

# HYDROLOGIC INVESTIGATION OF THE RED RIVER BASIN

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**Technical Report 98 - 4** 

Oklahoma Water Resources Board Duane A. Smith Executive Director

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## HYDROLOGIC INVESTIGATION OF THE RED RIVER BASIN

#### **INTRODUCTION**

This report describes the hydrologic investigation of the stream water resources of the Red River Basin in Oklahoma. Oklahoma Statutes (Title 82, O.S. Supp. 1981, Sec. 105.12) set forth the criteria for determining whether or not an application for the use of surface water will be approved. An accurate determination of the amounts and distribution of water available within a stream system is a necessity for determining if water is available for appropriation and for assessing the impact of a proposed appropriation of water on existing users. To facilitate these determinations, the Red River Basin in Oklahoma is subdivided into eighteen (18) stream systems, designated as Stream System 1-1 through Stream System 1-18. Three of these stream systems (1-8, 1-13 and 1-15) are further divided into stream subsystems.

Water available for appropriation within every stream system is being determined on a statewide basis to develop a comprehensive, updated reference for use by the Oklahoma Water Resources Board and the public. The new updates will replace the previously published Hydrologic Investigations that used different methods for calculating water available for appropriation in a stream. The revised hydrologic investigations use the mean annual stream flow from stream gages located within the various stream systems. Where stream gage data are unavailable, then mean annual precipitation runoff is used or data from a nearby watershed with comparable hydrologic characteristics may be used.

The primary purpose of this study is to provide data to assist the Oklahoma Water Resources Board in the day-to-day management of the state's surface water resources. This study determines water available for appropriation in the Red River Basin stream systems and subsystems, provides data on the major reservoirs and lakes in these stream systems and provides other reference data useful to the Board and the public.

Data used to calculate the figures in this report were obtained from records of the U.S. Geological Survey stream gages on tributaries and rivers in this basin. Other data were obtained from the Oklahoma Water Resources Board, the U.S. Army Corps of Engineers and the Natural Resources Conservation Service.

#### **BASIN DESCRIPTION**

The Red River Basin encompasses 24,298 square miles  $(mi^2)$  in Oklahoma. Stream flow in this basin enters Oklahoma from the states of Texas and Arkansas. These bordering states contribute an additional 7,702 mi<sup>2</sup> of drainage area. The Red River Basin flow then discharges from Oklahoma into Arkansas.

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#### STREAM SYSTEM BOUNDARIES AND DRAINAGE AREAS

Stream system boundaries and drainage areas used in this study are generally those from previously published Hydrologic Investigations by the Oklahoma Water Resources Board. There are instances, however, where the stream system boundaries presented in these past publications differ noticeably from those of the U.S. Geological Survey's (USGS) hydrologic unit boundaries shown on the Digital Atlas of Oklahoma (U.S. Geological Survey, 1997). Where such inconsistencies occur, the USGS's Hydrologic Unit boundaries from the Digital Atlas of Oklahoma were adopted. In addition, the USGS's Hydrological Unit Code watershed numbering system was used for subdivisions of the stream systems.

#### SURFACE WATER GAGE DATA

Whenever possible, USGS gage data are used in this study (U.S. Geological Survey, 1996). The gages selected are in operation and located on the main drainage stems of the stream systems as close as possible to the outlets of the stream systems. However, there are instances where data from discontinued gages had to be used as no other reliable gage was found. The importance of using current data is emphasized as parts of the state have experienced a significant change in annual precipitation over the past decade. In addition, recently observed shifts in base flows and changing upstream out-of-state influences are being reflected in the current gage data. Stream gage data from a nearby watershed having similar hydrologic characteristics are used where current stream gage data are unavailable or inadequate.

The gage data reflect water that flows past the gage and is a function of the dynamics of water within the watershed above the gage. These water dynamics include water diverted for use, return flows from users, base flow contribution by groundwater, precipitation runoff, water stored in lakes, water lost to an aquifer and water lost due to evaporation. The amount of water that is present before any of it is removed by appropriated users needs to be determined. The Oklahoma Water Resources Board database is used to calculate the average amount of permitted water rights in the drainage area above the gage for the years that encompass the gauge data. The annual mean discharge recorded by the gage then is adjusted upward by the annual mean upstream water right appropriations to derive the adjusted gage flow.

If the drainage areas of the gage and stream system are not the same, the flow calculation at the gage is adjusted proportionally to reflect the total drainage area of the stream system. If no major reservoirs exist between a gage and the entrance or outlet to the stream system, the proportionality is based on contributing drainage areas. However, if a major reservoir is present between these points, the surface area of the conservation pool of the reservoir is omitted when calculating this proportionality.

One of the goals of utilizing stream systems and subsystems in the stream water appropriation process is to maintain a balance between the total amount of water available within a large drainage area and water that may be appropriated for use within that area. Many of the stream systems and subsystems are hydrologically connected, as one drains into another. The total amount of water within a stream system or subsystem is called the Total Estimated Available Water (TEAW).

#### **RESERVOIRS AND LAKES**

The Oklahoma Water Resources Board maintains a large database of reservoirs and lakes in Oklahoma. This database consists of reservoirs and lakes that are associated with water use permits. The yield of many of these structures is known while others have yet to be determined. Only those reservoirs and lakes contained in this database, and therefore deemed to have or to potentially have a significant role in supplying the water needs of the area, are presented in this study. Information about these reservoirs and lakes is from the Oklahoma Water Resources Board files, Oklahoma Water Atlas (Oklahoma Water Resources Board, 1990) and Civil Works Projects (U.S. Army Corps of Engineers, 1993).

There are approximately 2,080 impoundments constructed by the Soil Conservation Service (SCS), now called the Natural Resources Conservation Service (NRCS), in Oklahoma. Oklahoma Statutes require that the Oklahoma Water Resources Board provide a priority based on beneficial use of that portion of the water designated by the NRCS as necessary for the sediment pool. NRCS structures that do not have a known yield are allocated water from the reservoir's sediment pool by the Oklahoma Water Resources Board, after multiplying the volume by an adjustment that takes into consideration the reservoir's drainage area and the area's mean precipitation runoff. This adjustment is known as the reservoir refill factor ( $\alpha$ ). The calculated estimated value of  $\alpha$  for the stream system or subsystem is included in this study.

The sediment pool storage of NRCS structures and the storage necessary to accommodate the dependable yields in other reservoirs and lakes are subtracted from the TEAW. The resulting value is the Adjusted Total Estimated Available Water (ATEAW), which is the amount of water available for appropriation from the river. Water available for appropriation from reservoirs or lakes is then based on the dependable yields, sediment pool storage or other appropriate storage value.

#### **ADDITIONAL DATA**

The major tributaries listed in each stream system or subsystem are those named on the <u>Hydrologic Unit Base Map</u> (U.S. Geological Survey, 1974); map scale is 1:500,000.

The mean annual runoff is presented for each stream system and subsystem. This number is calculated by dividing the gauge flow adjusted for upstream water use by the contributing drainage area above the gauge.

The mean annual net lake evaporation data are derived from a map titled <u>Average Annual</u> <u>Net Lake Evaporation, Pre-1988</u> (Natural Resources Conservation Service, date unknown).

#### REFERENCES

- Natural Resources Conservation Service, date unknown, <u>Average Annual Net Lake</u> <u>Evaporation, Pre-1988</u>, map.
- Oklahoma Water Resources Board, 1990, <u>Oklahoma Water Atlas</u>, Publication 135, Oklahoma City, Oklahoma, 360 p.
- U S Army Corps of Engineers, 1993, <u>Civil Works Projects, Pertinent Data</u>, Tulsa, Oklahoma, 146 p.
- U S Geological Survey, 1996, <u>Water Resources Data Oklahoma</u>, <u>Volume 1., Arkansas River</u> <u>Basin</u>, U S Geological Survey-Data Report-95-1.
- U S Geological Survey, 1997. Digital Atlas of Oklahoma, Oklahoma City, Oklahoma, CD.

APPENDIX A

# HYDROLOGIC DATA AND DETERMINATION OF AVAILABLE WATER WITHIN THE RED RIVER BASIN

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STREAM SYSTEM 1-1: MAIN STEM OF RED RIVER From Near Swink, OK to OK/AR State Line





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## STREAM SYSTEM 1-1: MAIN STEM OF RED RIVER FROM NEAR SWINK, OK TO STATE BORDER OF OK-AR

#### **General Information**

Stream system area - 410 mi<sup>2</sup> Hydrologic Unit Code-

1114 0106 020	175 mi <sup>2</sup>
1114 0106 040	183 mi <sup>2</sup>
1114 0106 050	52 mi <sup>2</sup>

Total drainage area - 410 mi<sup>2</sup>

Major tributaries - Clear Creek, Waterhole Creek, Norwood Creek Major reservoirs or lakes - None Mean annual runoff based on USGS Normal annual runoff values - 19 inches Mean annual net lake evaporation for stream system - 0 inches Estimated reservoir refill factor (α) for stream system - 2

## **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source USGS) Mean Annual Flow for stream system based on 19" annual runoff - 415,467 acre-feet/year

## Total Estimated Available Water - 415,467 acre-feet/year

## Reservoir's Storage/ Dependable Yields within stream system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 1,249 acre-feet/year

# Total Estimated Available Water - 415,467 acre-feet/year Total Estimated Storage/Dependable Yields - 1,249 acre-feet/year Adjusted Total Estimated Available Water - 414,218 acre-feet/year

Watershed Codes	<u>Area</u>	Adjusted Total Estimated Available Water
1114 0106 020	175 mi <sup>2</sup>	177,333.48 acre-feet/year
1114 0106 040	183 mi²	185,440.15 acre-feet/year
1114 0106 050	52 mi <sup>2</sup>	51,444.38 acre-feet/year

#### STREAM SYSTEM 1-2: LITTLE RIVER From Walnut Mountains, OK to Near Shinewell, OK





Stream System 1-2

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## **STREAM SYSTEM 1-2 : LITTLE RIVER**

## **General Information**

Stream system area in Oklahoma - 2,204 mi<sup>2</sup> Hydrologic Unit Code -

1114 0108	249 mi² (in Arkansas)
1114 0109	1,787 mi <sup>2</sup> (in Arkansas)
1114 0108 010	15 mi <sup>2</sup>
1114 0108 030	46 mi <sup>2</sup>
1114 0108 040	226 mi <sup>2</sup>
1114 0108 050	225 mi <sup>2</sup>
1114 0108 060	81 mi <sup>2</sup>
1114 0107 010	322 mi <sup>2</sup>
1114 0107 020	308 mi <sup>2</sup>
1114 0107 030	118 mi <sup>2</sup>
1114 0107 040	345 mi <sup>2</sup>
1114 0107 050	314 mi <sup>2</sup>
1114 0109 170	61 mi <sup>2</sup>
1114 0109 180	36 mi <sup>2</sup>
1114 0109 190	43 mi <sup>2</sup>
1114 0109 200	$64 \text{ mi}^2$

Total drainage area -  $4,240 \text{ mi}^2$  (2,204 mi<sup>2</sup> in OK, 2,036 mi<sup>2</sup> in AR)

Major tributaries (OK) - Beach Creek, Mountain Fork, Big Eagle Creek, Buffalo Creek, Boktuklo Creek, Black Fork Creek, Cloudy Creek, Terrapin Creek, Cypress Creek, West Fork, Glover Creek, Cedar Creek, North Carter, Mid Carter Creek, Mountain Fork Creek, Rock Creek, Otter Creek, East Fork Creek, Lukfata Creek.

• Major reservoirs or lakes - Broken Bow Lake, Pine Creek Lake Mean annual runoff based on adjusted gage flow - 23 inches Mean annual net lake evaporation for stream system - 3 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 2

## **Estimated Available Water**

Since there are two USGS gages available, one for Little River and the other for Mountain Creek, both were used to determine the Total Estimated Available Water for the entire stream system.

