PROPOSED

CHAPTER 45-APPENDIX A
"DESIGNATED BENEFICIAL USES FOR SURFACE WATERS"
(Preamble, Appendix A.1, Appendix A.6)

October 5, 2015

Proposed Updates to Chapter 45-Appendix A, "Designated Beneficial Uses for Surface Waters" (Preamble, Appendix A.1, Appendix A.6)

Introduction

In an effort to improve the Oklahoma Water Quality Standards (OWQS), the staff of the Oklahoma Water Resources Board (OWRB) works regularly with other stakeholders to update and correct Appendix A, which catalogues Oklahoma's listed surface waterbodies and their designated uses. Some changes are non-substantive, including standardization of nomenclature or the correction of errors and oversights. However, other changes are not merely editorial, including the addition of previously unlisted waterbodies or existing uses (e.g., public water supply), the upgrading or downgrading of a designated use, or the inclusion of a limitation (e.g., an antidegradation classification) or remark. During the current triennial revision, needed revisions are proposed and explained below.

Non-substantive Correction to Include High Quality Water Antidegradation Classification for Saline and Little Saline Creeks in Appendix A.1 of the OWQS.

During the OWRB 2010-2011 interim rulemaking, both Saline and Little Saline Creeks were classified as high quality waters (HQW). To substantiate these activities, the original staff justification document (Attachment B) and the final rule publication in the Oklahoma Register, Volume 28, Number 17 (Attachment C) are included. As part of the 2010-2011 rulemaking activity, Appendix A.1 of the OWQS was revised to include the limitations. Unfortunately, the HQW limitation was inadvertently removed during the subsequent 2012 triennial rulemaking. During the 2012 triennial, a significant revision occurred to all of Appendix A, including updated waterbody names and ID's, as well as use upgrades on certain streams. At some point in the rulemaking process, a copy of Appendix A predating the Saline and Little Saline HQW revisions was used and taken through the public participation and rule adoption processes. To correct this non-substantive editorial error, the HQW water designations are added back into Appendix A.1 during this triennial revision (Attachment A, Table 1).

Non-substantive Addition of a New Waterbody Identification Number for Great Salt Plains Reservoir in Appendix A.6 of the OWQS

In an effort to standardize the nomenclature used in Appendix A of the Oklahoma Water Quality Standards with other state and federal databases, OWRB staff occasionally proposes changes to modify the format of waterbody names or waterbody ID's. In most cases, the OWRB is using the Federal Geographic Names Information System (GNIS) and the National Hydrography Dataset (NHD) as sources for names. However, the waterbody identification numbers (WBID's) may be a mix of those gathered from reach file 3 (RF3) or those used by the Oklahoma Department of Environmental Quality (ODEQ) in the ATTAINS database used for Oklahoma's Integrated Report of Water Quality. Correcting these naming formats and waterbody ID's and standardizing with other established databases only helps strengthen the usability of the Standards document. The ODEQ works with the OWRB to standardize the waterbody names and numbers. One such change for this revision is on the Great Salt Plains Reservoir, which needs an additional WBID of 621010010020_00 (Attachment A, Table 2).

Addition of Lake Hefner to Appendix A.6 of the OWQS

During the OWRB 2007-2008 interim rulemaking, staff proposed considerable changes to Appendix A of the OWQS. Changes included revisions to lake names, addition of new lake waterbodies, and the addition of the public private water supply (PPWS) use to several reservoirs with the existing public water supply use. Included in these revisions was the addition of Hefner Lake, with designated uses, including warm water aquatic community

(WWAC), primary body contact recreation (PBCR), PPWS, agriculture (AG), and aesthetics (AES). At some point in the rulemaking process, Hefner Lake was excluded from the revision and never added back to rulemaking documents. Hefner Lake is a listed waterbody, as well as a regionally important reservoir, and should be included in Appendix A. To correct this error, Appendix A.6 of the OWQS is being revised to include Hefner Lake (Attachment A, Table 2), with the default designated beneficial uses of WWAC, PBCR, AG, and AES [OAC 785:45-8-3(b)(1)]. Additionally, because Lake Hefner is a public drinking water supply for the City of Oklahoma City, the PPWS use is an existing use and will be designated in the revision.

Upgrade of the Arkansas River from the mouth of the Verdigris River to Keystone Dam from Secondary to Primary Body Contact Recreation in Appendix A.1 of the OWQS

In the 1980's, the beneficial use assigned to the Arkansas River, from the confluence of the Verdigris River upstream to Keystone Dam, was designated as secondary body contact recreation (SBCR). The intent was to discourage human activity within the channel for safety reasons due to physical and flow characteristics of the river and existing water quality concerns. However, the higher water quality criteria associated with Clean Water Act's (CWA) section 101(a)(2) primary body contact recreation (PBCR) use were historically retained instead of the less stringent criteria for SBCR. The retention of the CWA swimmable use was accomplished by placing a footnote of (2), which "indicates that criteria for the beneficial use of PBCR apply regardless of the recreation use designated".

