream from Cushing Lake	620900020100	PPWS	WWAC	●	PBCR		●		
Cushing Lake and Watershed	620900020110, 620900020120, 620900020130	PPWS	WWAC	●	PBCR		●	SWS	
Stillwater Creek downstream from Little Stillwater Creek	620900040040	PPWS	WWAC	●	PBCR		●		
Little Stillwater Creek	620900040050	PPWS	WWAC	●	PBCR		●		
Stillwater Creek from Little Stillwater Creek to Sec. 32, T19N, R3E, IM	620900040070_00	EWS	HLAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Stillwater Creek upstream from Sec. 33, T19N, R3E to the Carl Blackwell Lake Dam	620900040070_10, 620900040270_00	EWS	HLAC	●	SBCR		●		
Brush Creek	620900040090		HLAC	●	SBCR		●		
Boomer Creek below Boomer Lake	620900040140, 620900040180	PPWS	WWAC	●	PBCR		●		
Boomer Lake and Watershed	620900040180, 620900040190	PPWS	WWAC	●	PBCR		●	SWS	
Lake McMurtry and Watershed	620900040220, 620900040230, 620900040240	PPWS	WWAC	●	PBCR		●	SWS	
Carl Blackwell Lake and Watershed	620900040270_10, 620900040280, 620900040290, 620900040300	PPWS	WWAC	●	PBCR		●	SWS	
Sand Creek	620900030040		HLAC	●	SBCR		●		
Dugout Creek	620900030080	PPWS	WWAC	●	PBCR		●		
Fitzgerald Creek	620900030150	PPWS	WWAC	●	PBCR		●		
Langston Lake and Watershed	620900030170, 620900030180	PPWS	WWAC	●	PBCR		●	SWS	
Beaver Creek	620900030230	PPWS	WWAC	●	PBCR		●		
Skeleton Creek downstream from Bitter Creek	620910030010, 620910030170_00	PPWS	WWAC	●	PBCR		●		
Wolf Creek	620910030020	PPWS	WWAC	●	PBCR		●		
Otter Creek	620910030040	PPWS	WWAC	●	PBCR		●		
Horse Creek	620910030110	PPWS	WWAC	●	PBCR		●		
Bitter Creek	620910030180	PPWS	WWAC	●	PBCR		●		
Skeleton Creek from Bitter Creek to Boggy Creek	620910030170_10,	EWS	HLAC	●	SBCR		●		
Hackberry Creek	620910030220	EWS	WWAC	●	SBCR		●		
Tributary of Skeleton Creek at Sec. 27, T22N, R5W, IM (Fairmont Creek)	620910030230_00		HLAC	●	SBCR		●		
Skeleton Creek upstream from Boggy Creek	620900030240_00	PPWS	WWAC	●	PBCR		●		
Tributary of Boggy Creek at NW 1/4, Sec. 14, T22N, R6W, IM	621010		HLAC	●	SBCR		●		
Cottonwood Creek	620910040010	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Guthrie Lake and Watershed	620910040050, 620910040060	PPWS	WWAC	●	PBCR		●	SWS	
Liberty Lake and Watershed	620910040070, 620910040080	PPWS	WWAC	●	PBCR		●	SWS	
Chisholm Creek	620910040100	PPWS	WWAC	●	PBCR		●		
Deer Creek	620910040120	PPWS	WWAC	●	PBCR		●		
Bluff Creek	620910040140	PPWS	WWAC	●	PBCR		●		
Hefner Lake	620910040200_00	PPWS	WWAC	●	PBCR		●		
Kingfisher Creek	620910050010		WWAC	●	PBCR		●		
Uncle John Creek	620910050030		WWAC	●	PBCR		●		
Winter Camp Creek	620910050080	PPWS	WWAC	●	PBCR		●		
Tributary of Winter Camp Creek at NE 1/4, Sec. 19, T15N, R8W, IM	620910050085_00	EWS	HLAC	●	SBCR		●		
Otter Creek	620910050130	PPWS	WWAC	●	PBCR		●		
Turkey Creek	620910060010	PPWS	WWAC	●	PBCR		●		
Unnamed tributary of Turkey Creek at Sec. 23, T19N, R7W, IM (Narragansett Creek)	620910060025_00		HLAC	●	SBCR		●		
Dry Salt Creek	620910060140		HLAC	●	SBCR		●		
Tributary of Dry Salt Creek at NW 1/4, Sec. 15, T21N, R8W, IM	620910060145_00		HLAC	●	SBCR		●		
Cooper Creek	620910020040	PPWS	WWAC	●	PBCR		●		
Salt Creek downstream from the Blaine-Kingfisher County Line	620910020100_00	EWS	WWAC	●	SBCR		●		
Salt Creek upstream from the Blaine-Kingfisher County Line	620910020100_10	EWS	HLAC	●	SBCR		●		
Spring Creek	620910020110	PPWS	WWAC	●	PBCR		●		
Tributary of Spring Creek at Sec. 19, T19N, R10W, IM	620910020115_00		HLAC	●	SBCR		●		
Tributary of Salt Creek at Sec. 11, T17N, R11W, IM (Hitchcock Creek)	620910020120_00		HLAC	●	SBCR		●		
Hoyle Creek	620910020210	PPWS	WWAC	●	PBCR		●		
Deep Creek	620910020250	PPWS	WWAC	●	PBCR		●		
Elm Creek	620910020270	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Indian Creek	620910020310	PPWS	WWAC	●	PBCR		●		
Sand Creek	620920010020	PPWS	WWAC	●	PBCR		●		
Gypsum Creek	620920010030	PPWS	WWAC	●	PBCR		●		
Cottonwood Creek	620920010080	PPWS	WWAC	●	PBCR		●		
Eagle Chief Creek	620920040010	PPWS	WWAC	●	PBCR		●		
Tributary of Eagle Chief Creek at Sec. 36, T24N, R12W, IM (Big Timber Lake Creek)	620920040030		HLAC	●	SBCR		●		
Lake Creek	620920040100		WWAC	●	PBCR		●		
Cheyenne Creek	620920010100	PPWS	WWAC	●	PBCR		●		
Barney Creek	620920010110	PPWS	WWAC	●	PBCR		●		
Griever Creek	620920010130	PPWS	WWAC	●	PBCR		●		
East Griever Creek	620920010140	PPWS	WWAC	●	PBCR		●		
Main Creek	620920010180	PPWS	WWAC	●	PBCR		●		
Ewers Creek	620920010190	PPWS	WWAC	●	PBCR		●		
Dog Creek	620920020020	EWS	WWAC	●	PBCR		●		
Sand Creek	620920020030	PPWS	WWAC	●	PBCR		●		
Chimney Creek	620920020040	PPWS	WWAC	●	PBCR		●		
White Horse Creek	620920020050	PPWS	WWAC	●	PBCR		●		
Doe Creek	620920020060	PPWS	WWAC	●	PBCR		●		
Long Creek	620920020080	PPWS	WWAC	●	PBCR		●		
Red Horse Creek	620920020110	PPWS	WWAC	●	PBCR		●		
Anderson Creek	620920020120	PPWS	WWAC	●	PBCR		●		
Traders Creek	620920020170	PPWS	WWAC	●	PBCR		●		
Moccasin Creek	620920020180	PPWS	WWAC	●	PBCR		●		
Sand Creek	620920020200	PPWS	WWAC	●	PBCR		●		
Buffalo Creek	620920050010	PPWS	WWAC	●	PBCR		●		
Sleeping Bear Creek	620920050030	PPWS	WWAC	●	PBCR		●		
Sand Creek	620920050050	PPWS	WWAC	●	PBCR		●		
Day Creek	620920030030	PPWS	WWAC	●	PBCR		●		
Keno Creek	620920030040	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Cimarron River from Kansas State Line near Englewood, Kansas to the Kansas State Line near Forgan, Oklahoma	620930000010	PPWS	WWAC	●	PBCR		●		
Snake Creek	620930000020	PPWS	WWAC	●	PBCR		●		
Redoubt Creek	620930000030	PPWS	WWAC	●	PBCR		●		
Horse Creek	620930000060	EWS	WWAC	●	SBCR		●		
Crooked Creek	620930000100	PPWS	WWAC	●	PBCR		●		
Cottonwood Creek	620930000110	PPWS	WWAC	●	PBCR		●		
Bug Creek	621200010320	PPWS	WWAC	●	PBCR		●		
Ranch Creek including Cleveland Lake	621200010260, 621200010270	PPWS	WWAC	●	PBCR		●		
Black Bear Creek	621200030010, 621200030260	PPWS	WWAC	●	PBCR		●		
Camp Creek including Lone Chimney Lake	621200030040, 621200030060	PPWS	WWAC	●	PBCR		●		
Pawnee Lake and Watershed	621200030080, 621200030090, 621200030100, 621200030110, 621200030120	PPWS	WWAC	●	PBCR		●	SWS	
Oak Creek	621200030190	PPWS	WWAC	●	PBCR		●		
Tributary of Oak Creek at SE 1/4, Sec. 27, T21N, R3E, IM	621200030195_00		WWAC	●	PBCR		●		
Mule Creek	621200030230	PPWS	WWAC	●	PBCR		●		
Cow Creek downstream from Lake Perry	621200030270,	PPWS	WWAC	●	PBCR		●		
Lake Perry and Watershed	621200030340, 621200030350	PPWS	WWAC	●	PBCR		●	SWS	
West Warren Creek	621200030390	PPWS	WWAC	●	PBCR		●		
Salt Creek	621200040010	PPWS	WWAC	●	PBCR		●		
Fairfax City Lake and Watershed	621200040030, 621200040040	PPWS	WWAC	●	PBCR		●	SWS	
Little Chief Creek	621200040070	PPWS	WWAC	●	PBCR		●		
Phillips Lake (Shidler) and Watershed	621200040170, 621200040180	PPWS	WWAC	●	PBCR		●	SWS	
Tributary of Salt Creek at SW 1/4, Sec. 34, T27N, R6E, IM	621200040270_00		HLAC	●	SBCR		●		
Elm Creek	621200040210	PPWS	WWAC	●	PBCR		●		
Doga Creek	621200020020	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Greasy Creek including Sooner Lake	621200020110, 621200020130		WWAC	●	PBCR		●		
Red Rock Creek	621200050010		WWAC	●	PBCR		●		
Tributary of Red Rock Creek at NW 1/4, Sec. 7, T23N, R2E, IM (Marland Creek)	621200050070_00		HLAC	●	SBCR		●		
Salt Fork of the Arkansas River	621000010010, 621000020010, 621010010010, 621010010160, 621010010220	PPWS	WWAC	●	PBCR		●		
Great Salt Plains Reservoir	621010010010, 621010010050, 621010010060, 621010010100, 621010010020_00		WWAC		PBCR		●		NLW
Bois d'Arc Creek	621000030010	PPWS	WWAC	●	PBCR		●		
Spring Creek downstream from Sec. 3, T27N, R2E, IM	621000030070, 621000030090_00	EWS	WWAC	●	PBCR		●		
Spring Creek upstream from Sec. 10, T27N, R2E, IM to Sec. 27, T28N, R2E, IM	621000030110_00	EWS	HLAC	●	SBCR		●		
Spring Creek upstream from Sec. 34, T28N, R2E, IM	621000030110_10	EWS	WWAC	●	PBCR		●		
Chikaskia River	621100000010, 621100000190	PPWS	WWAC	●	PBCR		●		
Duck Creek	621100000030	PPWS	WWAC	●	PBCR		●		
Stink Creek	621100000050	PPWS	WWAC	●	PBCR		●		
Bitter Creek	621100000100	PPWS	WWAC	●	PBCR		●		
Doe Creek	621100	PPWS	WWAC	●	PBCR		●		
Bluff Creek	621100000230	PPWS	WWAC	●	PBCR		●		
Deer Creek	621000040010	PPWS	WWAC	●	PBCR		●		
Pond Creek	621000050010	PPWS	WWAC	●	PBCR		●		
Polecat Creek	621000050030	PPWS	WWAC	●	PBCR		●		
Bullwacker Creek	621000050080	EWS	HLAC	●	SBCR		●		
Osage Creek	621000050100	PPWS	WWAC	●	PBCR		●		
Crooked Creek	621000060010	PPWS	WWAC	●	PBCR		●		
Sand Creek	621000060030	PPWS	WWAC	●	PBCR		●		
Wagon Creek	621000020200	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Tributary of Wagon Creek at Sec. 10, T25N, R9W, IM	621000020210_00		HLAC	●	SBCR		●		
Clay Creek	621010010090	EWS	WWAC	●	PBCR		●		
East Clay Creek	621010010110	PPWS	WWAC	●	PBCR		●		
West Clay Creek	621010010130	PPWS	WWAC	●	PBCR		●		
Sandy Creek	621010020010	PPWS	WWAC	●	PBCR		●		
Little Sandy Creek	621010020030	PPWS	WWAC	●	PBCR		●		
Medicine Lodge River	621010030010	PPWS	WWAC	●	PBCR		●		
Driftwood Creek	621010030030	PPWS	WWAC	●	PBCR		●		
Turkey Creek	621010010230	PPWS	WWAC	●	PBCR		●		
Greenleaf Creek	621010010250	PPWS	WWAC	●	PBCR		●		
Yellowstone Creek	621010010270	PPWS	WWAC	●	PBCR		●		
Hoover Ditch	621200		HLAC	●	SBCR		●		
Lake Ponca and Watershed	621200020190, 621200020200, 621200020210, 621200020220	PPWS	WWAC	●	PBCR		●	SWS	
Arkansas River upstream from Kaw Dam to Kansas State Line including Kaw Lake	62121000020, 621210000030, 62121000040	PPWS	WWAC	●	PBCR		●		
Beaver Creek	621210000050	PPWS	WWAC	●	PBCR		●		