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<u>USGS gage 07335300 Little River below Lukfata Creek near Idabel, OK</u>
Gage Location - SE1/4, SE1/4 Sec.14, T7S -R24E, McCurtain County - 1,226 mi<sup>2</sup> drainage area.
Water years 1971 through 1996
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Mean annual gage flow - 1,873 cfs; 1,356,352 acre-feet/year Drainage area of Little River below gage but above confluence with Mountain Creek -193 mi<sup>2</sup>

Mean Annual runoff for 193 mi<sup>2</sup> of Little River drainage below gage, and above confluence with Mountain Creek - 213,520 acre-feet/year.

Total Estimated Available Water for Little River prior to confluence with the Mountain Creek - 1,569,872 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
Јапиагу	124,484	April	143,384	July	27,738	October	64,764
February	133,158	May	201,672	August	20,911	November	130,884
March	176,578	June	119,100	September	41,843	December	171,350

Table of monthly mean flows (acre-feet) from USGS gage 07335300 (WY 1971-1996)

USGS gage 07339000 Mountain Fork near Eagletown, OK

Gage Location - SE1/4,SE1/4, Sec.7, T6S - R26E, McCurtain County - 787 mi<sup>2</sup> drainage area. Water years 1970 through 1996:

Mean annual gage flow - 1,479 cfs; 1,071,033 acre-feet/year

Drainage area of Mountain Creek below gage and before confluence with Little River - 54  $\mathrm{mi}^2$ 

Mean Annual runoff for 54  $mi^2$  of Mountain Creek below gage and before confluence with Little River - 73,489 acre-feet/year

Total Estimated Available Water for Mountain Creek prior to confluence with Little River - 1,144,522 acre-feet/year

# Total flow at confluence of Little River and Mountain Creek - 2,714,394 acre-feet/year

Drainage area below confluence of Little River and Mountain Creek - 56 mi<sup>2</sup> Mean Annual runoff for 56 mi<sup>2</sup> below confluence of Little River and Mountain Creek -in the stream system - 67,259 acre-feet/year

Total flow for the stream system - 2,781,653 acre-feet/year Mean Annual flow adjusted for upstream water use - 2,814,296 acre-feet/year Total Estimated Available Water - 2,814,296 acre-feet/year

Table of month	y mean flows	(acre-feet) fro	om USGS gage	: 07339000 (WY	1970-1996)
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Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	107,078	April	127,135	July	53,447	October	40,224
February	99,771	May	136,969	August	46,251	November	76,364
March	127,129	June	98,089	September	36,962	December	121,716

## Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 201,900 acre-feet/year Total dependable yield within stream system - 290,080 acre-feet/year NRCS storage within stream system - 0 acre-feet/year

## Total Estimated Available Water - 2,814,296 acre-feet/year Total Estimated Storage/Dependable Yields - 290,080 acre-feet/year Adjusted Total Estimated Available Water - 2,524,216 acre-feet/year

<u>Area</u>	Adjusted Total Estimated Available Water
15 mi <sup>2</sup>	19,153.56 acre-feet/year
46 mi <sup>2</sup>	58,737.58 acre-feet/year
226 mi <sup>2</sup>	288,580.26 acre-feet/year
225 mi <sup>2</sup>	91,303.36 acre-feet/year
81 mi <sup>2</sup>	103,429.21 acre-feet/year
322 mi <sup>2</sup>	411,163.03 acre-feet/year
308 mi²	299,206.37 acre-feet/year
118 mi <sup>2</sup>	150,674.65 acre-feet/year
345 mi <sup>2</sup>	440,531.81 acre-feet/year
314 mi <sup>2</sup>	400,947.80 acre-feet/year
61 mi <sup>2</sup>	77,891.13 acre-feet/year
36 mi²	45,968.54 acre-feet/year
43 mi <sup>2</sup>	54,906.86 acre-feet/year
64 mi <sup>2</sup>	81,721.84 acre-feet/year
	$\frac{\text{Area}}{15 \text{ mi}^2}$ $46 \text{ mi}^2$ $226 \text{ mi}^2$ $225 \text{ mi}^2$ $81 \text{ mi}^2$ $322 \text{ mi}^2$ $308 \text{ mi}^2$ $118 \text{ mi}^2$ $345 \text{ mi}^2$ $314 \text{ mi}^2$ $61 \text{ mi}^2$ $36 \text{ mi}^2$ $43 \text{ mi}^2$ $64 \text{ mi}^2$

#### PINE CREEK LAKE

# Little River - Stream System 1-2

Hydrologic Unit Code - 1114 0107 020

Located on the Little River Drainage area - 635 sq.mi.

Flood control storage - 465,780 acre-feet Conservation storage - 53,750 acre-feet

Surface area of Flood pool - 17,230 acres Surface area of Normal pool - 3,750 acres

Irrigation/Municipal water supply dependable yield - 94,080 acre-feet/year

#### **OWRB Reservoir ID # 46**

## **BROKEN BOW LAKE**

## Mountain Creek - Stream System 1-2

Hydrologic Unit Code - 1114 0108 050

Located on Mountain Creek Drainage area - 754 sq.mi.

Flood control storage - 1,368,230 acre-feet Conservation storage - 918,070 acre-feet

Surface area of Flood pool - 18,000 acres Surface area of Normal pool - 14,200 acres

Irrigation/Municipal water supply dependable yield - 196,000 acre-feet/year

#### **OWRB Reservoir ID # 08**







Stream System 1-3

#### **STREAM SYSTEM 1-3 : KIAMICHI RIVER**

#### **General Information**

Stream system are	ea - 1,821 mi <sup>2</sup>	•
Hydrologic Unit C	Code -	
	1114 0105 010	246 mi <sup>2</sup>
	1114 0105 020	172 mi <sup>2</sup>
	1114 0105 030	275 mi <sup>2</sup>
	1114 0105 040	314 mi <sup>2</sup>
	1114 0105 050	176 mi <sup>2</sup>
	1114 0105 060	204 mi <sup>2</sup>
	1114 0105 070	311 mi <sup>2</sup>
	1114 0105 080	123 mi <sup>2</sup>

Total drainage area - 1,821 mi<sup>2</sup>

Major tributaries - Rock Creek, Buffalo Creek, Anderson Creek, Jackfork Creek, Caney Creek, Marble Creek, Buck Creek, Tenmile Creek, Beaver Creek, Cedar Creek, One Creek, Rock Creek, Frazier Creek, Gates Creek, Long Creek, N. Fork Creek

Major reservoirs or lakes - Hugo Lake, Lake Raymond Gary, Sardis Lake Mean annual runoff based on adjusted gage flow - 21.8 inches Mean annual net lake evaporation for stream system - 2 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 2

## **Estimated Available Water**

<u>USGS gage\_07336200 Kiamichi River near Antlers, OK</u> Gage Location - SW1/4; Sec.35, T3S-R16E, Pushmataha County - 1,138 mi<sup>2</sup> drainage area. Water years 1984 through 1996:

Mean annual gage flow - 1,817 cfs; 1,315,799 acre-feet/year Mean annual gage flow adjusted for upstream water use - 1,324,059 acre-feet/year Mean annual runoff for 683 mi<sup>2</sup> below USGS gage - 724,593 acre-feet/year

## Total Estimated Available Water - 2,048,652 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	114,951	April	175,286	July	27,738	October	66,178
February	124,659	May	221,291	August	21,711	November	130,111
March	165,323	June	95,172	September	28,212	December	144,842

Table of monthly mean flows (acre-feet) from USGS gage 07336200 (WY 1984-1996)

## Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 344,800 acre-feet/year Total dependable yield within stream system - 221,760 acre-feet/year NRCS storage within stream system - 3,113 acre-feet/year

## Total Estimated Available Water - 2,048,652 acre-feet/year Total Estimated Storage/Dependable Yields - 224,873 acre-feet/year Adjusted Total Estimated Available Water - 1,823,779 acre-feet/year

Watershed Codes	<u>Area</u>	Adjusted Total Estimated Available Water
1114 0105 010	246 mi <sup>2</sup>	276,580.65 acre-feet/year
1114 0105 020	172 mi <sup>2</sup>	191,699.55 acre-feet/year
1114 0105 030	275 mi <sup>2</sup>	151,479.08 acre-feet/year
1114 0105 040	314 mi <sup>2</sup>	353,254.66 acre-feet/year
1114 0105 050	176 mi <sup>2</sup>	198,002.61 acre-feet/year
1114 0105 060	204 mi <sup>2</sup>	229,503.02 acre-feet/year
1114 0105 070	311 mi <sup>2</sup>	284,882.61 acre-feet/year
1114 0105 080	123 mi <sup>2</sup>	138,376.82 acre-feet/year

#### SARDIS LAKE

## Jackfork Creek - Stream System 1-3

Hydrologic Unit Code - 1114 0105 030

Located on Jackfork Creek Drainage area - 275 sq.mi.

Flood control storage - 396,900 acre-feet Conservation storage - 274,330 acre-feet

Surface area of Flood pool - 16,960 acres Surface area of Normal pool - 13,610 acres

Irrigation/Municipal water supply dependable yield - 156,800 acre-feet/year

### **OWRB Reservoir ID # 51**

#### **HUGO LAKE**

## Kiamichi River - Stream System 1-3

Hydrologic Unit Code - 1114 0105 070

Located on Kiamichi River Drainage area - 1,434 sq.mi.

Flood control storage - 955,176 acre-feet Conservation storage - 158,617 acre-feet

Surface area of Flood pool - 35,045 acres Surface area of Normal pool - 13,144 acres

Irrigation/Municipal water supply dependable yield - 64,960 acre-feet/year

**OWRB** Reservoir ID # 31

#### **RAYMOND GARY LAKE**

# Gates Creek - Stream System 1-3

Hydrologic Unit Code - 1114 0105 080

Located on Gates Creek Drainage area - unknown

Flood control storage - unknown Conservation storage - 1,681 acre-feet

Surface area of Flood pool - unknown Surface area of Normal pool - 263 acres

Irrigation/Municipal water supply dependable yield - unknown

### **OWRB Reservoir ID # none**



#### STREAM SYSTEM 1-4: MUDDY BOGGY RIVER

#### **General Information**

Stream system area - 2,551 mi<sup>2</sup> Hydrologic Unit Code -321 mi<sup>2</sup> 1114 0103 010 230 mi<sup>2</sup> 1114 0103 020 276 mi<sup>2</sup> 1114 0103 030 1114 0103 040 183 mi<sup>2</sup> 1114 0103 050  $212 \text{ mi}^2$ 201 mi<sup>2</sup> 1114 0103 060 351 mi<sup>2</sup> 1114 0104 010 150 mi<sup>2</sup> 1114 0104 020 214 mi<sup>2</sup> 1114 0104 030  $200 \text{ mi}^2$ 1114 0104 040  $89 \text{ mi}^2$ 1114 0104 050 124 mi<sup>2</sup> 1114 0101 060

Total drainage area - 2,551 mi<sup>2</sup>

Major tributaries - Leader Creek, Clear Boggy Creek, Muddy Boggy Creek, North Boggy Creek, Buck Creek, McGee Creek, Goose Creek, Delaware Creek, Sandy Creek, Caney Creek, Cowpen Creek, Shawnee Creek, Rock Creek, Caney Boggy Creek, Salt Creek, Keel Creek, Coal Creek, Crooked Creek, Sugar Creek, Crowder Creek.