In August 2015, the Indian Nations Council of Governments (INCOG) staff requested that the OWRB upgrade this portion of the Arkansas River to PBCR (Attachment D), and remove the footnote (2) (Attachment A, Preamble and Table 1). The swimmable PBCR use is the existing use, and it is both desirable and good practice to have designated uses accurately reflect the existing uses. Furthermore, the surrounding Arkansas River segments are already designated with PBCR use, and all implementation programs and permitted discharges are already required to meet the water quality criteria for PBCR. The resource is regularly used for recreation, and there is a regional desire to continue to promote the recreational benefits of the river, through economic development and increased aesthetic appeal. Additionally, according to INCOG, many of the features that originally posed safety concerns have been removed. The Sand Springs Reregulation Dam has been removed, and the River Parks Authority has removed several tons of metal and other dangerous debris from the river.

Attachment A. Draft Proposed Language Revisions (changes are in red with strikeout indicating deletion and underline indicating addition of language).

Appendix A Preamble

APPENDIX A. DESIGNATED BENEFICIAL USES FOR 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) **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) designates those streams for which further investigations are pending. Beneficial use designations for those streams are provided in Subchapter 5 of this Chapter.

(2) **Removed in 2015-2016 Rulemaking Revision.** ~~**A footnote (2) indicates that criteria for the beneficial use of Primary Body Contact Recreation apply regardless of the recreation use designated.**~~

(3) A footnote (3) 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.

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

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

Table 1. Appendix A.1 of the OWQS, "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
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		●		
Onion Creek	121510020340	PPWS	WWAC	●	PBCR		●		
Arkansas River from mouth of Verdigris River to Keystone Dam	120410010010, 120410010080_00, 120410010080_10, 120420010010_00, 120420010010_10, 120420010130	EWS	WWAC	●	~~SBCR~~ PBCR	●	●		~~(2)~~
Pecan Creek	120410010030	PPWS	WWAC	●	PBCR		●		

Table 2. Appendix A.6 of the OWQS, "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
Bluff Creek	620910040140	PPWS	WWAC	●	PBCR		●		
Hefner Lake	**620910040200_00**	**PPWS**	**WWAC**	**●**	**PBCR**		**●**		
Kingfisher Creek	620910050010		WWAC	●	PBCR		●		
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		●		

JUSTIFICATION FOR A NEW HIGH QUALITY WATER DESIGNATION FOR SALINE CREEK AND LITTLE SALINE CREEK IN MAYES AND DELEWARE COUNTIES, OKLAHOMA

The Orangethroat Darter, which lives in
Saline Creek and Little Saline Creek

Tuesday, November 24, 2015

JUSTIFICATION FOR NEW HIGH QUALITY WATER DESIGNATION FOR SALINE CREEK AND LITTLE SALINE CREEK

Introduction

Oklahoma Water Resources Board (herein "OWRB") staff were requested by persons owning land riparian to Saline and Little Saline Creeks to add a High Quality Water (HQW) designation to the entire length of Saline Creek and Little Saline Creek. Included in Appendix 1 are maps that illustrate the geographic reaches of Saline Creek and Little Saline Creek. The watershed consists primarily of forest and pasture lands. Today, hundreds of local citizens value Saline Creek for its unique recreational opportunities, including the Creek's alternating pools and riffles and the significant forest canopy that shades large segments of the creek. *See* Appendix 2.

Saline Creek is renowned as one of the most pristine bodies of water in the State; its spring-fed waters nurture and maintain diverse ecological habitats and

support numerous threatened and pollution-intolerant species. In fact, the Oklahoma Conservation Commission classifies Little Saline Creek, a tributary to Saline Creek, as a high quality water site, which is a highly coveted designation based on a complex matrix of data. Further, Saline Creek has been used as a benchmark for other conservation studies done in the area. The Creeks are largely untouched by human development and, as such, offers individuals the unique opportunity to enjoy and explore nature's beauty.

Oklahoma's Water Quality Standards (herein "WQS") provide additional protection for waters deemed special for recreational or ecological reasons. Those waters found to "possess existing water quality which exceeds those levels necessary to support propagation of fishes, shellfishes, wildlife, and recreation in and on the water" can be designated "High Quality Waters" (herein "HQWs"). See 785 OAC 45-3-2 (b).

The WQS further define HQWs as:

> (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[.]

Id.

Pursuant to Oklahoma and Federal law, "These high quality waters shall be maintained and protected." *See id.* As a result, listing a waterbody as HQWs provides additional protection for the waterbody.