APPENDIX A.7
Designated Beneficial Uses of Surface Waters
Water Quality Management Basin 7, Panhandle Region

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
North Canadian River upstream from and including Canton Lake (Crystal Beach Lake) to Hwy 50	720500010010, 720500010020, 720500010140_00	PPWS	WWAC	●	PBCR		●		
Cheyenne Creek	720500010040	PPWS	WWAC	●	PBCR		●		
Deep Creek	720500010060	PPWS	WWAC	●	PBCR		●		
Bent Creek	720500010070	PPWS	WWAC	●	PBCR		●		
Camp Creek	720500010080	PPWS	WWAC	●	PBCR		●		
Kizer Creek	720500010090	PPWS	WWAC	●	PBCR		●		
Cottonwood Creek	720500010110	PPWS	WWAC	●	PBCR		●		
Persimmon Creek	720500010150	PPWS	WWAC	●	PBCR		●		
North Persimmon Creek	720500010170	PPWS	WWAC	●	PBCR		●		
South Persimmon Creek	720500010180	PPWS	WWAC	●	PBCR		●		
Indian Creek	720500010200	PPWS	WWAC	●	PBCR		●		
North Canadian (Beaver) River upstream from Hwy. 50 to Optima Lake	720500010140_10, 720500010140_20, 720500020010, 720500020140, 720500020290, 720500020450		WWAC	●	PBCR		●		
Wolf Creek	720500020030, 720500030010	PPWS	WWAC	●	PBCR		●	SWS	
Fort Supply Reservoir	720500030020	PPWS	WWAC	●	PBCR		●	SWS	NLW
Sixteenmile Creek	720500030050	PPWS	WWAC	●	PBCR		●	SWS	
Little Wolf Creek	720500030070	PPWS	WWAC	●	PBCR		●	SWS	
Buzzard Creek	720500030080	PPWS	WWAC	●	PBCR		●	SWS	
Twentyfive mile Creek	720500030090	PPWS	WWAC	●	PBCR		●	SWS	
Willow Creek	720500030100	PPWS	WWAC	●	PBCR		●	SWS	
Rock Creek	720500030110	PPWS	WWAC	●	PBCR		●	SWS	
Otter Creek	720500020050	PPWS	WWAC	●	PBCR		●		
Clear Creek	720500020070	PPWS	WWAC	●	PBCR		●		
Kiowa Creek	720500020130	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Camp Creek	720500020150	PPWS	WWAC	●	PBCR		●		
Sand Creek	720500020160	PPWS	WWAC	●	PBCR		●		
Coon Creek	720500020190	PPWS	WWAC	●	PBCR		●		
Mexico Creek	720500020210	PPWS	WWAC	●	PBCR		●		
Duck Pond Creek	720500020250	PPWS	WWAC	●	PBCR		●		
Camp Creek	720500020260	PPWS	WWAC	●	PBCR		●		
Clear Creek	720500020300	PPWS	WWAC	●	PBCR		●		
Cottonwood Creek	720500020310	PPWS	WWAC	●	PBCR		●		
South Fork of Clear Creek	720500020330	PPWS	WWAC	●	PBCR		●		
North Fork of Clear Creek	720500020340	PPWS	WWAC	●	PBCR		●		
Home Creek	720500020380	PPWS	WWAC	●	PBCR		●		
Sixmile Creek	720500020390	PPWS	WWAC	●	PBCR		●		
Willow Creek	720500020420	PPWS	WWAC	●	PBCR		●		
Sharp Creek	720500020430	PPWS	WWAC	●	PBCR		●		
Jackson Creek	720500020460	PPWS	WWAC	●	PBCR		●		
Bull Creek	720500020480	PPWS	WWAC	●	PBCR		●		
Fulton Creek	720500020510	PPWS	WWAC	●	PBCR		●		
Sand Creek	720500020520	PPWS	WWAC	●	PBCR		●		
Palo Duro Creek	720500020500	PPWS	WWAC	●	PBCR		●		
Chiquita Creek	720500020530	PPWS	WWAC	●	PBCR		●		
Hackberry Creek	720500020560	PPWS	WWAC	●	PBCR		●		
North Canadian (Beaver) River upstream from Optima Lake to Texas State Line	720510010020, 720510000100, 720510000190_00	PPWS	WWAC	●	PBCR		●		
Coldwater Creek	720510000040	PPWS	WWAC	●	PBCR		●		
Pony Creek	720510000090	PPWS	WWAC	●	PBCR		●		
Goff Creek	720510000110	PPWS	WWAC	●	PBCR		●		
Dry Sand Draw	720510000150								(4)
Tepee Creek	720510000200	PPWS	WWAC	●	PBCR		●		
Sand Creek	720510000220	PPWS	WWAC	●	PBCR		●		

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
North Canadian (Beaver) River upstream from Texas State Line to New Mexico State Line	720510000190_10, 720510000275	PPWS	WWAC	●	PBCR		●	HQW	
Cienequilla Creek from mouth to New Mexico State Line	720510000240	PPWS	WWAC	●	PBCR		●		
Cimarron River upstream from the Colorado State Line to the New Mexico State Line	720900000010, 720900000180	PPWS	WWAC	●	PBCR		●	HQW	
South Picket House Draw	720900000050	PPWS	WWAC	●	PBCR		●		
Cold Springs Creek	720900000100	PPWS	WWAC	●	PBCR		●		
Gallinas Cañon	720900000130	PPWS	WWAC	●	PBCR		●		
Water Canyon	720900000190	PPWS	WWAC	●	PBCR		●		
South Carrizo Creek	720900000200	PPWS	WWAC	●	PBCR		●		
Lake Carl Etling	720900000240	PPWS	WWAC	●	PBCR		●		NLW
Cottonwood Canyon Creek	720900000210	PPWS	WWAC	●	PBCR		●		
Tesesquite Creek	720900000260	PPWS	WWAC	●	PBCR		●		
North Carrizo Creek	720900000280	PPWS	WWAC	●	PBCR		●		
Carrizozo Creek	720900000320	PPWS	WWAC	●	PBCR		●		

APPENDIX B. AREAS WITH WATERS OF RECREATIONAL AND/OR ECOLOGICAL SIGNIFICANCE

The following tables list National and State parks, National forests, wildlife areas, wildlife management areas, wildlife refuges (Table 1) and areas which contain federally listed threatened or endangered species pursuant to the Federal Endangered Species Act (Table 2).

TABLE 1 - National and State Parks, National Forests, Wildlife Areas, Wildlife Management Areas, and Wildlife Refuges

PROTECTED AREA / WATER	WQM Segment
Adair State Park	121700
Alabaster Caverns State Park	620920
Altus-Lugert Wildlife Management Area	311510
Arrowhead State Park	220600
Atoka Wildlife Management Area	410400
Beaver River Wildlife Management Area	720500
Beaver State Park	720500
Beavers Bend Resort State Park	410200
Black Kettle National Grasslands	310840
Black Kettle Wildlife Management Area	310840
Black Mesa State Park/Preserve	720900
Blue River Wildlife Management Area	310800
Boggy Depot State Park	410400
Boiling Springs State Park	720500
Boswell State Park	410400
Broken Bow Wildlife Management Area	410210
Brushy Lake State Park	220200
Candy Creek Wildlife Management Area	121300
Canton Wildlife Management Area	720500
Cherokee State Parks I, II, III	121600
Cherokee Landing State Park	121700
Cherokee Wildlife Management Area	120400
Chickasaw National Recreation Area	310800
Chouteau Wildlife Management Area	121500
Cimarron Bluff Wildlife Management Area	620920
Cimarron Hills Wildlife Management Area	620920
Clayton Lake State Park	410300
Cookson Hills Wildlife Management Area	220200
Cooper Wildlife Management Area	720500
Copan Wildlife Management Area	121400

PROTECTED AREA / WATER	WQM Segment
Cross Timbers Wildlife Management Area	311100
Crowder Lake State Park	310830
Deep Fork National Wildlife Refuge	520700
Deep Fork Wildlife Management Area	520700
Disney/Little Blue State Parks	121600
Dripping Springs State Park (Okmulgee)	520700
Drummond Flats Wildlife Management Area	620910
Ellis Co. Wildlife Management Area	520600
Eufaula Wildlife Management Area	520500 520700 220600
Five Civilized Tribes State Park	121600
Fobb Bottom Wildlife Management Area	311100
Fort Cobb State Park	310830
Fort Cobb Wildlife Management Area	310830
Fort Gibson Wildlife Management Area	121600
Fort Supply Wildlife Management Area	720500
Foss State Park	310830
Gary Sherrer Wildlife Management Area	410310
Grady County Wildlife Management Area	310810
Great Plains State Park	621010
Great Salt Plains State Park	621010
Greenleaf State Park	120400
(Camp) Gruber Training Center	120400
Hackberry Flat Wildlife Management Area	311310
Heavener Runestone State Park	220100
Heyburn Wildlife Management Area	120400
Hickory Creek Wildlife Management Area	311100
Honobia Creek Wildlife Management Area	410210
Hugo Lake State Park	410300
Hugo Wildlife Management Area	410300
Hulah Wildlife Management Area	121400
James M. Collins Wildlife Management Area	220600
John Dahl Wildlife Management Area	621200
Kaw Wildlife Management Area	621210
Keystone State Park	620900
Keystone Wildlife Management Area	620900 621200
Lake Eucha State Park	121600