Major reservoirs or lakes - McGee Creek Reservoir, Atoka Lake, Boswell Reservoir Mean annual runoff based on adjusted gage flow - 14.39 inches Mean annual net lake evaporation for stream system - 3 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 2

#### **Estimated Available Water**

<u>USGS gage 07335300 Muddy Boggy Creek near Unger, OK</u> Gage Location - SE1/4,SE1/4, Sec.17, T6S-R15E, Choctaw County - 2,273 mi<sup>2</sup> drainage area. Water years 1983 through 1996:

Mean annual gage flow - 2352 cfs; 1,703,224 acre-feet/year Mean annual gage flow adjusted for upstream water use - 1,743,860 acre-feet/year Mean annual runoff for 278 mi<sup>2</sup> below USGS gage - 213,283 acre-feet/year

#### Total Estimated Available Water -1,957,143 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	117,227	April	232,902	July	43,053	October	43,422
February	144,046	May	343,377	August	28,046	November	110,945
March	241,711	June	166,477	September	52,080	December	179,469

Table of monthly mean flows (acre-feet) from USGS gage 07335300 (WY 1983-1996)

#### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream sub-system - 294,170 acre-feet/year Total dependable yield within stream sub-system - 219,867 acre-feet/year NRCS storage within stream sub-system - 17,417 acre-feet/year

Total Estimated Available Water - 1,957,143 acre-feet/year Total Estimated Storage/Dependable Yields - 237,284 acre-feet/year Adjusted Total Estimated Available Water - 1,719,859 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1114 0103 010	321 mi <sup>2</sup>	243,231.19 acre-feet/year
1114 0103 020	230 mi <sup>2</sup>	83,690.42 acre-feet/year
1114 0103 030	276 mi <sup>2</sup>	211,548.91 acre-feet/year
1114 0103 040	183 mi <sup>2</sup>	68,488.73 acre-feet/year
1114 0103 050	212 mi <sup>2</sup>	162,553.71 acre-feet/year
1114 0103 060	201 mi <sup>2</sup>	154,088.44 acre-feet/year
1114 0104 010	351 mi <sup>2</sup>	262,258.37 acre-feet/year
1114 0104 020	150 mi <sup>2</sup>	112,704.93 acre-feet/year
1114 0104 030	214 mi <sup>2</sup>	161,060.13 acre-feet/year
1114 0104 040	200 mi <sup>2</sup>	153,282.24 acre-feet/year
1114 0104 050	89 mi <sup>2</sup>	68,038.35 acre-feet/year
1114 0101 060	124 mi <sup>2</sup>	38,913.57 acre-feet/year

## ATOKA LAKE

## Confluence of North Boggy Creek and Buck Creek - Stream System 1-4

Hydrologic Unit Code - 1114 0103 020

Located below the confluence of North Boggy Creek and Buck Creek Drainage area - unknown

Flood control storage - unknown Conservation storage - 125,000 acre-feet

Surface area of Flood pool - unknown Surface area of Normal pool - 5,700 acres

Irrigation/Municipal water supply dependable yield -92,067 acre-feet/year

#### **OWRB Reservoir ID # 05**

#### McGEE CREEK LAKE

# McGee Creek - Stream System 1-4

Hydrologic Unit Code - 1114 0103 040

Located on McGee Creek Drainage area - 171 sq.mi.

Flood control storage - 199,270 acre-feet Conservation storage - 113,930 acre-feet

Surface area of Flood pool -5,550 acres Surface area of Normal pool - 3,810 acres

Irrigation/Municipal water supply dependable yield - 71,800 acre-feet/year

**OWRB Reservoir ID # 39** 

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## **BOSWELL LAKE (PROPOSED)**

## Boggy Creek - Stream System 1-4

Hydrologic Unit Code -

Located on Boggy Creek Drainage area - 2,273 sq.mi.

Flood control storage - 2,402,000 acre-feet Conservation storage - 1,306,000 acre-feet

Surface area of Flood pool - 72,480 acres Surface area of Normal pool - 52,740 acres

Irrigation/Municipal water supply dependable yield - 56,000 acre-feet/year

**OWRB Reservoir ID # 07** 

#### STREAM SYSTEM 1-5: MAIN STEM OF RED RIVER From Near Banty, OK to Confluence with Red River



Stream System 1-5

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## STREAM SYSTEM 1-5: MAIN STEM OF RED RIVER FROM NEAR BANTY, OK TO CONFLUENCE WITH RED RIVER

## **General Information**

Stream system area - 111 mi<sup>2</sup> Hydrologic Unit Code -1113 0101 040 111 mi<sup>2</sup>

Total drainage area - 111 mi<sup>2</sup>

Major tributaries - Whitegrass Creek Major reservoirs or lakes - None Mean annual runoff based on USGS normal annual runoff values - 11 inches Mean annual net lake evaporation for stream system - 5 inches Estimated reservoir refill factor (α) for stream system - 2

## **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source -USGS) Mean Annual Flow based on 15" annual runoff - 88,800 acre-feet/year

## Total Estimated Available Water - 88,800 acre-feet/year

## Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year SCS storage within stream system - 0 acre-feet/year

Total Estimated Available Water - 88,800 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 88,800 acre-feet/year

#### STREAM SYSTEM 1-6: BLUE RIVER From Near Fitzhugh, OK to Confluence with Red River





Stream System 1-6

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### **STREAM SYSTEM 1-6 : BLUE RIVER**

#### **General Information**

Stream system area - 678 mi<sup>2</sup> Hydrologic Unit Code -

113 mi <sup>2</sup>
205 mi <sup>2</sup>
360 mi <sup>2</sup>

Total drainage area - 678 mi<sup>2</sup>

Major tributaries - Sandy Creek, Caddo Creek, Bokchito Creek. Major reservoirs or lakes - None Mean annual runoff based on adjusted gage flow - 9.65 inches Mean annual net lake evaporation for stream system - 10 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 1.8

### **Estimated Available Water**

USGS gage 07332500 Blue River near Blue, OK

Gage Location - Between Sec. 27 and Sec.36, T6S-R10 EIM, Bryan County - 476 mi<sup>2</sup> drainage area.

Water years 1936 through 1996:

Mean annual gage flow - 325 cfs; 235,352 acre-feet/year Mean annual gage flow adjusted for upstream water use - 245,112 acre-feet/year Mean annual runoff for 202 mi<sup>2</sup> below USGS gage - 104,018 acre-feet/year

### Total Estimated Available Water - 349,130 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
Јалиагу	13,592	April	34,938	July	9,410	October	14,884
February	20,665	May	40,839	August	4,945	November	15,237
March	28,230	June	26,605	September	9,940	December	15,807

### Table of monthly mean flows (acre-feet) from USGS gage 07332500 (WY 1936-1996)

#### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 0 acre-feet/year

Total dependable yield within stream-system - 0 acre-feet/year

NRCS storage within stream system - 0 acre-feet/year

## Total Estimated Available Water - 349,130 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 349,130 acre-feet/year

Watershed Code 1114 0102 010 1114 0102 020 1114 0102 030 <u>Area</u> 113 mi<sup>2</sup> 205 mi<sup>2</sup> 360 mi<sup>2</sup> Adjusted Total Estimated Available Water 58,188.33 acre-feet/year

105,562.91 acre-feet/year 185,378.76 acre-feet/year

**BRYAN** Lakes Tributaries/Streams Watershed SS 1-7 County E 8 Miles 0 S County Watershed SS 1-7 w Е 100 200 Miles 100 2

STREAM SYSTEM 1-7: MAIN STEM OF RED RIVER From Platter, OK to Near Wade, OK

Stream System 1-7

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## STREAM SYSTEM 1-7: MAIN STEM OF RED RIVER FROM PLATTER, OK TO NEAR WADE, OK

### **General Information**

Stream system area - 332 mi<sup>2</sup> Hydrologic Unit Code -1114 0101 010 89 mi<sup>2</sup> 1114 0101 020 243 mi<sup>2</sup>

Total drainage area - 332 mi<sup>2</sup>

Major tributaries - Island Bayou Creek, Long Creek, Tuklo Creek Major reservoirs or lakes - None Mean annual runoff based on USGS normal annual runoff values - 11 inches Mean annual net lake evaporation for stream system - 7 inches Estimated reservoir refill factor (α) for stream system - 1.9

### **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source-USGS) Mean Annual Flow based on 11" annual runoff - 194,773 acre-feet/year

### Total Estimated Available Water - 194,773 acre-feet/year

### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream sub-system - 0 acre-feet/year Total dependable yield within stream sub-system - 0 acre-feet/year SCS storage within stream sub-system - 0 acre-feet/year

## Total Estimated Available Water - 194,773 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 194,773 acre-feet/year

Watershed Code	<u>Area</u>	Adusted Total Estimated Available Water
1114 0101 010	89 mi <sup>2</sup>	52,213.24 acre-feet/year
1114 0101 020	243 mi <sup>2</sup>	142,559.77 acre-feet/year

### **STREAM SYSTEM 1-8 - WASHITA RIVER**

#### **General Information**

Stream system area - 7,593 mi<sup>2</sup>

Drainage area - 8,026 mi<sup>2</sup> (7,593 mi<sup>2</sup> in OK, 433 mi<sup>2</sup> in TX)

Major reservoirs and lakes - Dead Indian Lake, Foss Reservoir, Fort Cobb Reservoir, Lake Chickasha, Lake Humphrey, Taylor Lake, Lake Fuqua, Lakeof the Arbuckles, Lake Texoma, Lake Duncan.

## STREAM SUB SYSTEM 1-8: WASHITA RIVER



#### **Dependable Yield**

Dead Indian Lake water supply dependable yield - Unknown Foss Reservoir water supply dependable yield - 18,000 acre-feet/year Fort Cobb Reservoir water supply dependable yield - 18,000 acre-feet/year Lake Chickasha water supply dependable yield - Unknown Wiley Post Memorial Lake water supply dependable yield - 538 acre-feet/year Lake Texoma water supply dependable yield - 52,382 acre-feet/year Humphrey's Lake water supply dependable yield - 3,226 acre-feet/year Lake Fuqua water supply dependable yield - 3,427 acre-feet/year Arbuckle Lake water supply dependable yield - 24,000 acre-feet/year Taylor Lake water supply dependable yield - Unknown Duncan Lake water supply dependable yield - Unknown

### **Estimated Available Water**

Total Estimated Available Water:

Stream Subsystem 1-8-4 - 34,420 acre-feet/year Stream Subsystem 1-8-3 - 329,389 acre-feet/year Stream Subsystem 1-8-2 - 299,240 acre-feet/year Stream Subsystem 1-8-1 - 422,488 acre-feet/year

Adjusted Total Estimated Available Water:

Stream Subsystem 1-8-4 - 0 acre-feet/year Stream Subsystem 1-8-3 - 262,554 acre-feet/year Stream Subsystem 1-8-2 - 277,241 acre-feet/year Stream Subsystem 1-8-1 - 286,994 acre-feet/year Stream System 1-8 - 826,789 acre-feet/year

### STREAM SUBSYSTEM 1-8-4: WASHITA RIVER From OK/TX State Line to Foss Reservoir





### STREAM SUBSYSTEM 1-8-4 - WASHITA RIVER From OK-TX State Border to Foss Reservoir

#### Washita River Headwaters

#### **General Information -**

Stream subsystem area in Oklahoma - 1,027 mi<sup>2</sup> Hydrologic Unit Code -

1113 0301	433 mi <sup>2</sup> (in Texas)
1113 0301 030	268 mi <sup>2</sup>
1113 0301 040	332 mi <sup>2</sup>
1113 0301 050	129 mi <sup>2</sup>
1113 0301 060	$187 \text{ mi}^2$
1113 0301 070	111 mi <sup>2</sup>

Total drainage area - 1,460 mi<sup>2</sup> (1,027 mi<sup>2</sup> in OK, 433 mi<sup>2</sup> in TX)

Major tributaries - Dead Indian Creek, Sandstone Creek Major reservoirs or lakes - Dead Indian Lake, Foss Reservoir Mean annual runoff based on adjusted gage flow - 0.43 inches Mean annual net lake evaporation for stream subsystem - 38.0 inches Estimated reservoir refill factor (α) for stream subsystem - 0.6

#### **Estimated Available Water**

USGS gage 07324400 Washita River near Foss, OK Gauge Location - SW/4, SW/4, Sec.1, T12N-R19WIM, Custer County - 1,551 mi<sup>2</sup> drainage area Water Years 1962 - 1996 Mean annual gage flow - 38 cfs; 27,518 acre-feet/year Mean annual gage flow adjusted for upstream use - 36 565 acre-feet/year