Specifically, Oklahoma's WQS state:

> 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 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.

See 785 OAC 45-5-25 (c)(3)(B).

The chemical and physical water quality in Saline Creek and Little Saline Creek, as set forth below, establish it as a High Quality Water. The Creeks support vibrant ecological communities as a result of cool, clean waters and largely undisturbed watersheds. Ultimately, the high quality of the water in these Creeks allows the diverse and unique fishes and macroinvertebrates to thrive.

Local landowners request this application be approved so that future generations may enjoy this exceptional resource.

JUSTIFICATION AND DISCUSSION

> Pursuant to the OWRB's rules, a request for classification as a HQW: will demonstrate (1) 95% of water quality measurements for multiple parameters from metals, organics and general physicochemical water quality descriptors are 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, (3) significant local support for promulgation of the HQW designation.
>
> See 785 OAC 45-5-25 (c)(3)(C).

1. **Water quality in Saline Creek exceeds Oklahoma Criteria in greater than 95% of all samples.**

A complete data set from the Oklahoma Conservation Commission's (herein the "OCC") stream sampling activities is set forth in Appendix 3 of this document. The data establishes that for the past ten years, Saline Creek has exceeded Oklahoma water quality criteria in more than 95% of the measurements taken. *See* Appendix 3. A more detailed review of the exceptional chemical and biological attributes of Saline Creek is provided below:

The historic flow of Saline Creek, based on 142 synoptic measurements of flow, is found in Figure 1 below:

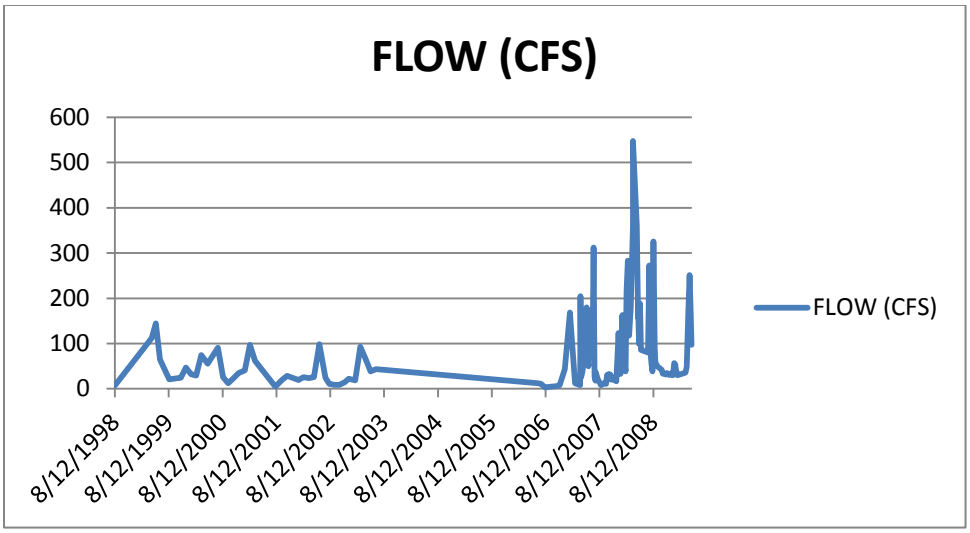


Figure 1. Historic Flow of Saline Creek.

The maximum measured flow in Saline Creek during this time period was 547 CFS (on March 25, 2008) and the minimum flow was 3.3 CFS (on August 8, 2006). The average flow in Saline Creek is 69.9 CFS. This data demonstrates that Saline Creek is a perennial stream with a continuous flow, which is consistent with observations by local landowners.

Figure 2 identifies the temperature of Saline Creek from 184 OCC sampling events between August 12, 1998 and April 28, 2009:

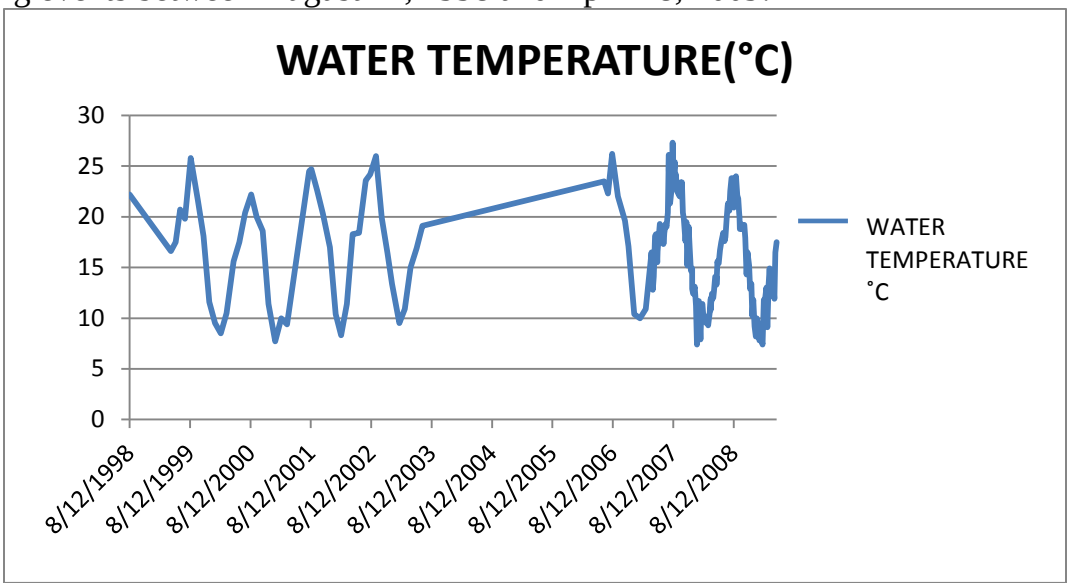


Figure 2, from OCC Data Set.

The maximum measured temperature in Saline Creek during this time period was 27.3^{o} C (on August 8, 2008) and the minimum temperature was 7.4^{o} C. (on January 2, 2009 and February 3, 2009). The average temperature in Saline Creek is 16.4^{o} C. The Oklahoma Administrative Code, 785 OAC 45, App. G, identifies 22^{o} C as the upper limit for fish and wildlife propagation. Only 29 of 171 measurements showed temperatures greater than 22^{o} C. Although those

measurements exceed the recommended temperature limit, they occurred in the late summer, which is after the critical reproductive period of aquatic organisms and had little or no biological effect. Further, the springs in Saline Creek provide refugia to existing aquatic life, which negates the effects of the higher observed temperatures. Accordingly, this temperature data for Saline Creek exceeds the numerical criteria for designation as a Cool Water Aquatic Community pursuant to Oklahoma law.

Figure 3 illustrates the dissolved oxygen content of Saline Creek during 184 OCC sampling events between April 19, 1999 and April 28, 2009:

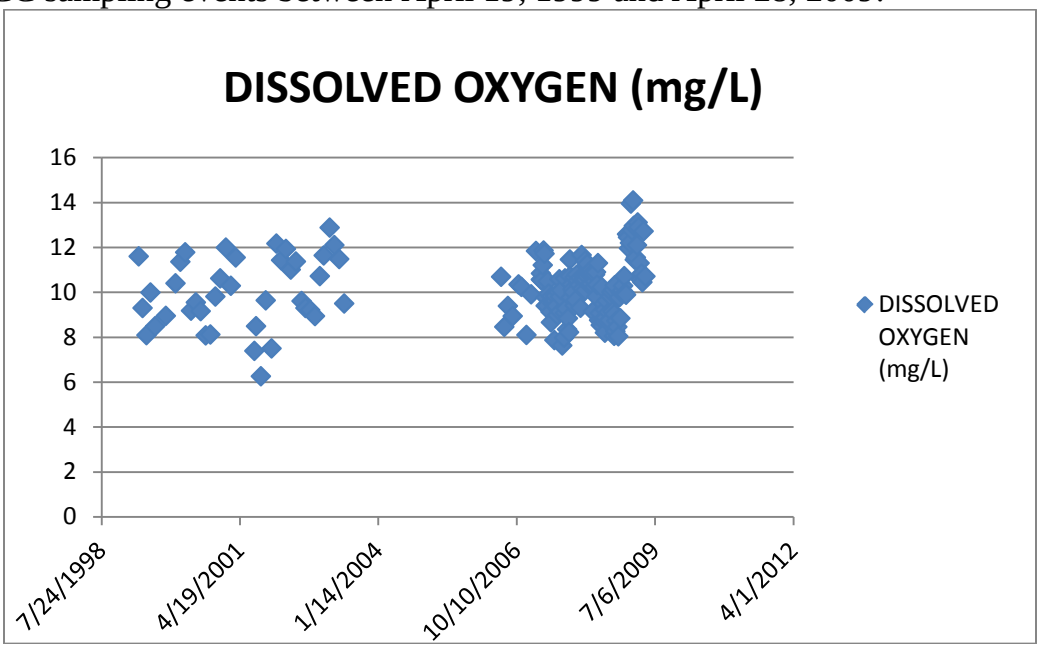


Figure 3, from OCC Data Set.