PROTECTED AREA / WATER	WQM Segment
Lake Eufaula State Park	520700
Lake Murray State Park	311100
Lake Texoma State Park	310000
Lake Wister State Park	220100
Lexington Wildlife Management Area	520600
Little River National Wildlife Refuge	410200
Little River State Park	520810
Little Sahara State Park	620920
Love Valley Wildlife Management Area	311100
McCurtain Co. Wilderness Area	410210
McGee Creek State Park	410400
McGee Creek Wildlife Management Area	410400
Mountain Park Wildlife Management Area	311500
Natural Falls State Park	121700
North Grand Lake State Park	121600
Okmulgee State Park	520700
Okmulgee Wildlife Management Area	520700
Oologah Wildlife Management Area	121510
Optima National Wildlife Refuge	720510
Optima Wildlife Management Area	720510
Osage Hills State Park	121400
Osage-Western Wall Rock Creek Wildlife Management Area	121400
Ouachita National Forest	410210 410310 220100
Ouachita Wildlife Management Area	220100
Ozark Plateau Wildlife Management Area	220200
Ozark Plateau National Wildlife Refuge	220200
Packsaddle Wildlife Management Area	520620
Pine Creek Wildlife Management Area	410201
Pushmataha Wildlife Management Area	410300
Quartz Mountain State Resort Park	311510
Raymond Gary State Park	410300
Red Rock Canyon State Park	310830
Redbud Valley Conservancy Area	121300
Rita Blanca National Grasslands	720510
Robbers Cave State Park	220100
Robbers Cave Wildlife Management Area	220100

PROTECTED AREA / WATER	WQM Segment
Robert S. Kerr State Wildlife Management Area	220200
Roman Nose State Park	620910
Sandy Sanders Wildlife Management Area	311800
Sequoyah National Wildlife Refuge	220200
Sequoyah State Park/Western Hills Resort Park	121600
Sheppard Point Recreational Area	120400
Shorb Wildlife Management Area	720500
Skiatook Wildlife Management Area	121300
Snowdale State Park	121600
Spavinaw State Park	121600
Spavinaw Hills Wildlife Management Area	121600
Sparrow Hawk Wildlife Management Area	121700
Spiro Mound State Park	220200
Stinchcomb Wildlife Refuge	520520
Stringtown Wildlife Management Area	410400
Sutton Wilderness Area	520810
Talimena State Park	410310
Tenkiller State Park	121700
Tenkiller Wildlife Management Area	121700
Texoma/Washita Arm Wildlife Management Area	310800
Three Rivers Wildlife Management Area	410210
Tishomingo National Wildlife Refuge	310800
Tishomingo Wildlife Management Unit	310800
Turkey Creek Recreational Area	410210
Wahshashe State Park	121400
Walnut Creek State Park	621200
Washita National Wildlife Refuge	310840
Waurika Wildlife Management Area	311210
Webbers Falls Wildlife Management Area	120400
Wichita Mountains National Wildlife Refuge	311310 311500
Yourman Wildlife Management Area	220600

Table 2 - Areas Which contain federally listed Threatened (T) or Endangered (E) Species pursuant to the Federal Endangered Species Act (ESA)

PROTECTED AREA / WATER	WQM SEGMENT	FEDERALLY-LISTED SPECIES under the ESA
Black Fork Creek in Pushmataha County from its junction with Little River, upstream to Oklahoma Highway 144 crossing~~.~~	410210	Leopard Darter (T)
Canadian River, main channel from the state line in Ellis and Roger Mills Counties, downstream to the Indian Nation Turnpike bridge west, of Eufaula Reservoir	220600 520600 520610 520620	Arkansas River Shiner (T), including critical habitat
Cimarron River, main channel west of I-35 crossing in Logan County, upstream to the state line and including the portion in northern Beaver and Harper counties	620910 620920	Arkansas River Shiner (T), including critical habitat
East Fork of Glover River, main channel in McCurtain County from its junction with the West Fork of Glover River, upstream to 4 air miles north-northeast of the community of Bethel in Section 5, T 2 S, R 24 EIM	410210	Leopard Darter (T), including critical habitat
Glover River, main channel in McCurtain County from Oklahoma Highway 3 crossing, upstream to the junction of the East Fork and West Fork of Glover River	410210	Leopard Darter (T), including critical habitat
Kiamichi River above Hugo Reservoir	410300	Scaleshell Mussel (E), Ouachita Rock Pocketbook mussel (E)
Little River, main channel in Pushmataha County from the mouth ~~to~~ of Cloudy Creek, upstream to the Pushmataha County Line	410210	Leopard Darter (T), including critical habitat; Ouachita Rock Pocketbook mussel (E); Rabbitsfoot mussel (T)
Little River below Pine Creek Reservoir	410200 410210	Ouachita Rock Pocketbook mussel (E); Rabbitsfoot mussel (T), including critical habitat; Winged Mapleleaf mussel (E)
Mountain Fork Creek (River), main channel in McCurtain County from mouth of Boktuklo Creek 6 air miles south-southwest of Smithville, upstream to the Oklahoma-Arkansas State line	410210	Leopard Darter (T), including critical habitat; Scaleshell Mussel (E)
Neosho (Grand) River above Miami	121600	Neosho Madtom (T), Neosho Mucket mussel (E)
Salt Plains National Wildlife Refuge	621010	Whooping Crane (E), including critical habitat

PROTECTED AREA / WATER	WQM SEGMENT	FEDERALLY-LISTED SPECIES under the ESA
West Fork of Glover River, main channel in-McCurtain County from its junction with the East Fork of Glover River, upstream to the community of Battiest	410210	Leopard Darter (T), including critical habitat
Verdigris River below Oologah Reservoir, downstream to Highway 266, Rogers County	121500	Rabbitsfoot mussel (T), including critical habitat
Illinois River, from Oklahoma-Arkansas State line, downstream to Barren Fork	121700	Neosho Mucket mussel (E), including critical habitat; Rabbitsfoot mussel (T)
Elk River, from Oklahoma-Arkansas State line, west to Buffalo Creek	121600	Neosho Mucket mussel (E), including critical habitat

APPENDIX C. SUITABILITY OF WATER FOR LIVESTOCK AND IRRIGATION USES [REVOKED]

APPENDIX D. CLASSIFICATIONS FOR GROUNDWATER IN OKLAHOMA

(a) **Vulnerability Levels of Hydrogeologic Basins.** Identification of vulnerability levels of hydrogeologic basins shall be as set forth in Table 1 of this Appendix. The boundaries of such hydrogeologic basins shall be as defined in the Oklahoma Water Resources Board publication number 99-1 entitled "Statewide Groundwater Vulnerability Map of Oklahoma".

(b) **Designations of "Nutrient-Vulnerable Groundwater".** Additional designations of certain hydrogeologic basins of groundwater as "nutrient-vulnerable groundwater" shall be as set forth in Table 2 of this Appendix. The boundaries of such "nutrient-vulnerable groundwater" hydrogeologic basins shall be as defined in the Oklahoma Water Resources Board publication number 99-1 entitled "Statewide Groundwater Vulnerability Map of Oklahoma".

Table 1. Identification of Vulnerability Levels of Hydrogeologic Basins

NAME OF HYDROGEOLOGIC BASIN		VULNERABILITY LEVEL
Alluvium and Terrace Deposits	of the North Fork of the Red River	Very High
	of the Salt Fork of the Arkansas River	Very High
	of the Red River	Very High
	of the Washita River	Very High
	Enid Isolated Terrace	Very High
	Canadian River	Very High
	of the Arkansas River	Very High
	of the Cimarron River	Very High
	of the North Canadian River	Very High
	Gerty Sand	High
	all other alluvium and terrace deposits	High-Very High
Bedrock	Boone	High
	Arbuckle-Simpson	High
	Blaine	High
	Elk City	High
	Cedar Hills	Moderate
	Antlers	Moderate
	Arbuckle-Timbered Hills	Moderate
	Arkansas Novaculite	Moderate
	Rush Springs	Moderate
	Vamoosa-Ada	Moderate
	Central Oklahoma	Moderate
	Ouachita Mountains	Low
	Ogallala	Low
	Cretaceous	Low
	Permian	Low
	Pennsylvanian	Low
	Mesozoic	Very Low
	Tishomingo Granite	Very Low
	Washita Igneous	Very Low

The vulnerability level may vary within each hydrogeologic basin, depending on site-specific hydrogeologic factors.

Table 2. Designations of Nutrient-Vulnerable Groundwater

NAME OF HYDROGEOLOGIC BASIN		VULNERABILITY LEVEL
Alluvium and Terrace Deposits	of the North Fork of the Red River	Very High
	of the Salt Fork of the Arkansas River	Very High
	of the Red River	Very High
	of the Washita River	Very High
	Enid Isolated Terrace	Very High
	Canadian River	Very High
	of the Arkansas River	Very High
	of the Cimarron River	Very High
	of the North Canadian River	Very High
	Gerty Sand	High
	all other alluvium and terrace deposits	High-Very High
Bedrock	Boone	High
	Arbuckle-Simpson	High
	Blaine	High
	Elk City	High

APPENDIX E. REQUIREMENTS FOR DEVELOPMENT OF SITE-SPECIFIC CRITERIA FOR CERTAIN PARAMETERS

A. General Applicability to Metals

Numerical criteria for metals to protect aquatic life are referenced in OAC 785:45-5-12(f)(6)(G) and Table 2 of Appendix G of this Chapter. For permitting purposes, such criteria for total recoverable Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, and Zinc may be translated into dissolved metals criteria using the conversion factors referenced in OAC 785:45-5-12(f)(6)(H) and Table 3 of Appendix G. Criteria for parameters other than metals are also located in Table 2 of Appendix G.

An additional alternative which may be utilized for permitting purposes is to determine site-specific criteria from either the total recoverable or the dissolved criteria. However, federal regulations found at 40 CFR 122.45(C) require that NPDES permit limits must express metals concentrations as total recoverable, not dissolved. Therefore, if dissolved criteria for metals are implemented, they must be translated to site-specific total metals criteria to be used in the issuance of permit limits consistent with OAC 785:46.

The permitting authority may issue a total recoverable permit limit if statewide total recoverable criteria are appropriate in the permitting authority's view, and/or satisfactory in the permittee's view. If permit limits obtained using total recoverable criteria are unsatisfactory to the permittee, the permittee may attempt to obtain different permit limits by developing site-specific criteria in accordance with the provisions of this Appendix.

Implementation of site-specific criteria may reduce the margin of safety afforded by implementation of criteria per 785:45-5-12(f)(6)(G) and Table 2 of Appendix G. Therefore, it is important that background concentration (which reduces the assimilation capacity of receiving water) be accounted for when site-specific criteria are implemented. Determination of background concentration requires a minimum of twelve samples collected over twelve months.

In order to develop permissible site-specific criteria, this Appendix must be followed to the satisfaction of the permitting authority and the OWRB. A work plan explaining sampling and analysis procedures and quality assurance/quality control must be approved by the OWRB prior to commencing the site-specific study. Upon completion, results must be submitted to OWRB and the permitting authority. Additional technical guidance is available in OWRB technical report 2001-2, “Guidance for Developing Site Specific Criteria for Metals and_through Appendices J and L of the "Water Quality Standards Handbook", EPA publication no. 823-B-94-005a (August 1995). Permittees are strongly encouraged to evaluate both the discharge and receiving water using clean sampling techniques.

Upon OWRB approval, site-specific criteria shall be promulgated as part of this Appendix following the next subsequent permanent rulemaking to amend OAC 785:45. These site-specific criteria supersede other numeric criteria promulgated elsewhere in this chapter if it is shown to the satisfaction of the Board that properties of the discharge or the circumstances surrounding the development of the site-specific criteria have not significantly changed since the promulgation of those site-specific criteria. Such criteria and the conditions around which they were derived, including but not limited to local environmental factors and effluent characteristics, shall be re-evaluated by the permit holder with each subsequent discharge permit renewal application or major modification request to determine if any significant changes have affected the propriety of the site-specific criteria.