Mean annual gage flow adjusted for upstream use - 36,565 acre-feet/year Mean annual runoff for 91 mi<sup>2</sup> below USGS gage, located outside the stream system 1-8-4 - 2,145 acre-feet/year Mean annual flow for stream subsystem - 34,420 acre-feet/year

#### Total Estimated Available Water - 34,420 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	1,230	April	1,863	July	2,928	October	1,734
February	1,183	May	4,195	August	2,626	November	964
March	1,470	June	7,261	September	1,565	December	543

Table of monthly mean flows (acre-feet) from USGS gage 07324400

### Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream subsystem - 166,817 acre-feet/year Total dependable yield within stream subsystem - 18,000 acre-feet/year NRCS storage within stream subsystem - 28,738 acre-feet/year

## Total Estimated Available Water - 34,420 acre-feet/year Total Estimated Storage/Dependable Yields - 46,738 acre-feet/year Adjusted Total Estimated Available Water - 0

(Omitting the NRCS Storage and other reservoir storage and taking into account only the dependable yield)

## Total Estimated Available Water - 34,420 acre-feet/year Total Estimated Storage/Dependable Yields - 18,000 acre-feet/year (using dependable yield only)

Adjusted Total Estimated Available Water - 16,420 acre-feet/year

Watershed Codes	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0301 030	268 mi <sup>2</sup>	8,982.04acre-feet/year
1113 0301 040	332 mi <sup>2</sup>	11,127.01 acre-feet/year
1113 0301 050	129 mi <sup>2</sup>	4,323.45 acre-feet/year
1113 0301 060	187 mi²	6,267.32 acre-feet/year
1113 0301 070	111 mi <sup>2</sup>	(14,279.82) acre-feet/year

## DEAD INDIAN LAKE Dead Indian-Wildhorse Creek Watershed Site #4

## Washita River Headwaters - Stream Subsystem 1-8-4

Hydrologic Unit Code - 1113 0301 040

Located on Dead Indian Creek

Normal pool storage - 977 acre-feet

Surface area of normal pool - 79 acres

Water supply dependable yield - Unknown

### FOSS RESERVOIR

### Washita River Headwaters - Stream Subsystem 1-8-4

Hydrologic Unit Code - 1113 0301 070

Located on the Washita River Drainage area - 1,496 mi<sup>2</sup>

Flood control storage - 180,410 acre-feet Irrigation/water supply storage - 165,480 acre-feet Sediment storage - 76,000 acre-feet

Surface area of flood pool - 11,360 acres Surface area of normal pool - 6,800 acres

Irrigation/water supply dependable yield - 18,000 acre-feet/year

### STREAM SUBSYSTEM 1-8-3: WASHITA RIVER From Foss Reservoir to Near Anadarko, OK





## STREAM SUBSYSTEM 1-8-3 - WASHITA RIVER From Foss Reservoir, OK to Near Anadarko, OK

#### **Upper Washita River**

### **General Information**

Stream subsystem area - 2,264 mi<sup>2</sup> Hydrologic Unit Code -

1113 0302 010	136 mi <sup>2</sup>
1113 0302 020	119 mi <sup>2</sup>
1113 0302 030	206 mi <sup>2</sup>
1113 0302 040	79 mi <sup>2</sup>
1113 0302 050	152 mi <sup>2</sup>
1113 0302 060	119 mi <sup>2</sup>
1113 0302 070	76 mi <sup>2</sup>
1113 0302 080	264 mi <sup>2</sup>
1113 0302 090	317 mi <sup>2</sup>
1113 0302 100	105 mi <sup>2</sup>
1113 0302 110	· 159 mi <sup>2</sup>
1113 0302 120	127 mi <sup>2</sup>
1113 0302 130	202 mi <sup>2</sup>
1113 0302 150	203 mi <sup>2</sup>

Drainage area - 3,724 mi<sup>2</sup> (3,291 mi<sup>2</sup> in OK; 433 mi<sup>2</sup> in TX)

Major tributaries - Boggy Creek, Cobb Creek Major reservoirs or lakes - Fort Cobb Reservoir Mean annual runoff based on adjusted gage flow - 1.83 inches Mean annual net lake evaporation for stream subsystem - 33.5 inches Estimated reservoir refill factor (α) for stream subsystem - 0.9

### **Estimated Available Water**

USGS gage 07326500 Washita River at Anadarko, OK Gage Location - NW1/4 Sec.15, T7N-R10WIM, Caddo County - 3,656 mi<sup>2</sup> drainage area Water Years 1964 - 1996: Mean annual gage flow - 450 cfs; 325,872acre-feet/year Mean annual gage flow adjusted for upstream use - 357,166 acre-feet/year Mean annual runoff for 68 mi<sup>2</sup> below USGS gage - 6,643 acre-feet/year Mean annual runoff in the stream system - 363,809 acre-feet/year Gross Estimated Available Water - 363,809 acre-feet/year (includes stream subsystem 1-8-4)

Table of monthly mean flows (acre-feet) from USGS gage 07326500 (1964-1996)

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	15,253	April	22,320	July	22,326	October	29,645
February	14,055	May	54,185	August	19,312	November	20,415
March	23,249	June	64,282	September	25,534	December	15,684

## **TEAW**(Total Estimated Available Water) of SS 1-8-3:

Gross Estimated Available Water - 363,809 acre-feet/year TEAW of SS 1-8-4 - 34,420 acre-feet/year TEAW of SS 1-8-3 - 329,389 acre-feet/year

#### Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream system - 80,100 acre-feet/year Total dependable yield within stream system - 18,000 acre-feet/year NRCS storage within stream system - 48,835 acre-feet/year

### Total Estimated Available Water - 329,389 acre-feet/year Total Estimated Storage/Dependable Yields - 66,835 acre-feet/year Adjusted Total Estimated Available Water - 262,554 acre-feet/year

Watershed Codes Area	Adjusted Total Estimated Available Water
1113 0302 010 136 mi <sup>2</sup>	13,655.62 acre-feet/year
1113 0302 020 119 mi <sup>2</sup>	12,034.29 acre-feet/year
1113 0302 030 206 mi <sup>2</sup>	24,624.91 acre-feet/year
1113 0302 040 79 mi <sup>2</sup>	8,267.70 acre-feet/year
1113 0302 050 152 mi <sup>2</sup>	19,643.46 acre-feet/year
1113 0302 060 119 mi <sup>2</sup>	11,760.79 acre-feet/year
1113 0302 070 76 mi <sup>2</sup>	11,057.23 acre-feet/year
1113 0302 080 264 mi <sup>2</sup>	31,818.32 acre-feet/year
1113 0302 090 317 mi <sup>2</sup>	42,147.48 acre-feet/year
1113 0302 100 105 mi <sup>2</sup>	12,561.23 acre-feet/year
1113 0302 110 159 mi <sup>2</sup>	20,570.88 acre-feet/year
1113 0302 120 127 mi <sup>2</sup>	14,854.71 acre-feet/year
1113 0302 130 202 mi <sup>2</sup>	10,851.85 acre-feet/year
1113 0302 150 203 mi <sup>2</sup>	28,705.94 acre-feet/year

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### FORT COBB RESERVOIR

## Upper Washita River - Stream Subsystem 1-8-3

Hydrologic Unit Code - 1113 0302 130

Located on Pond (Cobb) Creek Drainage area - 314 mi<sup>2</sup> of which 29 mi<sup>2</sup> is noncontributing

Flood control storage - 143,740 acre-feet Normal pool/Water supply storage - 80,100 acre-feet Dead pool - 1,660 acre-feet

Surface area of flood pool - 5,980 acres Surface area of normal pool - 4,100 acres

Water supply dependable yield - 18,000 acre-feet/year

#### STREAM SUBSYSTEM 1-8-2: WASHITA RIVER From Near Anadarko, OK to Near Pauls Valley, OK



Stream System 1-8

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### **STREAM SUBSYSTEM 1-8-2 - WASHITA RIVER** From Near Anadarko, OK to Near Pauls Valley, OK

### Middle Washita River

#### **General Information**

Stream

Stream subsyster	m area - 1,660 mi <sup>2</sup>	
Hydrologic Unit	Code -	
	1113 0302 160	192 mi <sup>2</sup>
	1113 0302 170	104 mi <sup>2</sup>
	1113 0302 180	241 mi <sup>2</sup>
	1113 0302 190	293 mi <sup>2</sup>
	1113 0303 010	192 mi <sup>2</sup>
	1113 0303 020	178 mi²
	1113 0303 030	67 mi <sup>2</sup>
	1113 0303 040	$68 \text{ mi}^2$
	1113 0303 050	87 mi <sup>2</sup>
	1113 0302 140	238 mi <sup>2</sup>

Drainage area - 5,622 mi<sup>2</sup> (5,189 mi<sup>2</sup> in OK; 433 mi<sup>2</sup> in TX)

Major tributaries - Sugar Creek, West Bitter Creek, Little Washita River, Finn Creek Major reservoirs or lakes - Lake Chickasha, Wiley Post Memorial Lake Mean annual runoff based on adjusted gage flow - 2.45 inches Mean annual net lake evaporation for stream subsystem - 26.4 inches Estimated reservoir refill factor ( $\alpha$ ) for stream subsystem - 1.3

### **Estimated Available Water**

USGS gage 07328500 Washita River near Pauls Valley, OK Gage Location - NE1/4, SE1/4, Sec.1, T3N-R1WIM, Garvin County - 5,330 mi<sup>2</sup> drainage area Water Years 1962 - 1996:

Mean annual gage flow - 906 cfs; 656,089 acre-feet/year Mean annual gage flow adjusted for upstream use - 695,320 acre-feet/year Mean annual runoff for 292 mi<sup>2</sup> below USGS gage - 2149 acre-feet/year

Gross Estimated Available Water - 697,469 acre-feet/year (includes stream subsystems 1-8-4 and 1-8-3)

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	33,827	April	53,330	July	40,962	October	54,001
February	35,164	May	113,167	August	29,214	November	42,378
March	56,584	June	119,992	September	40,355	December	36,902

Table of monthly mean flows (acre-feet) from USGS gage 07328500

## TEAW (Total Estimated Available water) of SS 1-8-2:

Gross Estimated Available Water - 697,469 acre-feet/year TEAW of SS 1-8-3 - 363,809 acre-feet/year TEAW of SS 1-8-4 - 34,420 acre-feet/year **TEAW of SS 1-8-2 - 299,240 acre-feet/year** 

### Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream system - 41,080 acre-feet/year Total dependable yield within stream system - 538 acre-feet/year NRCS storage within stream system - 21,999 acre-feet/year

## Total Estimated Available Water - 299,240 acre-feet/year Total Estimated Storage/Dependable Yields - 21,999 acre-feet/year Adjusted Total Estimated Available Water - 277,241 acre-feet/year

Watershed Codes	Area	Adjusted Total Estimated Available Water
1113 0302 160	192 mi <sup>2</sup>	33,607.89 acre-feet/year
1113 0302 170	104 mi <sup>2</sup>	16,781.07 acre-feet/year
1113 0302 180	241 mi <sup>2</sup>	39,637.38 acre-feet/year
1113 0302 190	293 mi <sup>2</sup>	52,380.66 acre-feet/year
1113 0303 010	192 mi <sup>2</sup>	31,114.89 acre-feet/year
1113 0303 020	178 mi²	28,960.78 acre-feet/year
1113 0303 030	67 mi <sup>2</sup>	9,321.96 acre-feet/year
1113 0303 040	68 mi²	8,045.62 acre-feet/year
1113 0303 050	87 mi <sup>2</sup>	14,487.66 acre-feet/year
1113 0302 140	238 mi <sup>2</sup> .	42,903.08 acre-feet/year