The maximum measured dissolved oxygen in Saline Creek during this time period was 14.08 mg/l (on January 29, 2009) and the minimum dissolved oxygen was 6.26 mg/l (on September 18, 2001). The average dissolved oxygen in Saline Creek is 10.11 mg/l. 785 OAC 45, App. G, identifies 7 mg/l as being best suited for the protection of fish and wildlife propagation. Only one measurement was recorded showing dissolved oxygen lower than 7 mg/l, in the late summer of 2001. Accordingly, the dissolved oxygen results for Saline Creek exceed the numerical criteria for designation as a Cool Water Aquatic Community pursuant to Oklahoma law.

Figure 4 graphs the concentrations of chloride, sulfate, hardness and total suspended solids of Saline Creek from 53 OCC sampling events between June 14, 1999 and May 28, 2008:

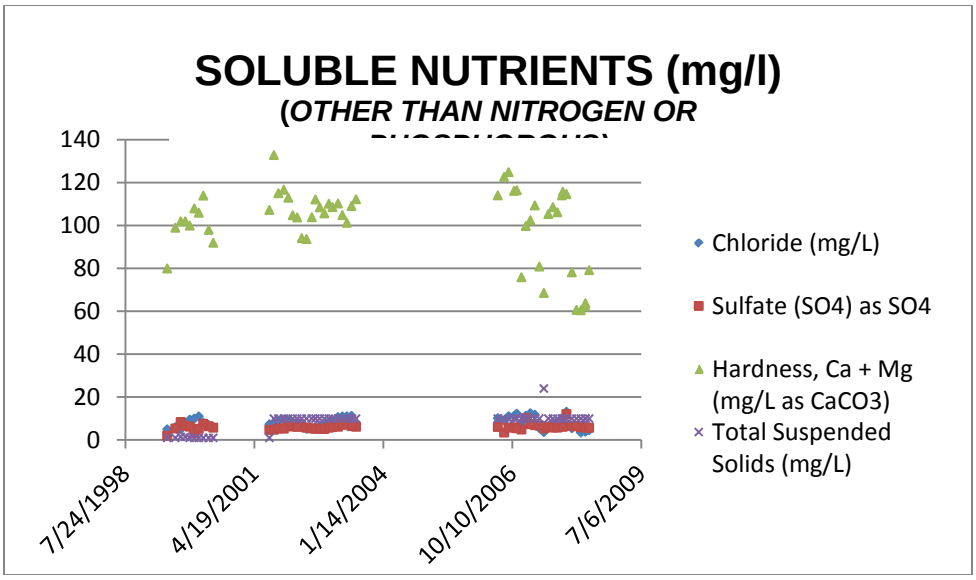
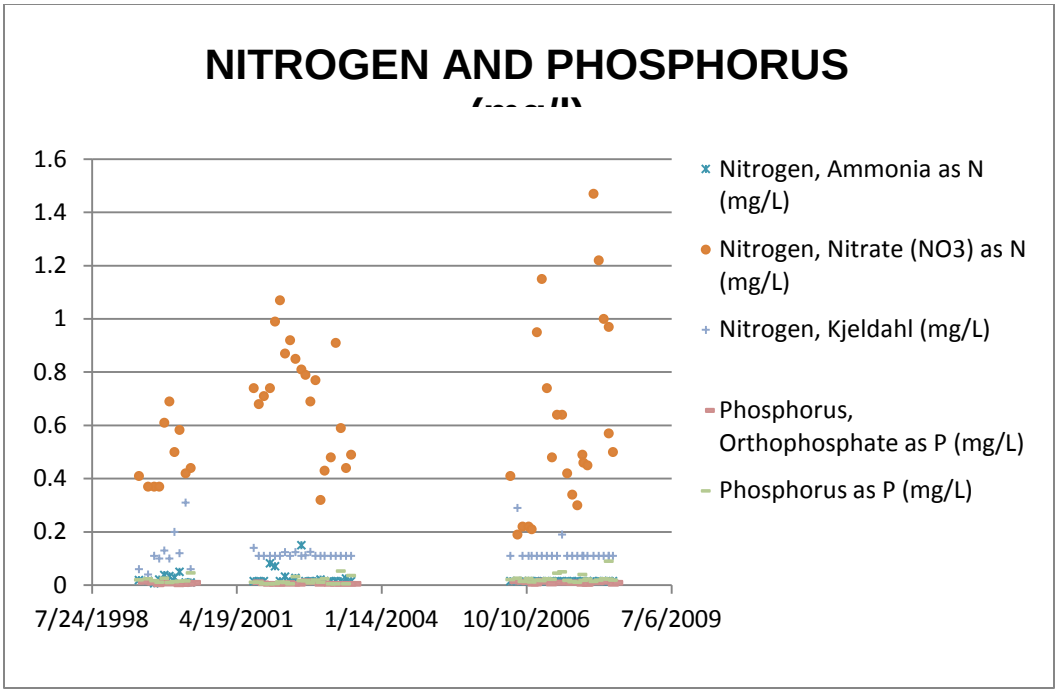


Figure 4, from OCC Data Set.