B. Site-Specific Criteria Applicability for NPDES Permit Activities

Oklahoma's site-specific criteria, except as otherwise specified, apply where the maximum concentration on the chronic regulatory mixing zone boundary occurs under critical conditions for receiving streams where $Q^*>0.1823$ and on the acute regulatory mixing zone boundary for streams where $Q^*\leq 0.1823$. Critical conditions include regulatory effluent and receiving stream flows. OAC 785:46-5-2(C) requires that effluent flow, Q_e, be the highest monthly averaged discharge if sufficient data is available or the design flow otherwise. When chronic criteria implementation is appropriate, OAC 785:45-5-4 requires that the receiving stream flow, Q_u, be the larger of 7Q2 or 1 cfs. One cfs shall be used if the 7Q2 cannot be determined. The discharger shall be required to determine the 7Q2 per OAC 785:46-1-6 prior to the next permit cycle at which time the permit limits may be revised using the newly calculated Q_u (785:46-1-6(d)).

The maximum concentration on the mixing zone boundary may be simulated by mixing effluent and receiving water. Percent effluent in receiving water, PE, depends upon the dilution capacity of the stream and shall not exceed 100%. Dilution capacity, for streams, is represented as $Q^*= Q_e/Q_u$.

The following formulas shall be used to determine PE for receiving streams:
For streams with large dilution capacities (Q^* < or equal to 0.1823), PE equals ($194Q^*$) divided by ($1 + Q^*$). PE for Q^*< or equal to 0.1823 shall not be less than 10%.

For streams with intermediate dilution capacities ($0.1823 < Q^* < 0.3333$), PE equals (100) divided by ($6.17 - 15.51Q^*$).

For streams with small dilution capacities (Q^* > or equal to 0.3333), PE equals 100%.

Site-specific criteria in Oklahoma lakes are also based on the maximum concentration on the mixing zone boundary. The following formulas shall be used to determine PE for lakes:

PE equals 4.96D, D > or equal to 3 feet where D is pipe diameter.

PE equals $23.8\sqrt{W}$, W > or equal to 3 feet where W is canal width.

As with streams, PE is always less than or equal to 100% for lakes.

If PE is calculated to be less than 10%, then effluent water effect ratios shall use PE = 10%.

“Waterbody-specific” criteria, such as segment-specific metals, may not have limitations on it’s applicability. Rather, it may be used a substitute for other applicable statewide criteria for the entire waterbody.

Site-specific criteria are dependent, in part, on specific properties of the effluent that influence the bioavailability and toxicity of metals. Substantial changes in the quality or quantity of the effluent may affect the resulting site-specific criterion. Therefore, if the existing permit contains requirements for toxicity reduction evaluations (TREs) or pollution prevention efforts, a site-specific criterion should not be developed until after these efforts have been completed. A new site-specific criteria study would likely have to be performed after those requirements are met because the characteristics of the effluent may significantly change (e.g., hardness, pH, TDS). In cases where the quality or quantity of an effluent changes, the burden rests on the permittee

to demonstrate that the effluent characteristics are not significantly altered to a degree that would affect the validity of the outcomes of the original site-specific criteria study. A site-specific criterion may need to be re-evaluated periodically to reflect changes in the system that may alter the characteristics of either the receiving water or effluent.

C. Site-Specific Criteria Applicability for Activities Not Related to NPDES Permits

In certain circumstances, statewide numeric criteria for parameters other than metals may be replaced by segment-specific criteria for specific parameters applicable to just one waterbody. These criteria will be applicable to any point in the waterbody. These criteria must be shown to be protective of native aquatic life through procedures similar to those used in the WER procedures detailed here and in OWRB technical report 2001-2, “Guidance for Developing Site Specific Criteria for Metals”.

Development of segment-specific criteria for minerals should follow the guidance contained in OWRB technical report TRWQ2001-2 (“Guidance For Developing Site-Specific Minerals Criteria“). Certain cases may require additional data or justification, but this document should provide sufficient basic guidance for the development of alternative criteria. Development of site-specific or segment-specific criteria for parameters for other than metals or minerals and lacking specific guidance documents will require extensive coordination with technical staff from OWRB and the permitting authority.

D. Sampling Procedures

General guidance for field sampling can be found in Appendix B of OWRB technical guidance document 2001-2, “Guidance for Developing Site Specific Criteria for Metals”. The permittee shall collect both receiving water and effluent, and mix them together to obtain PE. Ambient water collections shall be representative of low stream flow events and collected at a location unaffected by the discharge being permitted. Twenty-four (24) hour composite effluent samples representative of normal operation shall be collected at the outfall such that any periodic toxic discharges are captured and average effluent conditions are represented. Outfalls may be combined proportional to flow if in close proximity. Clean sampling techniques shall be used where possible and samples shall be analyzed by an Oklahoma certified laboratory utilizing generally accepted methods. Dilution water must be made in accordance with EPA's acute biomonitoring manual entitled "Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms", EPA publication no. 600/4-90-027 (1991). The pH, hardness, conductivity and alkalinity must be similar to that of the receiving water.

Site-specific criteria development for lakes should employ sampling procedures detailed in OWRB guidance document for BUMP Standard Operating Procedures. Deviation from these prescribed techniques must be justified to OWRB and the permitting authority prior to initiation of the sampling. Excursions from these techniques that occur as a result of on-site conditions must be reported to OWRB and the permitting authority as soon as possible. Implications of these deviations on the data quality and their appropriateness to the outcomes of the study must be reviewed and agreed upon by OWRB and the permitting authority prior to their use in the derivation of any criteria.

For systems lacking NPDES permitted dischargers, sampling procedures for determining background concentration detailed in the OWRB technical guidance 2001-2 shall be sufficient for characterizing local conditions.

E. Site-Specific Criteria Development Options for Metals:

Prior to the initiation of any work toward development of a site-specific criterion, interested parties must coordinate with OWRB technical staff. Such coordination will require, at a minimum, a workplan addressing project goals, collection and testing methods, quality assurance measures, and output schedules. This workplan will need to be reviewed and approved by OWRB and the permitting authority prior to initiation of any work.

Three options are available if the permittee decides to develop site-specific metals criteria for permitting purposes instead of utilizing the total recoverable criteria referenced in 785:45-5-12(f)(6)(G) and Table 2 of Appendix G.

1. Option 1: Water Effects Ratio (WER)

The permittee may obtain a site-specific water effects ratio (WER) to translate a state wide total criterion to a site-specific total criterion if the existing permit does not contain requirements for toxicity reduction evaluations or implementation of pollution prevention efforts. Toxicity tests using both laboratory dilution water and PE water must be performed. PE water is obtained by first determining the amount of water required for the toxicity test (e.g. 1L). Since PE = $100V_e/(V_e + V_r)$, where V_e and V_r are volumes of effluent and receiving water required for the toxicity test, respectively, then V_e = PE/100 (L). If PE = 25%, then V_e = 0.25L. Given that $V_e + V_r$ = 1 (L) in this example, V_r = 1 - PE/100, or 0.75L.

Toxicity tests using two different species are required. Acute 48-hour static renewal definitive toxicity tests shall be performed by the permittee in accordance with the EPA guidance for acute testing identified above. LC_{50} tests shall be used to determine WER's for both acute and chronic criteria. Toxicity tests require adding metal to both PE and dilution water. It shall not be acceptable to estimate metal concentrations by measuring the amount added. Total recoverable concentrations must be used to obtain LC50's for both test species for PE and laboratory water in Option 1.

Multiple WER's must be performed. At a minimum, three tests in three different seasons must be performed for two test species. WER is computed as $LC_{50dilution}/LC_{50PE}$. A geometric mean of the WER's is the final water effect ratio, FWER. A minimum of four WER's must be used in the computation of FWER. An explanation of any WER's obtained but not used in computation of FWER must be provided to the permitting authority and OWRB. The total criterion specified in Table 2 of Appendix G is divided by FWER to obtain a site-specific total criterion. Background concentration must be determined to use with the site-specific criterion to develop permit limits.

2. Option 2: Dissolved to Total Fraction

Dissolved and total recoverable concentrations must be obtained to determine a dissolved to total fraction. Samples must be taken from the effluent, receiving water and PE water. The dissolved to total fraction must be successfully computed a minimum of ten times.

The dissolved to total fraction is defined as $f_i = C_{Di}/C_{Ti}$, where C_{Di} is the dissolved concentration in the ith PE sample, and C_{Ti} is the total recoverable concentration. The dissolved fraction for the site shall be determined as the geometric mean for the n samples.

$$\therefore f = \exp\left[\sum_{i=1}^{n} [\ln(f_i)]/n \right]$$

To develop a site-specific criterion from the dissolved fraction alone, divide the dissolved criterion determined from Table 3 of Appendix G by f. The result is a site-specific total recoverable criterion.

3. Option 3: Combining f and FWER

The most definitive method of developing a site-specific criterion is to modify a dissolved criterion to account for both the fraction of the concentration biologically available and the difference between the toxicity of the metal in the laboratory dilution water and in PE water. In order to perform option 3, WER's must be obtained using dissolved concentrations. This accounts for differences between the toxicity of the dissolved metal in laboratory dilution water and dissolved metal in PE water.

A translator, T, is obtained as the product of f and dissolved FWER. T is divided into the dissolved criterion determined from Table 3 of Appendix G to obtain a site-specific total recoverable criterion.

F. Site-Specific Criteria for Metals Which Have Been Developed for Particular Waterbodies

Subsequent to the initial promulgation of this Appendix, there have been cases in which interested persons have developed site-specific criteria for particular discharges or other circumstances in accordance with this Appendix. Such site-specific criteria are set forth below. These site-specific criteria shall be interpreted according to the following:

C_{ast} = acute statewide total criterion
C_{cst} = chronic statewide total criterion
C_{asd} = acute statewide dissolved criterion
C_{csd} = chronic statewide dissolved criterion
S_{ast} = acute site-specific total criterion
S_{cst} = chronic site-specific total criterion
$FWER_t$ = final total water effects ratio
$FWER_d$ = final dissolved water effect ratio
f = dissolved to total fraction

Acute site-specific criteria are appropriate for large streams and chronic site-specific criteria are appropriate for small and medium size streams.

Options Allowed In Appendix E:

<u>Option 1</u>

$$S_{ast} = C_{ast}/FWER_t$$
$$S_{cst} = C_{cst}/FWER_t$$

Option 2

$S_{ast} = C_{csd}/f$

$S_{cst} = C_{csd}/f$

Option 3

$S_{ast} = C_{csd}/(fxFWER_d)$

$S_{cst} = C_{csd}/(fxFWER_d)$

1. City of Blackwell Discharge to Chikaskia River: Cadmium

A site-specific criteria modification study has been satisfactorily completed for cadmium for the City of Blackwell.

$FWER_t = 0.0989$
$FWER_d = 0.2905$
$f = 0.18$

The results of the study allow any of the four following criteria to be utilized.

C_{cst} = 0.51 µg/L	Statewide criterion
S_{cst} = 5.1 µg/L	Option 1
S_{cst} = 2.45 µg/L	Option 2
S_{cst} = 8.45 µg/L	Option 3

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

2. AES Shady Point Discharge to Poteau River: Copper

A site-specific criteria modification study has been satisfactorily completed for copper for AES Shady Point.

$FWER_t = 0.0876$
$FWER_d = 0.1306$
$f = 0.5936$

The results of the study allow any of the four following criteria to be utilized.

C_{cst} = 9.50 µg/L	Statewide criterion
S_{cst} = 65 µg/L	Option 1
S_{cst} = 15.3 µg/L	Option 2
S_{cst} = 74 µg/L	Option 3

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

3. City of Idabel Discharge to Mud Creek

A. Lead

A site-specific criteria modification study has been satisfactorily completed for lead for the City of Idabel.