## LAKE CHICKASHA Spring Creek Watershed Site #1

## Middle Washita River - Stream Subsystem 1-8-2

Hydrologic Unit Code - 1113 0302 190

Located on Spring Creek

Storage - 41,080 acre-feet

Surface area of normal pool - 820 acres

Water supply dependable yield - Unknown

### WILEY POST MEMORIAL LAKE Finn Creek Watershed Site #34

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## Middle Washita River - Stream Subsystem 1-8-2

Hydrologic Unit Code - 1113 0302 040

Located on Gaddis Creek

Storage - 2,082 acre-feet

Surface area of normal pool - 302 acres

Water supply dependable yield - 538 acre-feet/year

### OWRB Reservoir ID #96

## STREAM SUBSYSTEM 1-8-1: WASHITA RIVER From Near Pauls Valley, OK to Near Platter, OK





Stream System 1-8

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### STREAM SUBSYSTEM 1-8-1 - WASHITA RIVER From Near Pauls Valley, OK to Near Platter, OK

#### Lower Washita River

#### **General Information**

Stream subsystem area - 2,642 mi<sup>2</sup> Hydrologic Unit Code -

1113 0303 060	$100 \text{ m}^2$
1113 0303 000	
1113 0303 070	264 mi²
1113 0303 080	256 mi <sup>2</sup>
1113 0303 090	201 mi <sup>2</sup>
1113 0303 100	177 mi <sup>2</sup>
1113 0303 110	154 mi <sup>2</sup>
1113 0303 120	350 mi <sup>2</sup>
1113 0303 130	317 mi <sup>2</sup>
1113 0304 010	103 mi <sup>2</sup>
1113 0304 020	97 mi <sup>2</sup>
1113 0304 030	201 mi <sup>2</sup>
1113 0304 040	126 mi <sup>2</sup>
1113 0304 050	197 mi <sup>2</sup>

Drainage area -  $8,026 \text{ mi}^2$  (  $7,593 \text{ mi}^2$  in OK;  $433 \text{ mi}^2$  in TX)

Major tributaries - Rush Creek, Black Bear Creek, Salt Creek, Rock Creek, Wildhorse Creek, Chigley Sandy Creek, Caddo Creek, Henry Horse Creek, Mill Creek, Plannington Creek, Big Sandy Creek.

Major reservoirs or lakes - Lake Humphrey, Taylor Lake, Lake Fuqua, Lake of the Arbuckles, Lake Texoma, Lake Duncan.

Mean annual runoff based on adjusted gage flow - 3.64 inches Mean annual net lake evaporation for stream subsystem - 13 inches Estimated reservoir refill factor ( $\alpha$ ) for stream subsystem - 1.7

### **Estimated Available Water**

<u>USGS gage 07331000, Washita River near Dickson, OK</u> Gage Location - SW/4, SE 1/4, Sec 3, T4S-R3E, Carter County - 7,202 mi<sup>2</sup> drainage area. Water Years 1962 - 1996: Mean annual gage flow - 1833 cfs; 1,327,385 acre-feet/year

Mean annual gage flow adjusted for upstream use - 1,397,327 acre-feet/year Mean annual runoff for 824 mi<sup>2</sup> below gage - 159,872 acre-feet/year Gross Estimated Available Water - 1,518,186 acre-feet/year (includes stream subsystems 1-8-4, 1-8-3 and 1-8-2)

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	66,301	April	134,039	July	61,566	October	92,010
February	73,551	May	257,886	August	37,948	November	92,018
March	139,737	June	216,950	September	71,305	December	84,076

Table of monthly mean flows (acre-feet) from USGS gage 07331000 (1962-1996)

### TEAW (Total Estimated Available Water) of SS 1-8-1:

Gross Estimated Available Water - 1,518,186 acre-feet/year TEAW of SS 1-8-2 - 697,469 acre-feet/year TEAW of SS 1-8-3 - 363,809 acre-feet/year TEAW of SS 1-8-4 - 34,420 acre-feet/year **TEAW of SS 1-8-1 - 422,488 acre-feet/year** 

### Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream system - 90,038 acre-feet/year Total dependable yield within stream system - 62,462 acre-feet/year NRCS storage within stream system - 73,032 acre-feet/year

## Total Estimated Available Water - 422,488 acre-feet/year Total Estimated Storage/Dependable Yields - 135,494 acre-feet/year Adjusted Total Estimated Available Water - 286,994 acre-feet/year

Watershed Codes	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0303 060	199 mi²	30,312.78 acre-feet/year
1113 0303 070	264 mi <sup>2</sup>	41,029.02 acre-feet/year
1113 0303 080	256 mi <sup>2</sup>	(967.88) acre-feet/year
1113 0303 090	201 mi <sup>2</sup>	(22,073.91) acre-feet/year
1113 0303 100	177 mi <sup>2</sup>	26,819.71 acre-feet/year
1113 0303 110	154 mi <sup>2</sup>	22,020.58 acre-feet/year
1113 0303 120	350 mi <sup>2</sup>	42,342.27 acre-feet/year
1113 0303 130	317 mi <sup>2</sup>	41,371.16 acre-feet/year
1113 0304 010	103 mi <sup>2</sup>	15,804.36 acre-feet/year
1113 0304 020	97 mi <sup>2</sup>	15,411.48 acre-feet/year
1113 0304 030	201 mi <sup>2</sup>	32,062.35 acre-feet/year
1113 0304 040	126 mi <sup>2</sup>	19,679.54 acre-feet/year
1113 0304 050	197 mi <sup>2</sup>	(20,965.30) acre-feet/year

### HUMPHREYS LAKE

## Wildhorse Creek - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0303 080

Located on Wildhorse Creek

Storage - 14,041 acre-feet

Surface area of Normal pool - 882 acres

Water supply dependable yield - 3,226 acre-feet

**OWRB Reservoir ID # 81** 

# Rush Creek - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0303 070

Located on Rush Creek

Storage - 1,877 acre-feet

Surface area of Normal pool - 227 acres

Water supply dependable yield - not known

## FUQUA LAKE

# Wildhorse Creek - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0303 080

Located on Wildhorse Creek

Storage - 21,100 acre-feet

Surface area of Normal pool - 1,500 acres

Water supply dependable yield - 3,427 acre-feet

## LAKE OF THE ARBUCKLES

#### Rock Creek - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0303 130

Located on Rock Creek Drainage area - 126 sq.mi

Flood pool storage - 108,800 acre-feet Normal pool storage - 62,600 acre-feet Dead storage - 790 acre-feet

Surface area of Flood pool - 3,130 acres Surface area of Normal pool - 2,350 acres

Water supply dependable yield - 3,427 acre-feet

## LAKE DUNCAN

## Fitzpatrick Creek - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0303 080 Located on Fitzpatrick Creek Normal pool storage - 7,200 acre-feet Surface area of Normal pool - 500 acres Water supply dependable yield - not known

OWRB Reservoir ID # 76

#### LAKE TEXOMA

## Washita River - Stream Subsystem 1-8-1

Hydrologic Unit Code - 1113 0304 050

Located on Washita River

Normal pool storage - 1,570,216 acre-feet Flood pool storage - 5,194,163 acre-feet

Surface area of Normal pool - 88,000 acres Surface area of Flood pool - 141,418 acres Power storage - 2,580,386 acre-feet

Water supply dependable yield - 168,000 acre-feet Proportion of water supply yield within stream system 1-8-1 - 52,382 acre-feet (31.18% of total yield)

#### STREAM SYSTEM 1-9: MAIN STEM OF RED RIVER AT LAKE TEXOMA From Near Ardmore, OK to McBride, OK



Stream System 1-9

### STREAM SYSTEM 1-9: MAIN STEM OF RED RIVER AT LAKE TEXOMA From Near Ardmore, OK to McBride, OK

### **General Information**

Stream system area - 650 mi<sup>2</sup> Hydrologic Unit Code -

1113 0210 010	279 mi <sup>2</sup>
1113 0210 020	295 mi <sup>2</sup>
1113 0201 100	76 mi <sup>2</sup>

Total drainage area - 650 mi<sup>2</sup>

Major tributaries - Rock Creek, Buncombe Creek, Hickory Creek Major reservoirs or lakes - Lake Texoma, Lake Murray Mean annual runoff based on USGS Normal annual runoff values - 6 inches Mean annual net lake evaporation for stream system - 12 inches Estimated reservoir refill factor (α) for stream system - 1.7

### **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source USGS) Mean Annual Flow based on 6" annual runoff - 208,000 acre-feet/year

### Total Estimated Available Water - 208,000 acre-feet/year

### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 1,192,544 acre-feet/year Total dependable yield within stream system - 116,626 acre-feet/year NRCS storage within stream system - 0 acre-feet/year

## Total Estimated Available Water - 208,000 acre-feet/year Total Estimated Storage/Dependable Yields - 116,626 acre-feet/year Adjusted Total Estimated Available Water - 91,374 acre-feet/year

Watershed Code	Area	Adjusted Total Estimated Available Water
1113 0210 010	279 mi <sup>2</sup>	88,272.00 acre-feet/year
1113 0210 020	295 mi <sup>2</sup>	(21,218.00) acre-feet/year
1113 0201 100	$76 \text{ mi}^2$	24,320.00 acre-feet/year

### LAKE TEXOMA

#### Main Stem of Red River - Stream System 1-9

Hydrologic Unit Code - 1113 0210 020

Located on the Red River Drainage area - 39,719 mi<sup>2</sup>

Flood control storage - 5,194,163 acre-feet Conservation storage - 1,570,216 acre-feet

Surface area of Flood pool - 141,418 acres Surface area of Normal pool - 88,000 acres

Water supply dependable yield - 168,000 acre-feet/year

Proportion of water supply yield within Stream System 1-9 - 115,618 acre-feet/year (68.82% of total yield)

## LAKE MURRAY

## Main Stem of Red River - Stream System 1-9

Hydrologic Unit Code - 1113 0210 010

Located on West Anadarche Creek, East Anadarche and Fourche Maline Creek Drainage area - unknown

Flood control storage - unknown Conservation storage - 153,250 acre-feet

Surface area of Flood pool - unknown Surface area of Normal pool - 5,728 acres

Irrigation/Municipal water supply dependable yield - 1,008 acre-feet/year

## STREAM SYSTEM 1-10: WALNUT BAYOU From Near Fox, OK to Confluence with Red River





Stream System 1-10

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### STREAM SYSTEM 1-10: WALNUT BAYOU CREEK

#### **General Information**

Stream system area - 337 mi<sup>2</sup> Hydrologic Unit Code -1113 0201 080 1113 0201 090 144 mi<sup>2</sup>

Total drainage area - 337 mi<sup>2</sup>

Major tributaries - Simon Creek, Walnut Bayou Creek Major reservoirs or lakes -None Mean annual runoff based on USGS Normal annual runoff values - 4 inches Mean annual net lake evaporation for stream system - 19 inches Estimated reservoir refill factor (α) for stream system - 1.6

#### **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source USGS) Mean Annual Flow based on 4" annual runoff - 71,893 acre-feet/year

#### Total Estimated Available Water - 71,893 acre-feet/year

#### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year SCS storage within stream system - 0 acre-feet/year

## Total Estimated Available Water - 71,893 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 71,893 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0201 080	193 mi <sup>2</sup>	41,173.14 acre-feet/year
1113 0201 090	144 mi <sup>2</sup>	30,719.86 acre-feet/year

### STREAM SYSTEM 1-11: MUD CREEK From Petticoat Hill, OK to Confluence with Red River





Stream System 1-11

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#### STREAM SYSTEM 1-11: MUD CREEK

#### **General Information**

Stream system area - 938 mi<sup>2</sup> Hydrologic Unit Code -

1113 0201 020	79 mi <sup>2</sup>
1113 0201 030	133 mi <sup>2</sup>
1113 0201 040	303 mi <sup>2</sup>
1113 0201 050	123 mi <sup>2</sup>
1113 0201 060	136 mi <sup>2</sup>
1113 0201 070	88 mi²
1113 0201 100	76 mi²