The concentrations measured by the OCC indicate that Saline Creek has very high quality water when compared to temperate streams within the US. Water in Saline Creek lies within the oligotrophic (low nutrient) classification of streams (Total Phosphorus (TP) <25 µg/L, Total Nitrogen (TN) <500 µg/L) (see Dodds et al. 1998. Suggested classification of stream trophic state: distributions of temperate stream types by chlorophyll, total nitrogen, and phosphorus. Water Research 32: 1455-1462). The mean values for Saline Creek reported by OCC were 29 µg/L TP (sd 32 µg/L) and 143 µg/L TN (sd 198 µg/L). Consistent low levels of P indicate a high quality stream with neither point or nonpoint source inputs of organic wastes. The OCC data had 171 data points, only 5 of which were >0.05 mg/L, or approximately 3% of the samples, and none of the elevated concentrations occurred during consecutive sampling efforts. The mean value for TN in Saline Creek is well within the oligotrophic classification, and the mean value for TP is borderline oligotrophic.

Figure 5 shows the concentrations of nitrogen and phosphorous of Saline Creek from 53 OCC sampling events between June 14, 1999 and May 28, 2008 for nitrogen and phosphorous:



Oklahoma Water Quality Standards set numerical criteria for Phosphorous for Scenic Rivers. According to the OCC data, Saline Creek meets the criteria set for Scenic Rivers in Oklahoma. Specifically, pursuant to 785 OAC 45-5-19 (c) the 30 day geometric mean for total phosphorus shall not exceed 0.037 mg/l. According to the OCC's data, the average concentration (without the weighting of a geometric mean) for total Phosphorus as P for Saline Creek is 0.02 mg/l. The various nitrogen data for Saline Creek are also quite low, with for instance, Ammonia concentrations being generally at or below .02 mg/l. Moreover, when fairly constant concentrations of nitrogen compounds are seen in a stream system, as they are in the case of Saline Creek, it can be indicative of the stream being a high-quality spring fed creek. *See* Goldman and Horne, *Limnology* 303 (1983).

Accordingly, the OCC's soluble nutrient data on Saline Creek strongly support listing Saline Creek as a High Quality Water.

2. Saline and Little Saline Creeks support an unimpaired biological community

The OCC also collected a significant amount of data on macroinvertebrates and fishes present in Saline Creek. *See* Appendix 3. The macroinvertebrate sampling occurred on 12 different occasions between February 16, 1999 and March 17, 2009. It is widely accepted that the presence of certain species of macroinvertebrates is an indicator of high water quality. *See, e.g.*, http://www.epa.gov/bioindicators/html/invertebrate.html. This is because certain species are pollution intolerant, and if the stream is polluted, they will not exist there. *See, e.g.*, http://www.dep.state.fl.us/water/bioassess/bugind.htm.

Often these "pollution intolerant" indicator species are identified by their common names (for instance "Mayfly") or by their scientific order (Mayflies are in the order "Ephemeroptera."). The OCC data identifies the various macroinvertebrates found in Saline Creek by their scientific names.

Saline Creek contains many "pollution intolerant" indicator species, including Ephemeroptera (Mayflies), "Plecoptera" (Stoneflies), "Trichoptera" (Caddisflies), "Megaloptera" (Alderflies or Dobsonflies) and "Coleoptera" (Riffle Beetles). These species are intolerant of sediment, excessive organic enrichment, dewatering and the loss of gravel, cobble and boulder substrates. The data shows a wide range of species within each Order, and a wide range of Orders, indicating a diverse stream rich in aquatic organisms.

Likewise, the distribution and types of fishes within Saline Creek also indicates that it is a High Quality Water. The OCC collected fish at Saline Creek on four occasions starting in 1998, with the most recent collection in 2008. The fish collected include Ozark Minnows (which prefer areas of streams that are spring fed, and cannot tolerate silty waters); Southern Redbellied Dace and Shadow Bass (also requiring spring fed creeks, and whose presence indicates a high quality water); Stippled Darter (known to occur near springs in rocky pools); Orangethroat Darters (which need cool, clear water); Central Stonerollers (found in clear streams in runs and riffles over gravel/cobble substrate); Slender Madtom (an endangered species in some states, requiring clear water and gravel bottoms); Banded Sculpin (inhabits clear, cold-water streams with gravel bottoms); and Carmine and Cardinal Shiners (which require clear, fast flowing streams and small rivers over clean gravel or rubble substrates). Additionally, high level predator fish, including large and smallmouth bass were collected by the OCC. *See, e.g.*, Mareska & Jackson, *Use of shadow bass stock characteristics to evaluate natural and scenic waterways in Mississippi*, Proceedings of the Annual Conference Southeastern Association of Fish and Wildlife Agencies, 54:167-178 (2000); Tumilson & Cline, Food Habits of the Banded Sculpin (Cottus carolinae) in Oklahoma With Reference to Predation on the Oklahoma Salamander (Eurycea tynerensis) (2002); and the Wisconsin Department of Natural Resources, http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=13&SpecCode=AFCKA02250.