$FWER_t$ = 2.5912
$FWER_d$ = 0.2914
f = 0.7157

The results of the study allow any of the four following criteria to be utilized.

C_{cst} = 2.3492 µg/L	Statewide criterion
S_{cst} = 0.9066 µg/L	Option 1
S_{cst} = 2.7104 µg/L	Option 2
S_{cst} = 9.3036 µg/L	Option 3

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

B. Nickel

A site-specific criteria modification study has been satisfactorily completed for nickel for the City of Idabel.

$FWER_t$ = 1.1244
$FWER_d$ = 0.9735
f = 0.5798

The results of the study allow any of the four following criteria to be utilized.

C_{cst} = 46.82 µg/L	Statewide criterion
S_{cst} = 41.6 µg/L	Option 1
S_{cst} = 80.50 µg/L	Option 2
S_{cst} = 82.69 µg/L	Option 3

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

C. Zinc

A site-specific criteria modification study has been satisfactorily completed for zinc for the City of Idabel.

$FWER_t$ = 0.6714
$FWER_d$ = 0.7178
f = 0.6213

The results of the study allow any of the four following criteria to be utilized.

C_{ast} = 107.52 µg/L	Statewide criterion
S_{ast} = 160.14 µg/L	Option 1
S_{ast} = 169.24 µg/L	Option 2
S_{ast} = 235.78 µg/L	Option 3

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

4. Oklahoma Gas & Electric Mustang Generating Station Discharge to North Canadian River at NE 1/4 of NE 1/4 of SE 1/4 of Section 36, T 12 N, R 5 WIM, Canadian County, Oklahoma: Copper

A site-specific criteria modification study has been satisfactorily completed for copper for the Oklahoma Gas & Electric Mustang Generating Station discharge to the North Canadian River.

$FWER_t = 0.053$
$FWER_d = 0.224$
$f = 0.368$ (0.37)

The results of the study allow any of the four following criteria to be utilized. All criteria are calculated at an in-stream hardness of 334 mg/L.

C_{cst} = 35.9 µg/L	Statewide criterion
S_{cst} = 677 µg/L	Option 1
S_{cst} = 94.0 µg/L	Option 2
S_{cst} = 416.0 µg/L	Option 3 (Recommended in OG&E study)
C_{ast} = 59.8 µg/L	Statewide criterion
S_{ast} = 1128 µg/L	Option 1
S_{ast} = 156.0 µg/L	Option 2
S_{ast} = 692.0 µg/L	Option 3 (Recommended in OG&E study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

5. City of Poteau Discharge to Poteau River at SE 1/4 of NW 1/4 of Section 30, T 7 N, R 26 EIM, LeFlore County, Oklahoma

A. Copper

A site-specific criteria modification study has been satisfactorily completed for copper for the City of Poteau discharge to the Poteau River.

$FWER_t = 0.1850$
$FWER_d = 0.1765$
$f = 0.2969$

The results of the study allow any of the four following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L.

C_{cst} = 4.02 µg/L	Statewide criterion
S_{cst} = 21.73 µg/L	Option 1
S_{cst} = 13.0 µg/L	Option 2
S_{cst} = 73.66 µg/L	Option 3 (Recommended in Poteau study)
C_{ast} = 5.35 µg/L	Statewide criterion

S_{ast} = 28.92 µg/L Option 1
S_{ast} = 17.31 µg/L Option 2
S_{ast} = 98.09 µg/L Option 3 (Recommended in Poteau study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

B. Zinc

A site-specific criteria modification study has been satisfactorily completed for zinc for the City of Poteau discharge to the Poteau River.

$FWER_t$ = 0.4040
$FWER_d$ = 0.4276

The results of the study allow any of the four following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L. However, option 1 was deemed sufficient to provide relief from a zinc limit in the discharge permit.

C_{ast} = 37.95 µg/L Statewide criterion
S_{ast} = 93.95 µg/L Option 1 (Recommended in Poteau study)

C. Cadmium

A site-specific criteria modification study has been satisfactorily completed for cadmium for the City of Poteau discharge to the Poteau River. **[Effective as state water quality criteria only; not effective for Clean Water Act programs.]**

$FWER_t$ = 0.2427
$FWER_d$ = 0.2400

The results of the study allow any of the following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L.

C_{cst} = 0.39 µg/L Statewide criterion
S_{cst} = 1.61 µg/L Option 1
S_{cst} = 0.38 µg/L Option 2
S_{cst} = 1.58 µg/L Option 3 (Recommended in Poteau study)

C_{ast} = 7.30 µg/L Statewide criterion
S_{ast} = 30.08 µg/L Option 1
S_{ast} = 7.31 µg/L Option 2
S_{ast} = 30.46 µg/L Option 3 (Recommended in Poteau study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

D. Silver
A site-specific criteria modification study has been satisfactorily completed for silver for the City of Poteau discharge to the Poteau River. **[Effective as state water quality criteria only; not effective for Clean Water Act programs.]**

$FWER_t = 0.2075$
$FWER_d = 0.2908$

The results of the study allow any of the following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L.

Statewide chronic criteria are available for this parameter.

C_{ast} = 0.39 µg/L	Statewide criterion
S_{ast} = 1.88 µg/L	Option 1
S_{ast} = 0.94 µg/L	Option 2
S_{ast} = 3.24 µg/L	Option 3 (Recommended in Poteau study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

E. Lead
A site-specific criteria modification study has been satisfactorily completed for lead for the City of Poteau discharge to the Poteau River. **[Effective as state water quality criteria only; not effective for Clean Water Act programs.]**

$FWER_t = 0.1782$
$FWER_d = 0.1828$

The results of the study allow any of the following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L.

C_{cst} = 0.57 µg/L	Statewide criterion
S_{cst} = 3.20 µg/L	Option 1
S_{cst} = 0.59 µg/L	Option 2
S_{cst} = 3.25 µg/L	Option 3 (Recommended in Poteau study)

C_{ast} = 14.52 µg/L	Statewide criterion
S_{ast} = 81.48 µg/L	Option 1
S_{ast} = 15.15 µg/L	Option 2
S_{ast} = 82.88 µg/L	Option 3 (Recommended in Poteau study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

6. City of Heavener Discharge to Morris Creek at SE 1/4 of NW 1/4 of Section 30, T 7 N, R 26 EIM, LeFlore County, Oklahoma: Copper

A site-specific criteria modification study has been satisfactorily completed for copper for the City of Heavener discharge to Morris Creek.

$FWER_t$ = 0.1294
$FWER_d$ = 0.1216
f = 0.8595

The results of the study allow any of the four following criteria to be utilized. All criteria are calculated at an in-stream hardness of 25.75 mg/L.

C_{cst} = 4.02 µg/L	Statewide criterion
S_{cst} = 31.07 µg/L	Option 1
S_{cst} = 4.68 µg/L	Option 2
S_{cst} = 38.50 µg/L	Option 3 (Recommended in Morris Ck. study)

C_{ast} = 5.35 µg/L	Statewide criterion
S_{ast} = 41.34 µg/L	Option 1
S_{ast} = 6.22 µg/L	Option 2
S_{ast} = 51.19 µg/L	Option 3 (Recommended in Morris Ck. study)

The discharger may choose the above criterion it wishes to use for discharge permit calculations.

7. City of Broken Bow to Unnamed Tributary of Yanubbe Creek at SE 1/4 of SE 1/4 of SE 1/4 of Section 18, T 6 S, R 24 EIM, McCurtain County, Oklahoma (Latitude 34° 01' 37.165" North, Longitude 94° 43' 22.270" West)

A. Copper

A site-specific criteria modification study has been satisfactorily completed for copper for the City of Broken Bow Public Works Authority discharge to Unnamed Tributary of Yanubbe Creek. All criteria are calculated at an in-stream hardness of 34.9 mg/L.

$FWER_t$ = 0.0995
$FWER_d$ = 0.1253
f = 0.6544

The results of the study allow any of the four following criteria to be utilized

C_{cst} = 5.20 µg/L	Statewide criterion
S_{cst} = 52.28 µg/L	Option 1
S_{cst} = 7.628 µg/L	Option 2
S_{cst} = 60.87 µg/L	Option 3

C_{ast} = 7.12 µg/L	Statewide criterion
S_{ast} = 71.58 µg/L	Option 1
S_{ast} = 10.45 µg/L	Option 2
S_{ast} = 83.34 µg/L	Option 3

B. Zinc

A site-specific criteria modification study has been satisfactorily completed for zinc for the City of Broken Bow Public Works Authority discharge to Unnamed Tributary of Yanubbe Creek. All criteria are calculated at an in-stream hardness of 34.9 mg/L.

$FWER_t = 0.6312$
$FWER_d = 0.7502$
$f = 0.7343$

$C_{ast} = 49.11$ µg/L	Statewide criterion
$S_{ast} = 77.77$ µg/L	Option 1
$S_{ast} = 65.32$ µg/L	Option 2
$S_{ast} = 86.87$ µg/L	Option 3

G. Site-Specific Criteria for Parameters Other Than Metals

The purpose of site-specific criteria investigations may not necessarily be intended to prevent toxicity as a result of the substance of concern. Various substances may produce various types of adverse impacts in the environment. For example, minerals may produce a toxic response due to ionic imbalance while nutrients may produce various impacts depending upon algal response to various conditions within the system. Examples of such systems include those where there may be nitrogen, phosphorus or light limitations. Resulting site-specific criteria may involve seasonal, spatial or other limitations as well as specific numeric limitations.

"Waterbody-specific" criteria, such as certain nutrients in waters designated SWS or SWS-R, or segment-specific metals, may not have limitations on its applicability. Rather, it may be used a substitute for other applicable statewide criteria.

Development of site-specific criteria for minerals should follow the guidance contained in OWRB technical report TRWQ2001-2 ("Guidance For Developing Site-Specific Minerals Criteria"). Certain cases may require additional data or justification, but this document should provide sufficient basic guidance for the development of site-specific criteria.

Development of site-specific criteria for parameters other than metals or minerals and lacking specific guidance documents will require extensive coordination with technical staff from OWRB and the permitting authority. Such coordination will require, at a minimum, a workplan addressing project goals, collection and testing methods, quality assurance measures and output schedules. This workplan will need to be reviewed and approved by OWRB and the permitting authority prior to initiation of any work.

Those instances in which site-specific phosphorus or nitrogen criteria may be promulgated pursuant to OAC 785:45-5-10(7) titled "Chlorophyll-a numerical criterion for certain waters" will be limited to those waterbodies that have been shown to be impaired by nutrients and a numeric nutrient criterion has been determined to be the best way to affect reductions in the target nutrient. Such a demonstration will follow procedures outlined in OAC 785:46-15-10. Criteria may be derived from the result of "Clean Lake Studies" or other site-specific investigations performed by an agency of competent authority or a designee.

In cases where toxicity may be a concern due to the parameter in question, toxicity testing using two different species is required. Such testing should comply with the procedures detailed in OAC 252:690 and guidance found in OWRB technical report TRWQ2002-1 *(Guidance Document for the Development of Site-Specific Water Quality Criteria for Metals*). Exceptions to or deviations from these protocols should be brought to the attention of the OWRB and permitting authority prior to completion of the testing and thoroughly detailed in the final report.

H. Site-Specific Criteria for Nutrients Which Have Been Developed for Particular Waterbodies
(reserved)

I. Site-Specific Criteria for Other Parameters Which Have Been Developed for Particular Waterbodies

1. **American Electric Power discharge to a tributary of Nine Mile Creek and Nine Mile Creek upstream of the confluence with East Cache Creek at Section 4, T 1 S, R 11 WIM, Comanche County.**

   A site-specific mineral study has been satisfactorily completed on these waterbodies indicating that the actual agricultural uses of the waterbody are capable of tolerating more mineral input than currently allowed by the default values in Appendix F for segment 311300. The following criteria are allowed for the protection of the actual agricultural usage of the water.