Total drainage area - 938 mi<sup>2</sup>

Major tributaries - Mud Creek, Red Creek Major reservoirs or lakes - Comanche Lake Mean annual runoff based on adjusted gage flow - 4.96 inches Mean annual net lake evaporation for stream system - 21 inches Estimated reservoir refill factor (α) for stream system - 1.3

#### **Estimated Available Water**

USGS gage 07315700 Mud Creek near Courtney, OK

Gage Location - NW1/4, SE1/4 Sec. 25, T6N-R4WIM, Jefferson County - 572 mi<sup>2</sup> drainage area. Water years 1961 through 1996:

Mean annual gage flow - 194 cfs; 140,487 acre-feet/year

Mean annual gage flow adjusted for upstream water use - 151,259 acre-feet/year Mean annual runoff for 366  $mi^2$  below USGS gage - 96,785 acre-feet/year

# Total Estimated Available Water - 248,044 acre-feet/year

#### Table of monthly mean flows (acre-feet) from USGS gage 07315700 (WY 1961-1996)

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	5,775	April	17,439	July	2,731	October	6,335
February	8,277	May	35,119	August	1,593	November	6,904
March	16,852	June	22,260	September	7,321	December	9,841

### Reservoir's Storage/ Dependable Yields within stream-system

Total storage within stream system - 2,500 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 1,401 acre-feet/year

# Total Estimated Available Water - 248,044 acre-feet/year Total Estimated Storage/Dependable Yields - 1,401 acre-feet/year Adjusted Total Estimated Available Water - 246,643 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0201 020	79 mi <sup>2</sup>	20,890.70 acre-feet/year
1113 0201 030	133 mi <sup>2</sup>	35,170.42 acre-feet/year
1113 0201 040	303 mi <sup>2</sup>	80,125.09 acre-feet/year
1113 0201 050	123 mi <sup>2</sup>	32,526.03 acre-feet/year
1113 0201 060	136 mi²	35,963.74 acre-feet/year
1113 0201 070	88 mi²	21,869.65 acre-feet/year
1113 0201 100	76 mi²	20,097.38 acre-feet/year

# **COMANCHE LAKE**

# Mud Creek - Stream System 1-11

Hydrologic Unit Code - 1113 0201 040

Located on Mud Creek Drainage area - unknown

Flood control storage - unknown Conservation storage - 2,500 acre-feet

Surface area of Flood pool - unknown Surface area of Normal pool - 184 acres

Irrigation/Municipal water supply dependable yield - none

#### **OWRB Reservoir ID # none**

#### STREAM SYSTEM 1-12: BEAVER CREEK From Near Fletcher, OK to Confluence with Red River





Stream System 1-12

# STREAM SYSTEM 1-12: BEAVER CREEK

# **General Information**

Stream system area - 862 mi<sup>2</sup> Hydrologic Unit Code -

1113 0208 010	208 mi <sup>2</sup>
1113 0208 020	$76 \text{ mi}^2$
1113 0208 030	196 mi <sup>2</sup>
1113 0208 040	193 mi <sup>2</sup>
1113 0208 050	189 mi²

Total drainage area - 862 mi<sup>2</sup>

Major tributaries - Beaver Creek, Little Beaver Creek, Cow Creek Major reservoirs or lakes -Waurika lake Mean annual runoff based on adjusted gage flow - 4.94 inches Mean annual net lake evaporation for stream system - 21 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 1.3

# **Estimated Available Water**

USGS gage 07313500 Beaver Creek near Waurika, OK

Gage Location - NW1/4, NW1/4 Sec. 16, T4N-R8WIM, Jefferson County - 563 mi<sup>2</sup> drainage area. Water years 1978 through 1993:

Mean annual gage flow - 199 cfs; 144,108 acre-feet/year Mean annual gage flow adjusted for upstream water use - 148,355 acre-feet/year Mean annual runoff for 195 mi<sup>2</sup> of Cow Creek - 51,384 acre-feet/year Mean annual runoff for 104 mi<sup>2</sup> below USGS gage (below confluence of Cow Creek and Beaver Creek) - 27,405 acre-feet/year

# Total Estimated Available Water - 227,144 acre-feet/year

# Table of monthly mean flows (acre-feet) from USGS gage 07313500 (WY 1978-1993)

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	10,517	April	13,035	July	6,704	October	7,011
February	8,999	May	20,235	August	573	November	12,499
March	18,943	June	32,379	September	5,148	December	8,242

# Reservoir's Storage/ Dependable Yields within stream-system

Total storage within stream system - 167,600 acre-feet/year Total dependable yield within stream system - 40,549 acre-feet/year NRCS storage within stream system - 1,420 acre-feet/year

# Total Estimated Available Water - 227,144 acre-feet/year Total Estimated Storage/Dependable Yields - 41,969 acre-feet/year Adjusted Total Estimated Available Water - 185,175 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0208 010	208 mi <sup>2</sup>	54,809.69 acre-feet/year
1113 0208 020	76 mi²	20,026.62 acre-feet/year
1113 0208 030	196 mi²	51,247.59 acre-feet/year
1113 0208 040	193 mi <sup>2</sup>	50,339.07 acre-feet/year
1113 0208 050	189 mi²	8,752.03 acre-feet/year

### WAURIKA LAKE

### **Beaver Creek - Stream System 1-12**

Hydrologic Unit Code - 1113 0208 050

Located on Beaver Creek Drainage area - 562 mi<sup>2</sup>

Flood control storage - 325,680 acre-feet Conservation storage - 185,830 acre-feet

Surface area of Flood pool - 15,510 acres Surface area of Normal pool - 9,260 acres

Irrigation/Municipal water supply dependable yield - 45,590 acre-feet/year

**OWRB Reservoir ID # 63** 

#### **STREAM SYSTEM 1-13 - CACHE CREEK**

#### **General Information**

Stream system area - 2,032 mi<sup>2</sup> Drainage area - 2,032 mi<sup>2</sup> Major reservoirs and lakes - Lake Lawtonka, Lake Ellsworth



#### **Estimated Available Water**

Lake Lawtonka water dependable yield - 23,500 acre-feet/year Lake Ellsworth water dependable yield - 23,500 acre-feet/year NRCS storage within stream system - 13,033 acre-feet/year (SS 1-13-2) Department of The Interior Reservoir storage within stream system - 19,268 acre-feet 6,407 acre-feet/year (SS 1-13-2) 12,861 acre-feet/year (SS 1-13-1)

Stream System 1-13

# **Total Estimated Available Water:**

Stream Subsystem 1-13-2 - 231,467 acre-feet/year Stream Subsystem 1-13-1 - 246,003 acre-feet/year

# Adjusted Total Estimated Available Water:

Stream Subsystem 1-13-2 - 218,434 acre-feet/year Stream Subsystem 1-13-1 - 199,003 acre-feet/year STREAM SUBSYSTEM 1-13-2: WEST CACHE CREEK, DEEP RED RUN CREEK From Wichita Mountains, OK to Taylor, OK



Stream System 1-13

### STREAM SUBSYSTEM 1-13-2 - CACHE CREEK AND DEEP RED RUN CREEK

#### **General Information**

Stream subsystem area - 1,101 mi<sup>2</sup> Hydrologic Unit Code -

1113 0203 010	75 mi <sup>2</sup>
1113 0203 020	143 mi <sup>2</sup>
1113 0203 030	90 mi <sup>2</sup>
1113 0203 040	140 mi²
1113 0203 050	181 mi²
1113 0203 060	288 mi <sup>2</sup>
1113 0203 070	184 mi²

Total drainage area - 1,101 mi<sup>2</sup>

Major tributaries - Deep Red Creek, Deadman Creek, Sandy Creek, West Cache Creek, Blue Beaver Creek, Pecan Creek, Little Post Oak Creek, Horse Creek, Jack Creek.

Major reservoirs or lakes - No major reservoirs. But there are 17 small reservoirs built by Department of the Interior which are listed at the end of this section.

Mean annual runoff based on adjusted gage flow - 3.94 inches Mean annual net lake evaporation for stream subsystem - 25.0 inches Estimated reservoir refill factor ( $\alpha$ ) for stream subsystem - 0.9

#### **Estimated Available Water**

Flow for Deep Red Creek -<u>USGS gauge 07311500 Deep Red Creek near Randlett, OK,</u>
Gage Location - SW/4, SW/4, Sec.10, T4S-R12WIM, Cotton County - 617 mi<sup>2</sup> drainage area.
Water Years 1950 - 1996: Mean annual gage flow - 176 cfs; 127,452 acre-feet/year Mean annual gage flow adjusted for upstream use - 129,718 acre-feet/year Mean annual runoff for 10 mi<sup>2</sup> below USGS gage and above the confluence with West Cache Creek, - 2,102 acre-feet/year Mean annual runoff for Deep Red Creek above confluence with West Cache Creek -131,820 acre-feet/year

Flow for West Cache Creek -

By method of linear proportioning Mean annual runoff for 457  $\text{mi}^2$  of West Cache Creek above confluence with Red Creek - 96,127 acre-feet/year

Mean Annual runoff at confluence of Red Creek and West Cache Creek - 227,948 acre-feet/year Mean annual runoff for 16.74 mi<sup>2</sup> below confluence of Red Creek and West Cache Creek - 3,519 acre-feet/year

Mean annual flow for the entire stream sub-system - 231,467 acre-feet/year

Total Estimated Available Water - 231,467 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	3,026	April	7,916	July	3,967	October	16,606
February	3,994	May	30,690	August	4,527	November	5,363
March	7,134	June	27,736	September	11,666	December	4,447

### Table of monthly mean flows (acre-feet) from USGS gage 07311500 (1950-1996)

### Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream sub-system - 6,407 acre-feet/year Total dependable yield within stream sub-system - 0 acre-feet/year NRCS storage within stream sub-system - 13,033 acre-feet/year

# Total Estimated Available Water - 231,467 acre-feet/year Total Estimated Storage/Dependable Yields - 13,033 acre-feet/year Adjusted Total Estimated Available Water - 218,434 acre-feet/year

Watershed Code	Area	Adjusted Total Estimated Available Water
1113 0203 010	$75 \text{ mi}^2$	15,767.51 acre-feet/year
1113 0203 020	143 mi <sup>2</sup>	24,850.18 acre-feet/year
1113 0203 030	90 mi <sup>2</sup>	11,101.21 acre-feet/year
1113 0203 040	140 mi <sup>2</sup>	29,432.68 acre-feet/year
1113 0203 050	181 mi²	38,052.25 acre-feet/year
1113 0203 060	288 mi <sup>2</sup>	60,547.23 acre-feet/year
1113 0203 070	184 mi <sup>2</sup>	38,682.95 acre-feet/year

# **RESERVOIRS/LAKES OF THE DEPARTMENT OF THE INTERIOR**

Item	Reservoir/Lake	Storage Capacity (acre-feet)
1	Gramma Lake	851
2	Comanche Lake	575
3	Kiowa Lake	80
4	Caddo Lake	126
5	West Post Oak Lake	73
6	Treasure Lake	75
7	French Lake	329
8	Fish Lake	50
9	Apache Lake	95
10	Burford Lake	64
11	Osage Lake	71
12	Lost Lake	80
13 .	Quanah Parker Lake	905
14	Rush Lake	1,080
15	Jed Johnson Lake	1,100
16	Crater Lake	53
17	Whites Lake	800
	Total	6,407

Stream Subsystem 1-13-2

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Water supply dependable yield - Unknown



Stream System 1-13

# STREAM SUBSYSTEM 1-13-1 - EAST CACHE CREEK

#### **General Information**

Stream subsystem area - 931 mi<sup>2</sup> Hydrologic Unit Code -

1113 0202 010	117 mi <sup>2</sup>
1113 0202 020	188 mi <sup>2</sup>
1113 0202 030	137 mi <sup>2</sup>
1113 0202 040	223 mi <sup>2</sup>
1113 0202 050	139 mi <sup>2</sup>
1113 0201 010	127 mi <sup>2</sup>