The presence of such pollution intolerant fishes indicates that Saline Creek and Little Saline Creek are High Quality Waters. These locations are additionally important because of the presence of Lake Hudson downstream of these creeks. The reservoir prevents both downstream dispersal of riverine biota, and upstream migration from other, upstream reaches of the Neosho drainage into Saline and Little Saline Creeks. At some point the Creek populations of riverine fishes may become relict, but should now be considered a source of genetic material to replenish imperiled stocks in other, impacted areas.

Additional, but overlooked considerations indicate Saline and Little Saline Creeks should be designated HQWs. Both creeks are tributaries of the Neosho

River system and likely contain rare species, some of which are designated as endangered in certain locations. Unionid mussels are at exceptional risk of endangerement/extinction in North America in streams with substrate alteration. Mussel species including the Neosho Mucket (Lampsilis rafinesqueana), Western Fanshell (Cyprogenia aberti) and Rabbitsfoot (Quadrula cylindrical cylindrical) are rare or are considered extirpated in the upper reaches of the Neosho River drainage (*see* Obermeyer, BK. 2000. Recovery plan for four freshwater mussels in southeast Kansas: Neosho mucket–Lampsilis rafinesqueana, Ouachita kidneyshell-Ptychobranchus occidentalis, Rabittsfoot-Quadrula cylindrica cylindrica, Westernfanshell-Cyprogenia aberti. Kansas Department of Wildlife & Parks, Pratt, Kansas. 83 pp). As undisturbed tributaries of the Neosho River, Saline and Little Saline Creeks may contain relict populations of some or all of these mussel species. Unionid mussels are unique in having pseudoparasitic larvae that are dependent on one or a few species of fish hosts as a means of dispersal. The Neosho Mucket parasitizes only Micropterus basses, two of which (Largemouth: Micropterus salmoides and Smallmouth: Micropterus dolumieu) are present in Saline and Little Saline Creeks (*see* Shriver, MA. 2001. Reproduction and propagation of the Neosho Mucket, Lampsilis rafinesqueana. MS Thesis, Missouri State University, Springfield, Missouri. 73 pp.). Host fish for the Western Fanshell are darter species also found in these locations (Fantail Darter: Etheostoma flabellare and Logperch: Percina caprodes) and the Mottled Sculpin (Cottus carolinae) (*see* Obermeyer, BK. 2000). The Rabbitsfoot also utilizes darters: Greenside (Etheostoma blenniodes), Orangethroat (Etheostoma spectabile) and the Cardinal Shiner (Luxilis cardinalis) (*see* Obermeyer, BK. 2000). Mussels are often overlooked during fisheries surveys because they bury in substrate from the substrate surface to depths of 15 cm below the substrate surface, which makes them difficult to observe. They are seldom dislodged during seining activities for fish, and do not float or move during electrofishing sampling. Mussels also tend to congregate in patchy distributions called mussel beds that are characterized by serving as flow refugia during flooding, and may be nearly or totally absent from adjacent substrates (*see* Strayer, DL. 1999. Use of flow refuges by unionid mussels in rivers. J. N. Am. Benthol. Soc. 18: 468-476). All three of the mussels addressed here are dependent on gravel/cobble substrates as occur in Saline and Little Saline Creeks.

Amphibians are also usually ignored during fisheries surveys. Of importance in this location is the rare Oklahoma Salamander (Eurycea tynerensis), which has an extremely small range of occurrence in the Ozark Foothills. Oklahoma Salamanders occur in very shallow waters (<1 cm) in areas with little or no perceptible current (*see* Tumlinson, R, GR Cline & P Zwank. 1990. Surface habitat associations of the Oklahoma Salamander (Eurycea tynerensis) Herpetologica, 46: 169-175). They forage predominantly for aquatic macroinvertebrates (mayflies, midge larvae, amphipods and isopods), all of which have been identified in Saline and Little Saline Creeks. Oklahoma Salamanders

could be easily overlooked during OCC surveys due to a combination of their small size (body length <30 mm), their preference for very shallow water and their habit of rapid escape into interstitial substrate spaces when disturbed.

3. There is significant local support for promulgation of the HQW designation for Saline and Little Saline Creeks

Among those seeking the HQW designation for Saline and Little Saline Creek are landowners owning significant portions of the land riparian to the streams. Thus far, over 100 local citizens have joined together to protect Saline and Little Saline Creeks. In addition, numerous Oklahoma Senators and Representatives have issued formal letters of support in listing the Creeks as High Quality Waters.