	Total Dissolved Solids	Sulfate	Chloride
Yearly mean standard (mg/L)	1680	338	499
Sample standard (mg/L)	2100	423	624

APPENDIX F. STATISTICAL VALUES OF THE HISTORICAL DATA FOR MINERAL CONSTITUENTS OF WATER QUALITY (BEGINNING OCTOBER 1976 ENDING SEPTEMBER 1983, EXCEPT AS INDICATED)

The numbers in the "Segment" column on the far left of this Appendix refer to "WQM Segment" numbers which are described in the Introduction to Appendix A of this Chapter. Wherever a segment appears that is identified with an eight-digit segment number, such segment is a sub-watershed of the preceding six-digit WQM Segment. Details of the locations of these sub-watersheds are available from the Department of Environmental Quality 2002 Integrated Water Quality Assessment Report on file at the office of the Oklahoma Water Resources Board. The numbers in the "Monitoring Station" column refer to the abbreviated numbers of the monitoring stations administered by the U.S. Geological Survey ("USGS"); to change an abbreviated number to the complete number used by the USGS, add the prefix digits "07" and add suffix digits of zeroes in order to produce an eight-digit number. In some cases, "Ambient Trend Monitoring" ("ATM") stations were used from streams where no USGS gauge was located. Numbering of these ATM stations complied with the USGS numbering format. The ATM station data have been considered for all stations, including USGS gauges, where available and have been incorporated into the results for that segment where appropriate. The letters "AVG" in the "Monitoring Station" column indicate an average wherever there are multiple monitoring stations in a WQM Segment; the numbers to the right of the "AVG" represent the averages of the historical data for the various monitoring stations.

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
120400	1945	492	703	116	153	726	998
	1946	304	393	91	115		
	AVG	**398**	**548**	**104**	**134**	726	998
120410	16557	629	810	140	172	1419	1782
120420	1644	743	971	143	172	1608	2033
	1645	694	878	150	183	1482	1827
	(1)					1398	1743
	AVG	**719**	**925**	**147**	**178**	**1496**	**1868**
121300	1765	89	123	30	41	334	396
	17805	93	119	60	76		
	1784	85	109	60	78		
	(1)					440	544
	AVG	**89**	**117**	**50**	**65**	**387**	**470**
121400	1730	40	55	27	35	264	313
	1742	123	172	32	45	457	590
	1755	131	177	42	56	457	576
	(1)					461	585

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
	AVG	**98**	**135**	**34**	**45**	**410**	**516**
121500	1714	38	51	86	129	367	512
	1760	74	102	69	93		
	17862	62	81	64	80	332	399
	1788	56	72	67	90		
	1790	70	96	58	76		
	AVG	**60**	**80**	**69**	**94**	**350**	**456**
121510	1710	65	88	88	135	326	411
12151001 (4)		194	287	745	963	1232	1572
121600	1850	29	41	126	183	442	547
	1880	19	27	62	82	283	324
	1905	15	20	43	57	184	205
	19122	18	24	29	48		
	1915	29	43	53	73	176	195
	19155	23	34	60	88	241	287
	1935	16	20	43	50	189	207
	AVG	**21**	**30**	**59**	**83**	**253**	**294**
121610	19156	100	148	121	162		
121700	1955	17	23	20	27	184	230
	1960	19	26	23	32	171	219
	1965	17	25	26	37	158	184
	1970	13	19	22	31	133	156
	1980	37	56	35	57	160	195
	AVG	21	30	25	37	161	197
220100	2485	13	19	21	29	104	125
	24944	41	67	48	69	171	228
	AVG	**27**	**43**	**35**	**49**	**138**	**177**
220200	2464	225	295	71	87	534	644
	(1)					490	596
	AVG	**225**	**295**	**71**	**87**	**512**	**620**
220300	2450	83	96	52	60	320	357
220600	2315	346	456	244	335	1062	1328
	2316	63	109	70	112		
	2317	281	371	232	317		
	(1)					612	777

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
	AVG	**230**	**312**	**182**	**255**	**837**	**1053**
310800	3310	134	184	521	702	1187	1524
310810	3281	109	142	788	983		
	3285	144	198	721	933	3008	4409
	AVG	**127**	**170**	**755**	**958**	**3008**	**4409**
31081001 (4) 31081002 (4) 31081003 (4) 31081004 (4) 31081005 (4)		106	161	154	248		
310820							
31082001 (4) 31082002 (4)		137	200	720	997		
310830	3244	92	131	1196	1461	2010	2396
	3255	137	176	1190	1463	2237	2733
	3265	247	387	1004	1287	2457	3157
	AVG	**159**	**231**	**1130**	**1404**	**2235**	**2762**
310840	3242	115	173	1281	1654	2368	3042
311100	3155	1797	2464	866	1161	4746	6290
	3157	310	451	150	237		
	3159	328	447	172	253		
	3160	1594	2175	751	1013	3956	5154
	AVG	**1007**	**1384**	**485**	**666**	**4351**	**5722**
31110003 (4) 31110004 (4)		239	352	206	298		
311200	31272	2112	2834	948	1231		
	3135	142	195	221	307	904	1137

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
	3136	395	561	266	376		
	AVG	**883**	**1197**	**478**	**638**	**904**	**1137**
31120000 (4)		92	130	248	358		
311210	3134	69	93	344	478		
31121000 (4)		92	130	248	358		
311300	3090	65	92	135	173		
	3110	81	102	82	102	472	560
	AVG	**73**	**97**	**109**	**138**	**472**	**560**
311300 trib to Nine Mile Ck[2]		231	262	128	145	809	879
311300 Nine Mile Ck[2]		232	279	124	150	830	950
311500	3045	243	353	781	1040	1777	2284
311310	3112	16	23	21	27	126	151
	311505	357	547	136	209		
	AVG	**187**	**285**	**79**	**118**	**126**	**151**
311510	3015	2328	3924	1413	1869		
	3030	5612	8948	1308	1703		
	(1)					2334	2815
	AVG	**3970**	**6436**	**1361**	**1786**	**2334**	**2815**
311600	3005	645	963	1720	2114		
	30111	690	856	1451	1755	3331	3969
	AVG	**668**	**910**	**1586**	**1935**	**3331**	**3969**
311800	3035	9875	13569	1939	2401		
	(1)					37568	58087
	AVG	**9875**	**13569**	**1939**	**2401**	**37568**	**58087**
410100	33682	285	397	200	277	913	1220
410200	3385	42	64	20	28	125	165
410210	3371	10	14	17	22	62	81
	3379	12	17	19	25	69	89
	AVG	**11**	**16**	**18**	**24**	**66**	**85**
410300	3362	16	24	21	28	1174	2023
410310	3357	7	10	13	18	31	38
410400	3340	38	53	44	65	235	283

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
	3350	106	149	59	90	427	537
	(1)					114	172
	AVG	**72**	**101**	**52**	**78**	**259**	**331**
410400 Red River Near Hugo[3]	3355	388	503	345	478	1080	1405
410600	3325	34	55	31	44	312	357
410700							
520500	2420	349	451	168	217	1030	1284
	2422	319	409	141	189		
	AVG	**334**	**430**	**155**	**203**	**1030**	**1284**
520510	2417	305	395	148	192		
520520	2399	219	261	260	317		
	24155	451	620	188	239	1196	1523
	AVG	**335**	**441**	**224**	**278**	**1196**	**1523**
520530	2390	270	318	369	469	1156	1240
	2395	267	337	475	640	1300	1552
	(1)					1145	1399
	AVG	**269**	**328**	**422**	**555**	**1200**	**1397**
520600	2294	259	342	309	414		
52060001 (4) 52060002 (4)		127	197	112	185		
520610	2292	255	353	433	570	1114	1410
520620	2285	336	488	568	724	1458	1849
52062002 (4) 52062003 (4) 52062006 (4)		38	49	1612	1918		
520700	2424	211	276	127	175		
	2425	219	291	117	165		
	2435	222	292	98	134	721	926
	AVG	**217**	**286**	**114**	**158**	**721**	**926**
520710	24235	253	342	159	207	841	1085

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
520800	2300	104	130	50	73	486	581
	2310	765	1065	75	115	1538	2063
	(1)					1551	2083
	AVG	**435**	**598**	**63**	**94**	**1192**	**1576**
520810	(1)					265	294
620900	1610	4233	5650	519	650	7941	10357
62090001 (4)		89	123	73	100		
62090003 (4)		135	220	376	657		
620910	1584	12076	17506	1670	2171	18760	26005
	1591	7464	10162	729	921	14809	19580
	15972	174	218	255	304	901	1072
	15975	182	233	242	301	879	1091
	1600	4813	6431	633	799		
	1605	597	864	548	744	1834	2391
	AVG	**4218**	**5902**	**680**	**873**	**7437**	**10028**
62091003 (4)		135	220	376	657		
620920	15795	8436	12508	1141	1740	16954	25129
	15796	423	604	2058	2616	3752	4781
	AVG	**4430**	**6556**	**1600**	**2178**	**10353**	**14955**
62092004 (4)		158	230	1673	2446		
62092005 (4)		349	467	2394	3129		
621000	1505	5658	8174	706	918	10577	14972
	15226	1089	1473	283	360		
	AVG	**3374**	**4824**	**495**	**639**	**10577**	**14972**

SEGMENT	MONITORING STATION	CHLORIDE (mg/L)		SULFATE (mg/L)		TOTAL DISSOLVED SOLIDS AT 180°C (mg/L)	
		YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD	YEARLY MEAN STANDARD	SAMPLE STANDARD
62100001 (4) 62100003 (4) 62100004 (4) 62100005 (4)		197	273	272	364		
621010	14845	288	388	936	1173	1886	2306
62101001 (4)		158	230	1673	2446		
621100	1520	388	586	175	247	1091	1417
62110000 (4)		1073	1690	817	1111		
621200	14814	252	321	115	157		
	1525	536	738	144	185	1111	1405
	1530	544	811	45	65		
	AVG	**444**	**623**	**101**	**136**	**1111**	**1405**
621210	(1)	482	728	132	182		
720500	2340	1455	1893	890	1192	3847	4938
	2375	450	562	597	785	1878	2359
	2380	300	379	681	955	1602	1732
	AVG	**735**	**945**	**723**	**977**	**2442**	**3010**
720900							

Notes:

(1) Indicates data obtained from Appendix B, OWQS 1982

(2) Data collected from June 1999 through September 2000

(3) Data collected from November 1959 through December 1982 AND November 1998 through August 2000

(4) Data collected 1998 through 2003

APPENDIX G. NUMERICAL CRITERIA TO PROTECT BENEFICIAL USES

(a) **Introduction.** This Appendix prescribes numerical limits for certain criteria which are necessary to protect beneficial uses as and wherever designated. Table 1 is a chart that states the numerical limits to protect the beneficial use and subcategories of Fish and Wildlife Propagation for the single parameter of dissolved oxygen as set forth in OAC 785:45-5-12(f)(1). The latter limits vary depending upon several factors including the pertinent subcategory or fishery class, the time of the year, and the seasonal temperature. Table 2 prescribes the numerical limits for certain substances or parameters in order to protect beneficial uses and subcategories as set forth in OAC 785:45-5-10(1), 785:45-5-10(6), 785:45-5-12(f)(6), and 785:45-5-20. The numerical limits may vary from one beneficial use or subcategory to another according to how the criteria are required by OAC 785:45 or OAC 785:46 to be implemented.