Total drainage area - 931 mi<sup>2</sup>

Major tributaries - East Cache Creek, Mission Creek Major reservoirs or lakes - Lake Ellsworth, Lake Lawtonka, Department of the Interior's lakes (listed at the end of the section)

Mean annual runoff based on adjusted gage flow - 4.95 inches Mean annual net lake evaporation for stream subsystem - 25 inches Estimated reservoir refill factor ( $\alpha$ ) for stream subsystem - 0.9

#### **Estimated Available Water**

<u>USGS gage 07311000 East Cache Creek near Walters, OK</u> Gage Location - SE1/4, SE1/4 Sec.19, T2S-R10WIM, Cotton County - 675 mi<sup>2</sup> drainage area. Water Years 1938 - 1996: Mean annual gage flow - 216 cfs; 156,419 acre-feet/year Mean annual gage flow adjusted for upstream use - 178,359 acre-feet/year Mean annual runoff for 256 mi<sup>2</sup> below USGS gage - 67,644 acre-feet/year Mean annual runoff in the stream sub-system - 246,003 acre-feet/year

### Total Estimated Available Water - 246,003 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	5,572	April	13,630	July	6,101	October	14,761
February	7,611	May	37,271	August	3,776	November	6,190
March	14,515	June	28,212	September	9,523	December	8,180

Table of monthly mean flows (acre-feet) from USGS gage 07311000 (1938-1996)

## Reservoir's Storage/Dependable Yields within stream system or sub-system

Total storage within stream sub-system - 164,635 acre-feet/year Total dependable yield within stream sub-system - 47,000 acre-feet/year NRCS storage within stream sub-system - 0 acre-feet/year

# Total Estimated Available Water - 246,003 acre-feet/year Total Estimated Storage/Dependable Yields - 47,000 acre-feet/year Adjusted Total Estimated Available Water - 199,003 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1113 0202 010	117 mi <sup>2</sup>	30,915.52 acre-feet/year
1113 0202 020	188 mi²	26,176.22 acre-feet/year
1113 0202 030	137 mi²	12,700.23 acre-feet/year
1113 0202 040	223 mi <sup>2</sup>	58,924.46 acre-feet/year
1113 0202 050	139 mi <sup>2</sup>	36,728.70 acre-feet/year
1113 0201 010	127 mi <sup>2</sup>	33,557.87 acre-feet/year

### LAWTONKA LAKE

# Medicine Creek - Stream Subsystem 1-13-1

Hydrologic Unit Code - 1113 0202 030

Located on Medicine Creek Drainage area - unknown

Flood control storage - unknown Normal pool/Water supply storage - 56,574 acre-feet

Surface area of flood pool - unknown Surface area of normal pool - 2,398 acres

Water supply dependable yield - 23,500 acre-feet/year

### **OWRB Reservoir ID # 35**

#### LAKE ELLSWORTH

# East Cache Creek - Stream Subsystem 1-13-1

Hydrologic Unit Code - 1113 0202 020

Located on East Cache Creek Drainage area - unknown

Flood control storage - unknown Normal pool/Water supply storage - 95,200 acre-feet

Surface area of flood pool - unknown Surface area of normal pool - 5,600 acres

Water supply dependable yield - 23,500 acre-feet/year

#### **OWRB Reservoir ID # 16**

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# **RESERVOIRS/LAKES OF THE DEPARTMENT OF THE INTERIOR**

Item	Reservoir/Lake	Storage Capacity (acre-feet)
1	Walters Lake	861
2	Elmer Thomas Lake	12,000
	Total	12,861

Stream Subsystem 1-13-1

Water supply dependable yield unknown.

#### STREAM SYSTEM 1-14: MAIN STEM OF RED RIVER From Burt, OK to Taylor, OK



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# STREAM SYSTEM 1-14: MAIN STEM OF RED RIVER FROM BURT, OK, TO TAYLOR, OK

### **General Information**

Stream system area - 380 mi<sup>2</sup> Hydrologic Unit Code -

1113 0102 010	104 mi <sup>2</sup>
1113 0102 020	68 mi <sup>2</sup>
1113 0102 030	208 mi <sup>2</sup>

Total drainage area - 380 mi<sup>2</sup>

Major tributaries - Suttle Creek, Cooper Creek, Augur Creek, Blue Creek Major reservoirs or lakes - None Mean annual runoff based on USGS Normal annual runoff values - 2.2 inches Mean annual net lake evaporation for stream system - 32 inches Estimated reservoir refill factor (α) for stream system - 0.8

### **Estimated Available Water**

No USGS gage available Determining the Mean Annual Flow based on run-off values for the period 1951-1980 (Source USGS) Mean Annual Flow based on 2.2" annual runoff - 44,587 acre-feet/year

# Total Estimated Available Water - 44,587 acre-feet/year

# Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 73\* acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 0 acre-feet/year

# Total Estimated Available Water - 44,587 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 44,587 acre-feet/year

\* Storage of Murray Lake near Frederick, OK, in Tillman County. (Not to be confused with Murray lake in Carter/Love Counties of Stream System 1-9)

Watershed Code	Area
1113 0102 010	104 mi <sup>2</sup>
1113 0102 020	68 mi <sup>2</sup>
1113 0102 030	208 mi <sup>2</sup>

Adjusted Total Estimated Available Water 12,202.76 acre-feet/year 7,978.73 acre-feet/year 24,405.52 acre-feet/year

#### **STREAM SYSTEM 1-15 : NORTH FORK RED RIVER**

#### **General Information**

Stream system area - 2,256 mi<sup>2</sup> Drainage area - 5,107 mi<sup>2</sup> ( 2,823 mi<sup>2</sup> in OK; 2,284 mi<sup>2</sup> in TX) Drainage area for Oklahoma includes -Stream System 1-15-2 - 860 mi<sup>2</sup> Stream System 1-15-1 - 1,396 mi<sup>2</sup> Stream System 1-18 - 567 mi<sup>2</sup> Drainage area for Texas includes -Stream System 1-18 - 326 mi<sup>2</sup> Stream System 1-18 - 326 mi<sup>2</sup> Major reservoirs and lakes - Lake Altus, Tom Steed Reservoir



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# **Estimated Available Water**

Lake Altus water supply dependable yield - 47,100 acre-feet/year Tom Steed Reservoir water supply dependable yield - 16,000 acre-feet/year NRCS pool storage - 8,565 acre-feet/year.

#### **Total Estimated Available Water**

Stream system 1-15-2 - 90,636 acre-feet/year Stream System 1-15-1 - 316,963 acre-feet/year

### Adjusted Total Estimated Available Water

Stream system 1-15-2 - 41,228 acre-feet/year Stream System 1-15-1 - 134,738 acre-feet/year



Stream System 1-15

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# STREAM SUBSYSTEM 1-15-2 - NORTH FORK RED RIVER

# **Upper North Fork Red River**

### **General Information**

Stream subsystem area in Oklahoma - 860 mi<sup>2</sup> Hydrologic Unit Code -

1112 0301	1,167 mi <sup>2</sup> (in Texas)
1112 0302	791 mi <sup>2</sup> (in Texas)
1112 0302 040	91 mi <sup>2</sup>
1112 0302 050	$3 \text{ mi}^2$
1112 0302 060	235 mi <sup>2</sup>
1112 0302 070	297 mi <sup>2</sup>
1112 0302 080	234 mi <sup>2</sup>

Drainage area -  $2,818 \text{ mi}^2$  (860 mi<sup>2</sup> in OK;  $1,958 \text{ mi}^2$  in TX)

Major tributaries - Sweetwater Creek, Buffalo Creek, Long Creek, Timber Creek Major reservoirs or lakes - Lake Altus Mean annual runoff based on adjusted gage flow - 0.86 inches Mean annual net lake evaporation for stream subsystem - 37 inches Estimated reservoir refill factor ( $\alpha$ ) for stream subsystem - 0.6

# **Estimated Available Water**

USGS gage 07301500 North Fork Red River near Carter. OK Gage Location - NW1/4, SE1/4, Sec.15-T8N-R22WIM, Beckham County - 2,337 mi<sup>2</sup> drainage area of which 399 mi<sup>2</sup> is probably noncontributing. Water Years 1945 - 1996: Mean annual gage flow (122 cfs); 88,348 acre-feet Mean annual gage flow adjusted for upstream use - 88,863 acre-feet Mean annual runoff for 481 mi<sup>2</sup> below USGS gage - 21,596 acre-feet Mean annual net lake evaporation for Lake Altus (9.8 mi<sup>2</sup>) - 19,823 acre-feet

# Total Estimated Available Water - 90,636 acre-feet/year

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	4,367	April	7,380	July	4,453	October	5,640
February	5,155	May	24,909	August	3,032	November	3,024
March	6,144	June	17,082	September	3,405	December	3,580

### Table of monthly mean flows (acre-feet) from USGS gage 07301500 (1945-1996)

#### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream sub-system - 132,830 acre-feet/year Total dependable yield within stream sub-system - 47,100 acre-feet/year NRCS storage within stream sub-system - 2,308 acre-feet/year

# Total Estimated Available Water - 90,636 acre-feet/year Total Estimated Storage/Dependable Yields - 49,408 acre-feet/year Adjusted Total Estimated Available Water - 41,228 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1112 0302 040	91 mi <sup>2</sup>	9,505.55 acre-feet/year
1112 0302 050	3 mi <sup>2</sup>	219.17 acre-feet/year
1112 0302 060	235 mi <sup>2</sup>	23,996.81 acre-feet/year
1112 0302 070	297 mi <sup>2</sup>	30,441.04 acre-feet/year
1112 0302 080	$234 \text{ mi}^2$	(22,934.58) acre-feet/year

# LAKE ALTUS

# Upper North Fork Red River - Stream Subsystem 1-15-2

Hydrologic Unit Code - 1112 0302 080

Located on the North Fork Red River Drainage area - 2,515 mi<sup>2</sup>

Flood control storage - 152,430 acre-feet Conservation storage - 132,830 acre-feet

Surface area of Flood pool - 6,800 acres Surface area of Normal pool - 6,260 acres

Irrigation/Municipal water supply dependable yield - 47,100 acre-feet/year

**OWRB Reservoir ID # 02** 

# STREAM SUBSYSTEM 1-15-1: NORTH FORK RED RIVER From Near Elk City, OK to Confluence with Red River





Stream System 1-15

93

### **STREAM SUBSYSTEM 1-15-1 - NORTH FORK RED RIVER**

### Lower North Fork Red River

#### **General Information**

Stream subsystem area - 1,396 mi<sup>2</sup> Hydrologic Unit Code -

1112 0303 010	118 mi <sup>2</sup>
1112 0303 020	197 mi <sup>2</sup>
1112 0303 030	88 mi²
1112 0303 040	104 mi <sup>2</sup>
1112 0303 050	106 mi <sup>2</sup>
1112 0303 060	84 mi <sup>2</sup>
1112 0303 070	137 mi <sup>2</sup>
1112 0303 080	287 mi²
1112 0303 090	252 mi <sup>2</sup>
1113 0101 070	23 mi <sup>2</sup>

Total drainage area - 5,107 mi<sup>2</sup> (2,823 mi<sup>2</sup> in OK; 2,284 mi<sup>2</sup> in TX)

Drainage area for Oklahoma includes -Stream System 1-15-2 - 860 mi<sup>2</sup> Stream System 1-15-1 - 1,396 mi<sup>2</sup> Stream System 1-18 - 567 mi<sup>2</sup> Drainage area for Texas includes -Stream System 1-15-2 - 1,958 mi<sup>2</sup> Stream System 1-18 - 326 mi<sup>2</sup>

Major tributaries - Trail Creek, Elk Creek, Spring Creek, Little Elk Creek, Tepee Creek, Otter Creek, Stinking Creek.