Saline Creek and Little Saline Creek are historically important, and are biologically healthy streams. It is critical that the Creeks receive additional protections. Both Saline and Little Saline Creeks far exceed the scientific requirements of High Quality Waters and are already considered High Quality Sites by the Oklahoma Conservation Commission. As detailed above, Saline and Little Saline Creeks meet all requirements necessary for a High Quality Water designation. It is requested that the Oklahoma Water Resources Board designate both Saline Creek and Little Saline Creek as High Quality Waters.

Attachment C. Oklahoma Register, Volume 28, Number 17 Final Rule Publication

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
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	121600		WWAC	•	SBCR		•		
Tributary of Chouteau Creek at SE 1/4, Sec. 29, T20N, R19E, IM	121600		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 Lake	121600020050	PPWS	WWAC	•	PBCR		•		
Saline Creek	121600020030	PPWS	CWAC	•	PBCR		•	HQW	
Little Saline Creek	121600020070	PPWS	CWAC	•	PBCR		•	HQW	

Attachment D. INCOG Request for Upgrading the Arkansas River

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September 14, 2015

Mr. Derek Smithee
Oklahoma Water Resources Board
Water Quality Programs Division Chief
3800 N. Classen Blvd.
Oklahoma City, OK 73118

Regarding: Justification for Upgrading the Current Secondary Body Contact Recreational Beneficial Use to a Primary Body Contact Recreational Beneficial Use on the Arkansas River from the mouth of the Verdigris River to Keystone Dam

Affected River Reaches: OK120420010130_00 (Tulsa County), OK120420010010_10 (Tulsa County), OK120420010010_00 (Tulsa County), OK120410010080_10 (Tulsa County), OK120410010080_00 (Tulsa & Wagoner Counties) and OK120410010010_00 (Muskogee County)

Reason for Change:

In the 1980's the beneficial use assigned to the Arkansas River, from the confluence of the Verdigris River upstream to Keystone Dam, was designated as Secondary Body Contact Recreation (SBCR). The intent, at that time, was to discourage human activity within the channel for safety reasons due to physical and flow characteristics of the river and existing water quality concerns. To maintain and continually improve water quality, the higher water quality criteria for Primary Body Contact Recreation (PBCR) was retained instead of the less stringent standard for SBCR. Since then, all activities and discharge permittees along the river have been required to meet the water quality criteria for PBCR, the highest standard.

Upgrading this portion of the Arkansas River to PBCR from SBCR is in keeping with EPA's Fishable and Swimmable Goal and will realign it with most surface waters in Oklahoma. The Arkansas River from the Kansas state line to and including Keystone Reservoir has a beneficial use of PBCR. The Arkansas River below this section, from the confluence of the Verdigris River to the Arkansas state line, is also assigned a PBCR beneficial use. In addition, many of the features that originally posed safety concerns have been removed. The Sand Springs Reregulation Dam has been removed; River Parks Authority has removed several tons of metal and other dangerous debris from the river, and engineering design has been completed and permitting received to modify Zink Dam to significantly reduce existing hydraulic hazards. Safety is always a concern around water, but this section of the river is not physically more hazardous than many other waters of the state, and this is not currently considered a valid reason to continue with a SBCR beneficial use listing.

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Permitted dischargers and much of the stormwater runoff within this watershed are now closely regulated. Since the SBCR designation, wastewater treatment plant upgrades, the introduction of industrial pretreatment programs and technological advances in municipal and industrial processes have resulted in cleaner discharges. Also, the stormwater runoff from many cities and urbanized areas is now regulated under the Phase I and Phase II MS4 Stormwater Program. Technological improvements, additional regulatory programs, and enforcement activities have resulted in water quality improvements throughout this region.

At this time there is a regional desire to promote the recreational benefits of having a resource like the Arkansas River which flows through eastern Oklahoma and the Tulsa area. Upgrading the beneficial use to PBCR while continuing to maintain the higher water quality standards currently in place will help foster development activities in a sustainable and environmentally friendly way. As the population and economic development within this watershed grows and citizens become more informed, there will be renewed interest in the Arkansas River. INCOG believes a PBCR beneficial use is appropriate and will allow recreational opportunities and the aesthetics this resource can provide to reach its full potential.

The INCOG Board of Directors, at their meeting on Sept. 8, 2015, voted unanimously to request that the OWRB change the beneficial use for the above mentioned reaches of the Arkansas River to Primary Body Contact Recreation. Please include this in the 2015/2016 triennial review process.

INDIAN NATIONS COUNCIL OF GOVERNMENTS

John Smaligo, Chair

Date: 9-15-15