For the Fish and Wildlife Propagation criteria in Table 2, unless otherwise noted, the acute criterion is the Criterion Maximum Concentration (CMC) applied as a one-hour average concentration, and the chronic criterion is the Criterion Continuous Concentration (CCC) applied as a 96-hour (4 days) average concentration. The CMC and CCC criteria may not be exceeded more than once every three years on the average. Footnotes 1 and 2, associated with 14 pollutants in Table 2, provide exceptions to the duration and frequency components described in this paragraph.

Table 3 is a chart that sets forth conversion factors that can be used to determine Fish and Wildlife Propagation criteria for dissolved metals (where not already expressed as dissolved criteria in Table 2) in order to protect the beneficial use of Fish and Wildlife Propagation and all its subcategories as set forth in OAC 785:45-5-12(f)(6)(H).

(b) **Explanations for abbreviations and certain terms in Tables.**

(1) "CAS #" refers to a parameter's Chemical Abstract Service registry number. Each of these numbers is a unique identifier of a particular compound with a particular structure; the number provides additional and further specificity for the parameter in question than simply identifying it by a systematic, generic, proprietary, or [trivial] name. The CAS number has no particular chemical significance.

(2) Equations are prescribed for those substances the toxicity of which varies with water chemistry.

TABLE 1.

Dissolved Oxygen Criteria to Protect Fish and Wildlife Propagation and All Subcategories Thereof [1]

SUBCATEGORY OF FISH AND WILDLIFE PROPAGATION (FISHERY CLASS)	DATES APPLICABLE	DO CRITERIA[4] (MINIMUM) (mg/L)	SEASONAL TEMPERATURE (°C)
Habitat Limited Aquatic Community			
Early Life Stages	4/1 - 6/15	4.0	25[3]
Other Life Stages			
Summer Conditions	6/16 - 10/15	3.0	32
Winter Conditions	10/16 - 3/31	3.0	18
Warm Water Aquatic Community[5]			
Early Life Stages	4/1 - 6/15	6.0[2]	25[3]
Other Life Stages			
Summer Conditions	6/16 - 10/15	5.0[2]	32
Winter Conditions	10/16 - 3/31	5.0	18
Cool Water Aquatic Community & Trout			
Early Life Stages	3/1 - 5/31	7.0[2]	22
Other Life Stages			
Summer Conditions	6/1 - 10/15	6.0[2]	29
Winter Conditions	10/16 - 2/28	6.0	18

[1] For use in calculation of the allowable load.

[2] Because of natural diurnal dissolved oxygen fluctuation, a 1.0 mg/l dissolved oxygen concentration deficit shall be allowed for not more than eight (8) hours during any twenty-four (24) hour period.

[3] Discharge limits necessary to meet summer conditions will apply from June 1 of each year. However, where discharge limits based on Early Life Stage (spring) conditions are more restrictive, those limits may be extended to July 1.

[4] DO shall not exhibit concentrations less than the criteria magnitudes expressed above in greater than 10% of the samples as assessed across all life stages and seasons.

[5] For Lakes, the warm water aquatic community dissolved oxygen criteria expressed above are applicable to the surface waters.

TABLE 2.
Numerical Criteria to Protect Beneficial Uses and All Subcategories Thereof

PARAMETER	CAS #	Fish & Wildlife Propagation		Public & Private Water Supply (Raw Water)	Fish Consumption (+ Other Organisms) and Water	Fish Consumption (+ Other Organisms)
		ACUTE	CHRONIC			
		µg/L	µg/L	µg/L	µg/L	µg/L
INORGANICS						
Arsenic III	7440382	340	150	40		205.0
Barium	7440393			1000		
Cadmium (Dissolved)	7440439	e(1.0166[ln(hardness)]-3.924)*[1.136672-0.041838 ln(hardness)]	e(0.7409[ln(hardness)]-4.719)*[1.101672-0.041838 ln(hardness)]	20	14.49	84.13
Chromium (total)				50	166.3	3365.0
Chromium (III) (Dissolved)	16065831	e(0.819[ln(hardness)]+3.7256)*0.316	e(0.819[ln(hardness)]+0.6848)*0.860			
Chromium (VI) (Dissolved)	18540299	16	11			
Copper	7440508	e(0.9422[ln(hardness)]-1.3844)	e(0.8545[ln(hardness)]-1.386)	1000		
Cyanide	57125	45.93	10.72	200		
Fluoride @ 90° F				4000		
Lead	7439921	e(1.273[ln(hardness)]-1.460)	e(1.273[ln(hardness)]-4.705)	100	5.0	25.0
Mercury	7439976	2.4	1.302	2	0.050	0.051
Nickel (Dissolved)	7440020	e(0.846[ln(hardness)]+2.255)*0.998	e(0.8460[ln(hardness)+0.0584)*0.997		607.2	4583.0
Nitrates (as N)	14797558			10,000		
Selenium	7782492	20.0	5	10		
Silver (Dissolved)	7440224	e(1.72[ln(hardness)]-6.59)*0.85 (Footnote 1)		50	104.8	64620.0
Thallium	7440280	1400.0 (Footnote 2)			0.24	0.47
Zinc (Dissolved)	7440666	e(0.8473[ln(hardness)]+0.884)*0.978		5000		

1 This criterion is based on EPA 304(a) recommendations issued in 1980 that were derived using guidelines that differed from EPA's *1985 Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985 Guidelines), which update minimum data requirements and derivation procedures. Therefore, the acute criterion (CMC) may not be exceeded at any time and the chronic criterion (CCC) may not be exceeded based on a 24-hour average. However, the acute criterion may be applied using a one hour averaging period not to be exceeded more than once every three years on the average, if the acute value given in Table 2 is divided by 2 to obtain a value that is more comparable to an acute criterion derived using the 1985 Guidelines.

2 This criterion was adopted as a magnitude value only.

PARAMETER	CAS #	Fish & Wildlife Propagation		Public & Private Water Supply (Raw Water)	Fish Consumption (+ Other Organisms) and Water	Fish Consumption (+ Other Organisms)
		ACUTE	CHRONIC			
		µg/L	µg/L	µg/L	µg/L	µg/L
ORGANICS						
1-1-1 TCE	71556				3094.0	173100.0
2-4-5-TP Silvex	93721			10		
2-4-6-TNT		450.0 (Footnote 2)				
2-4-D	94757			100		
Acrolein	107028				6.0	9.0
Acrylonitrile	107131	7550.0 (Footnote 2)			0.51	2.5
Aldrin	309002	3.0 (Footnote 1)			0.00049	0.00050
Benzene	71432		2200.0 (Footnote 2)		22	510
Benzidine	92875			1		
Carbon Tetrachloride	56235				2.3	16
Chlordane	57749	2.4 (Footnote 1)	0.17 (Footnote 1)		0.0080	0.0081
Chloroform	67663				56.69	4708.0
Chlorpyrifos (Dursban)	2921882	0.083	0.041			
4,4'-DDD	72548				0.0031	0.0031
4,4'-DDT	50293	1.1 (Footnote 1)	0.001 (Footnote 1)		0.0022	0.0022
Demeton	8065483		0.1			
Detergents (total)				200		
Diazinon	333415	0.17				
Dichlorobromomethane	75274				5.5	170
Dieldrin	60571	0.24	0.056		0.00052	0.00054
Dioxin (TCDD)	1746016				5.0E-08	5.1E-08
Endosulfan		0.22 (Footnote 1)	0.056 (Footnote 1)			
Endrin	72208	0.086	0.036	0.2	0.059	0.060
Ethylbenzene	100414				530	2100
Guthion	86500		0.01			
gamma BHC (Lindane)	58899	0.95		4	0.98	1.8
Heptachlor	76448	0.52 (Footnote 1)	0.0038 (Footnote 1)		0.00079	0.00079

PARAMETER	CAS #	Fish & Wildlife Propagation		Public & Private Water Supply (Raw Water)	Fish Consumption (+ Other Organisms) and Water	Fish Consumption (+ Other Organisms)
		ACUTE	CHRONIC			
		µg/L	µg/L	µg/L	µg/L	µg/L
Hexachlorobenzene	118741				0.0028	0.0029
Malathion	121755		0.10			
Methoxychlor	72435		0.03	100		
Methylene blue active substances				500		
Mirex	2385855		0.001			
Nonylphenol	25154523	28	6.6			
Parathion	56382	0.065	0.013			
PCB			0.044		0.00064	0.00064
PCE (Tetrachloroethylene)	127184	5280.0 (Footnote 2)			6.9	33
Pentachlorophenol	87865	e[1.005(pH)- 4.869]	e[1.005(pH)-5.134]		2.7	30
Perchlorate	7601-90-3	6600 (Footnote 2)	1800 (Footnote 2)		9	
Phenol	108952				10,000.0	860,000.0
Phthalate esters				3		
Bis(2-ethylhexyl) phthalate (BEHP)	117817				12	22
Butylbenzyl phthalate	85687			150	1500	1900
Diethyl phthalate	84662				17000	44000
Dimethyl phthalate	131113				2.7E+05	1.1E+06
Di-*n*-Butyl phthalate	84742				2000	4500
RDX	121824	2591.5 (Footnote 2)				
Toluene	108883		875.0 (Footnote 2)		1300	15000
Toxaphene	8001352	0.78	0.0002	5		

1 This criterion is based on EPA 304(a) recommendations issued in 1980 that were derived using guidelines that differed from EPA's *1985 Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985 Guidelines), which update minimum data requirements and derivation procedures. Therefore, the acute criterion (CMC) may not be exceeded at any time and the chronic criterion (CCC) may not be exceeded based on a 24-hour average. However, the acute criterion may be applied using a one hour averaging period not to be exceeded more than once every three years on the average, if the acute value given in Table 2 is divided by 2 to obtain a value that is more comparable to an acute criterion derived using the 1985 Guidelines.

2 This criterion was adopted as a magnitude value only.

TABLE 3

Conversion Factors for Total to Dissolved Fractions
[H=hardness as $CaCO_3$ (mg/L)]

METAL	CAS#	ACUTE	CHRONIC
Arsenic	7440382	1.000	1.000
Cadmium	7440439	1.136672 – 0.041838 InH	1.101672 – 0.041838 InH
Copper	7440508	0.960	0.960
Chromium III	16065831	0.316	0.860
Chromium VI	18540299	0.982	0.962
Lead	7439921	1.46203 – 0.145712 InH	1.46203 – 0.145712 InH
Mercury	7439976	0.85	N/A
Nickel	7440020	0.998	0.997
Silver	7440224	0.85	N/A
Zinc	7440666	0.978	0.986

APPENDIX H. BENEFICIAL USE DESIGNATIONS FOR CERTAIN LIMITED AREAS OF GROUNDWATER

A. Within Oklahoma there are some bodies or areas of groundwater the quality of which is not suitable for the beneficial uses that are designated on a default basis in OAC 785:45-7-3(b). In most cases this unsuitability is caused by natural conditions or irreversible human-induced impacts such as pollution. Consequently, it is necessary to provide for beneficial use designations for these limited areas of groundwater which are more accurate and appropriate than the default designations in 785:45-7-3(b). The absence of an area of a groundwater formation from this appendix does not indicate that area is free from contamination or has quality suitable for any beneficial use.

B. The groundwater formations or portions thereof that require special designations are identified in the tables that follow in this Appendix. The groundwater formations or units are identified by their name (e.g., "Garber Wellington") and legal description (e.g., "2-4, 9-11, 13-16 T2N R20W " denoting section(s), Township and Range). The area identified may be localized and not necessarily inclusive of the entire hydrogeologic basin or groundwater formation. The tables also set forth a general description of the physical location above the groundwater formation or unit for use as a general point of reference. The tables also set forth columns to show the groundwater classifications and beneficial uses which are designated for each identified area of groundwater. A “Depth Zone” also is indicated, to which the beneficial uses and “Remarks” listed in following columns are applicable.

C. Designations of beneficial uses for an identified groundwater formation or portion thereof are reflected in the tables by the presence of a dot ("•") in the columns to the right of the groundwater name and location. An empty space in a column means that column's beneficial use or subcategory thereof is not designated for that groundwater. Groundwater not identified in this Appendix is subject to the default designations detailed in OAC 785:45-7-3.

D. The state environmental agency that requested the groundwater formation or unit to be so identified and designated with certain beneficial uses and/or limitations is shown in the column headed “Agency”. A specific division within that agency may also be listed. Questions relating to the quality of the groundwater found in any particular formation or unit, or concerns related to any comment in the “Remarks” column, should be addressed to the agency denoted in the “Agency” column.

E. The presence of any comment in the "Remarks" column denotes special circumstances which are applicable only to the groundwater formation or unit so identified. These comments may refer to certain constituents of the groundwater at that location, special well construction requirements, or other information deemed pertinent by the agency that requested this listing.

F. Definitions
“ACOG” means Association of Central Oklahoma Governments
“Corp Comm” means Oklahoma Corporation Commission
“DEQ” means Oklahoma Department of Environmental Quality
“SEP” means Supplemental Environmental Projects
“RCRA” means Resource Conservation and Recovery Act
“VCP” means Voluntary Cleanup Program

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Garber Wellington (Thunderhead Hills)	W 1/2 of W 1/2 of Section 20, T 14 N, R 2 WIM; W 1/2 of NW 1/4 and NW 1/4 of SW 1/4 of Section 29, T 14 N, R 2 WIM	Along and ¼ mile east of Coltrane from Danforth Rd to Sherrywood Rd, Edmond, Oklahoma County	85 - 200 ft deep; ¼ mile wide by at least 1 ¾ mile long	2		●		Corp Comm, Oil and Gas Div & ACOG	Brine plume moving south about 80 feet/year. Case/cement new wells through upper affected zone.
Garber Wellington (Double Eagle / 4th St superfund site)	SE 1/4 of Section 35, T 12 N, R 3 WIM and SW 1/4 of Section 36, T 12 N, R 3 WIM	Oklahoma County	0 - 160 ft	2		●	●	DEQ	Brine, chlorinated solvents and hydrocarbons. Special well construction required.

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Boone (Tar Creek superfund site)	Sections 13, 14, 23, 24, 25, 26, 35, and 36 of T 29 N, R 22 EIM. Sections 13-36 of T 29 N, R 23 EIM. Sections 17-19, W 1/2 of Section 20, W 1/2 of Section 29, and Sections 30-32 of T 29 N, R 24 EIM. Section 1, E 1/2 of Section 2, E 1/2 of Section 11, Section 12, N 1/2 of Section 13, NE 1/4 of Section 14 all in T 28 N, R 22 EIM. Section 1, W 1/2 of Section 5, Section 6, Section 7, W 1/2 of Section 8, NW 1/4 of Section 17, N 1/2 of Section 18 all in T 28 N, R 23 EIM, W 1/2 of Section 5, Section 6 all in T 28 N, R 24 EIM.	Ottawa County	0 - 350 ft	2	●	●	●	DEQ	Toxic metals, special well construction required
Quaternary Terrace (Kingfisher Wellhead Protection Area)	Section 33, SW 1/4 of Section 36 in T 18 N, R 7 WIM. SW 1/4 of Section 1, NW 1/4 and S 1/2 of Section 2, N 1/2 of Section 3, N 1/2 of Section 4, NE 1/4 of Section 11, and Section 12 all in T 17 N, R 7 WIM	Kingfisher County	0 - 100 ft	1	●	●	●	DEQ	Zone 1 Wellhead Protection Area, no pollution sources
Southwestern Oklahoma (Altus AFB area)	Sections 34-36 in T 3 N, R 20 WIM. Sections 1-3, Sections 10-15, and Sections 22-24 all in T 2 N, R 20 WIM	North of US 62, eastern edge of City of Altus and entire AFB, Jackson County	0 - 60 ft	3		●	●	OWRB	TCE and by-products, remediation activity in-place

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Ogallala (Dobson Ranch)	One square acre within NW 1/4 of Section 17, T11N, R26W IM	State Highway 152, approximately four miles west of Sweetwater, OK, Roger Mills County	0 - 20 ft	2	●	●	●	DEQ - VCP	Restriction on groundwater use within the 1 square mile recorded on a deed notice due to Benzene contamination. See DEQ or county clerk for location details
Quaternary Terrace Deposits - (Cornerstone Shopping Center)	SE 1/4 of Section 16, T 12 N, R 4 WIM, Approx six (6) acres of WEST PARK ADDITION to Oklahoma County, Oklahoma.	3900 N. MacArthur Avenue, Oklahoma City, Oklahoma County, Oklahoma	0 - 22 ft	2	●	●	●	DEQ - VCP	Tetrachloro-ethene - Deed restriction on file. See DEQ or county clerk for location details.

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Alluvium & Terrace Deposits - (OKC Urban Renewal Phase I)	21.6 acres of the NW 1/4 of Section 3, T 11 N, R 3 WIM	An area bounded to the South of Reno Avenue, East of the BNSF railroad tracks, North of Interstate 40/or its replacement street and west of a line extended from Stiles Avenue to Interstate 40/or its replacement street in Oklahoma City, Oklahoma County, Oklahoma.	0 - 30 ft	2	●	●	●	DEQ - VCP	Deed restriction on groundwater use. See DEQ or county clerk for location details.
Coffeyville Formation (Compass Industries Landfill Superfund site)	SE 1/4 of NE 1/4 and NE 1/4 of SE 1/4 of Section 13, T 19 N, R 11 EIM, and S 1/2 of NW 1/4 and N 1/2 of SW 1/4 of Section 18, T 19 N, R 12 EIM	7600 W 26th St, Tulsa, Tulsa County, Oklahoma	0 - 105 ft	2	●	●	●	DEQ-Superfund	Deed restriction on groundwater use for any purpose. See DEQ or county clerk for location details.

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Weatherford Member of the Cloud Chief Formation & Rush Springs Sandstone Formation (Oklahoma Refining Company Superfund site)	S 1/2 of SW 1/4 of Section 18, T 5 N, R 9 WIM and NW 1/4 of Section 19, T 5 N, R 9 WIM, and NW 1/4 of Section 19, T 5 N, R 9 WIM, and SE 1/4 of SE 1/4 of Section 13, T 5 N, R 10 WIM and E 1/2 of NE 1/4 of NE 1/4 of Section 24, T 5 N, R 10 WIM	South Baskett St, Cyri, Caddo County, Oklahoma	0 - 145 ft	2	●	●	●	DEQ - Superfund	Deed restriction on disturbing landfill caps and on groundwater use for any purpose due to hydrocarbon contamination. See DEQ or county clerk for location details.
North Canadian Alluvium (Tenth Street Superfund site)	2.931 acres in the NW 1/4 of Section 31, T 12 N, R 2 WIM	3200 NE 10th St Oklahoma City, Oklahoma County, Oklahoma	0 - 20 ft		●	●	●	DEQ - Superfund	Deed restriction on drilling of any type of wells through the landfill cap or into the landfill. See DEQ or county clerk for location details.
North Canadian Alluvium and Garber (Mosley Road Landfill Superfund site)	71.765 acres in NE 1/4 of Section 21, T 12 N, R 2 WIM	Mosely Road Between NE 23 & NE 36 Oklahoma City, Oklahoma County, Oklahoma	0 - 150 ft	2	●	●	●	DEQ - Superfund	Restriction on groundwater use for any purpose. See DEQ or county clerk for location details

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Tallant Formation (Blackstar Performance)	SE 1/4 of Section 25, T 20 N, R 8 EIM and NE 1/4 of Section 25, T 20 N, R 8 EIM	East of Highway OK-48, about 4 miles north of Highway OK-51 intersection, in Terlton, Pawnee County, Oklahoma	0 - 30 ft; depth of contamination not yet defined.	2	●	●	●	DEQ - RCRA	1,1,1-Tricholroethane and 1,1-Dichoroethene Depth of contamination unknown, private wells to 200 feet are impacted. See DEQ for additional details.
N. Canadian Terrace Deposits underlain by Hennesey Group (OKC Solvent Plume)	Approximately 80 acres in NE 1/4 of Section 27, T 12 N, R 4 WIM and NW 1/4 of Section 27, T 12 N, R 4 WIM	Between NW 23rd and NW 19th and N Meridian and Ann Arbor, Oklahoma City, Oklahoma County, Oklahoma	0 - 30 ft; depth of contamination not yet defined.	2	●	●	●	DEQ -SEP	Tetrcholor-ethylene (max 1200 ppb) and Thrichhloro-ethylene (max 35 ppb). Plume not delineated; private wells impacted. See DEQ for details.
Garber-Wellington (Eagle Industries)	Approximately 6 acres in SE 1/4 of Section 7, T 11 N, R 1 WIM	North of SE 29th & West of Westminister Road, Midwest City, Oklahoma County, Oklahoma	0 - 50 ft; depth of contamination not yet defined.	2	●	●	●	DEQ - RCRA	Trichloro-ethylene (max 2280 ppb). Plume not delineated. See DEQ for details.

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
East Central Oklahoma bedrock	SE 1/4 of SE 1/4 of SE 1/4 of Section 5, T 7 N, R 9 EIM	Hughes County	200 ft; Aerial extent unknown	2	•	•	•	Corp. Comm. O & G Division	Brine affecting aquifer. Disposal well offsetting old (now plugged) oil well was the most likely conduit.
Garber-Wellington Sandstone Formation	NW 1/4 of SE 1/4 of Section 1, T 9 N, R 2 EIM	Pottawatomie Countie	160 - 200 ft; 20 acres	2	•	•	•	Corp. Comm. O & G Division	Brine affecting aquifer. Now plugged disposal well was the most likely source.
Rush Springs Sandstone, Marlow Formation. (Cyril Plume)	Portions of Sections 1 and 12 in T 5 N, R 10 WIM and Sections 6 and 7 in T 5 N, R 9 WIM and Section 36, T 6 N, R 10 WIM and Section 31, T 6 N, R 9 WIM	2-3 miles north of Cyril, Caddo County.	Up to 450 ft deep; some saline ground-water discharge into Little Washita River tributaries. ~960 acre plume	2	•	•	•	Corp Comm, Oil and Gas Div	~960 acre plume moving S-SW @ 90'/year; 30 year monitoring program started in 1999. Cyril municipal wells affected were abandoned.
Blaine (Drummond Flats)	NE 1/4 of Section 33, T 22 N, R 8 WIM	From NE corner of Drummond 4 miles north, 1 west, 1 south and 3/8 west. Near Turkey creek.	20 - 50 ft in affected wells.	2	•	•	•	Corp Comm, Oil and Gas Div	Drummond Flats, water has historical contamination.

Groundwater formation name (Site name)	Location	Address	Depth Zone (upper-lower limit) feet (ft)	Class* (1-4)	Water Supply	Ag	M&I	Agency	Remarks
Terrace Deposits (Drummond Flats)	SW 1/4 of Section 12, R 21 N, R 9 WIM	From Ames, 1/2 mile east, 4 miles north, 3 3/4 east, north into site.	About 40 ft in affected wells.	2	●	●	●	Corp Comm, Oil and Gas Div	Drummond Flats, water has historical contamination.
Arkansas River Alluvium (Sand Springs Petrochemical Superfund Site)	W 1/2 of NW 1/4 of Section 13, T 19 N, R 11 EIM and NW 1/4 of Section 14, T 19 N, R 11 EIM	Tulsa County	0 - 37 ft	2		●	●	DEQ	Metals, VOC Special Well Construction Required.

APPENDIX I. CRITERIA FOR GROUNDWATER PROTECTION

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

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

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