Major reservoirs or lakes - Tom Steed Reservoir Mean annual runoff based on adjusted gage flow - 1.26 inches Mean annual net lake evaporation for stream subsystem - 35 inches Estimated reservoir refill factor (α) for stream subsystem - 0.8

#### **Estimated Available Water**

<u>USGS gage 07305000, North Fork Red River near Headrick, OK</u> Gage Location - NW1/4, NE1/4,Sec. 21 -T2N-R18WIM, Tillman County - 4,244 mi<sup>2</sup> drainage area of which 399 mi<sup>2</sup> is probably non-contributing.

Water Years 1945 - 1996:

Mean annual gage flow - 318 cfs; 230,283 acre-feet/year Mean annual gage flow adjusted for upstream use - 258,862 acre-feet/year Mean annual runoff for 863 mi<sup>2</sup> below USGS gage - 58,101 acre-feet/year **Gross Estimated Available Water - 316,963 acre-feet/year (includes stream subsystem 1-15-2 and stream system 1-18)** 

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	6,212	April	14,404	July	14,945	October	22,818
February	7,500	May	61,442	August	10,517	November	8,690
March	11,501	June	48,687	September	16,487	December	6,950

#### Table of monthly mean flows (acre-feet) from USGS gage 07305000 (1945-1996)

#### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream sub-system - 88,970 acre-feet/year Total dependable yield within stream sub-system - 16,000 acre-feet/year NRCS storage within stream sub-system - 6,257 acre-feet/year

#### **TEAW (Total Estimated Available Water)**

Total Estimated Available Water (1-15-1) - 316,963 acre-feet/year Total Estimated Available Water (1-15-2) - 90,636 acre-feet/year Total Estimated Available Water (1-18) - 69,332 acre-feet/year **Total Estimated Available Water (1-15-1) - 156,995 acre-feet/year** 

# Total Estimated Available Water - 156,995 acre-feet/year Total Estimated Storage/Dependable Yields - 22,257 acre-feet/year Adjusted Total Estimated Available Water - 134,738 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1112 0303 010	118 mi <sup>2</sup>	13,213.35 acre-feet/year
1112 0303 020	197 mi <sup>2</sup>	18,096.74 acre-feet/year
1112 0303 030	88 mi <sup>2</sup>	9,283.53 acre-feet/year
1112 0303 040	104 mi <sup>2</sup>	11,081.90 acre-feet/year
1112 0303 050	106 mi <sup>2</sup>	11,310.82 acre-feet/year
1112 0303 060	84 mi <sup>2</sup>	9,371.69 acre-feet/year
1112 0303 070	137 mi <sup>2</sup>	15,287.10 acre-feet/year
1112 0303 080	287 mi <sup>2</sup>	16,166.19 acre-feet/year
1112 0303 090	252 mi <sup>2</sup>	28,340.07 acre-feet/year
1113 0101 070	23 mi <sup>2</sup>	2,586.59 acre-feet/year

### TOM STEED RESERVOIR

West Otter Creek - Stream Subsystem 1-15-1

Hydrologic Unit Code - 1112 0303 080

Drainage area - 681 sq.miles Flood control storage - 109,280 acre-feet Conservation storage - 88,970 acre-feet

Surface area of Flood pool - 7,130 acres Surface area of Conservation pool - 6,400 acres

Water supply dependable yield - 16,000 acre-feet

Stream System 1-15

### STREAM SYSTEM 1-16: SALT FORK RED RIVER From OK/TX State Line to Confluence with Red River



Stream System 1-16

# STREAM SYSTEM 1-16 - SALT FORK RED RIVER

#### **General Information**

Stream system area in Oklahoma - 714 mi<sup>2</sup> Hydrologic Unit Code -

1112 0201	746 mi <sup>2</sup> (in Texas)
1112 0202	544 mi <sup>2</sup> (in Texas)
1112 0202 040	116 mi <sup>2</sup>
1112 0202 050	130 mi <sup>2</sup>
1112 0202 060	314 mi <sup>2</sup>
1112 0202 070	154 mi <sup>2</sup>

Total drainage area - 2,004 mi<sup>2</sup> (714 mi<sup>2</sup> in OK; 1,290 mi<sup>2</sup> in TX)

Major tributaries - Turkey Creek, Cottonwood Creek, Horse Branch Creek Major reservoirs or lakes - None Mean annual runoff based on adjusted gage flow - 2.16 inches Mean annual net lake evaporation for stream system - 37.8 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 0.6

### **Estimated Available Water**

<u>USGS gage 07301110 Salt Fork Red River near Elmer, OK</u> Gage Location - NW1/4, NE1/4, Sec. 15, T1S- R21WIM, Jackson County - 1,878 mi<sup>2</sup> drainage area of which 209 mi<sup>2</sup> is probably noncontributing. Water Years 1980 - 1996:

Mean annual gage flow - 261 cfs; 189,006 acre-feet/year Mean annual gage flow adjusted for upstream water use - 191,852 acre-feet/year Mean annual runoff for 9 mi<sup>2</sup> below USGS gage - 1,035 acre-feet/year

Total Estimated Available Water - 192,887 acre-feet/year

1 able of monting mean nows (acre-feet) from USGS gage 0/301110 (1900-193	Table of m	onthly mean	flows (a	cre-feet)	from USGS	gage 07301110	(1980-199
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Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	· Month	Acre-feet
January	7,626	April	10,952	July	11,132	October	17,037
February	7,111	May	35,980	August	17,344	November	7,976
March	9,533	June	43,390	September	13,332	December	7,934

### Reservoir's Storage/ Dependable Yields within stream-system or sub-system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 3,829 acre-feet/year

# Total Estimated Available Water - 192,887 acre-feet/year Total Estimated Storage/Dependable Yields - 3,829 acre-feet/year Adjusted Total Estimated Available Water - 189,058 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1112 0202 040	116 mi <sup>2</sup>	29,991.58 acre-feet/year
1112 0202 050	130 mi <sup>2</sup>	35,028.38 acre-feet/year
1112 0202 060	314 mi <sup>2</sup>	82,503.11 acre-feet/year
1112 0202 070	154 mi <sup>2</sup>	41,535.08 acre-feet/year

Stream System 1-16

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# STREAM SYSTEM 1-17: PRAIRIE DOG TOWN FORK OF RED RIVER From OK/TX State Line to Confluence with Red River

# STREAM SYSTEM 1-17 - PRAIRIE DOG TOWN FORK OF THE RED RIVER

#### **General Information**

Stream system area in Oklahoma - 492 mi<sup>2</sup> Hydrologic Unit Code -

1112 0105	1591 mi <sup>2</sup> (in Texas)
1113 0101	68 mi <sup>2</sup> (in Texas)
1112 0105 060	12 mi <sup>2</sup>
1113 0101 030	111 mi <sup>2</sup>
1113 0101 040	180 mi <sup>2</sup>
1113 0101 050	43 mi <sup>2</sup>
1113 0101 060	146 mi <sup>2</sup>

Total drainage area - 2,151 mi<sup>2</sup> (492 mi<sup>2</sup> in OK; 1,659 mi<sup>2</sup> in TX)

Major tributaries - East Fork Sandy Creek, West Fork Sandy Creek, Sandy Creek, Gypsum Creek, Buck Creek

Major reservoirs or lakes - None Mean annual runoff based on USGS Normal annual runoff values - 0.75 inches Mean annual net lake evaporation for stream system - 37.0 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 0.6

#### **Estimated Available Water**

No reliable USGS gage within stream system or its vicinity. The nearest gage # 07299540 at Childress, Texas is not trustworthy. Hence Mean Annual Flow was determined based on the run-off values for the period 1951-1980.

Mean annual flow for the watersheds of Buck Creek - 590.4 acre-feet/year Mean annual flow for the watersheds of Sandy Creek - 14,760 acre-feet/year Mean annual flow for the watersheds of Gypsum Creek - 4,329.6 acre.feet/year Mean annual flow for stream system 1-17 based on runoff values - 19,680 acre-feet/year

Total Estimated Available Water - 19,680 acre-feet/year

#### Reservoir's Storage/ Dependable Yields within stream-system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 0 acre-feet/year

Stream System 1-17
# Total Estimated Available Water - 19,680 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 19,680 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1112 0105 060	12 mi <sup>2</sup>	480 acre-feet/year
1113 0101 030	111 mi <sup>2</sup>	4,440 acre-feet/year
1113 0101 040	180 mi <sup>2</sup>	7,200 acre-feet/year
1113 0101 050	43 mi <sup>2</sup>	1,720 acre-feet/year
1113 0101 060	146 mi <sup>2</sup>	5,840 acre-feet/year





Stream System 1-18

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### STREAM SYSTEM 1-18 : ELM FORK OF THE RED RIVER

### **General Information**

Stream system area in Oklahoma - 567 mi<sup>2</sup> Hydrologic Unit Code -

1112 0304	326 mi <sup>2</sup> (in Texas)
1112 0304 020	$42 \text{ mi}^2$
1112 0304 030	69 mi <sup>2</sup>
1112 0304 040	209 mi <sup>2</sup>
1112 0304 050	137 mi <sup>2</sup>
1112 0304 060	110 mi <sup>2</sup>

Total drainage area - 893 mi<sup>2</sup> (567 mi<sup>2</sup> in OK; 326 mi<sup>2</sup> in TX)

Major tributaries - North Elm Creek, Bull Creek, Fish Creek, Elm Creek, Deer Creek, Haystack Creek.

Major reservoirs or lakes - None Mean annual runoff based on adjusted gage flow - 0.72 inches Mean annual net lake evaporation for stream system - 37 inches Estimated reservoir refill factor ( $\alpha$ ) for stream system - 0.6

### **Estimated Available Water**

USGS gage 07303400 Elm Fork of the Red River near Carl, OK

Gage Location - SW1/4,NW1/4, Sec.12, T6N-R26WIM, Harmon County - 416 mi<sup>2</sup> drainage area. Water years 1960 through 1996:

Mean annual gage flow - 44.6 cfs; 32,298 acre-feet/year Mean annual gage flow adjusted for upstream water use - 32,298 acre-feet/year Mean annual runoff for 477 mi<sup>2</sup> below USGS gage - 37,034 acre-feet/year

Total Estimated Available Water - 69,332 acre-feet/year

Table of	<sup>°</sup> monthly	mean flows	(acre-feet)	from U	SGS gag	e 07303400 (	WY	1960-1996)
A COLO US	. AAAVAAVAAA J					0 0 1 0 0 0 1 0 0 1		<b>X/UU</b> X//U/

Month	Acre-feet	Month	Acre-feet	Month	Acre-feet	Month	Acre-feet
January	1,199	April	3,095	July	1,808	October	2,300
February	1,222	May	5,412	August	2,472	November	1,577
March	1,698	June	7,023	September	3,214	December	1,285

## Reservoir's Storage/ Dependable Yields within stream-system

Total storage within stream system - 0 acre-feet/year Total dependable yield within stream system - 0 acre-feet/year NRCS storage within stream system - 0 acre-feet/year

# Total Estimated Available Water - 69,332 acre-feet/year Total Estimated Storage/Dependable Yields - 0 acre-feet/year Adjusted Total Estimated Available Water - 69,332 acre-feet/year

Watershed Code	<u>Area</u>	Adjusted Total Estimated Available Water
1112 0304 020	42 mi <sup>2</sup>	5,135.70 acre-feet/year
1112 0304 030	69 mi <sup>2</sup>	8,437.23 acre-feet/year
1112 0304 040	209 mi <sup>2</sup>	25,556.24 acre-feet/year
1112 0304 050	137 mi <sup>2</sup>	16,752.18 acre-feet/year
1112 0304 060	110 mi²	13,450.65 acre-feet/year

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**APPENDIX B** 

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# SUMMARY OF HYDROLOGIC DATA OF AVAILABLE WATER WITHIN THE RED RIVER BASIN

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	Duting A	Track Frederica d	D	The set of the set of the set	
SIREAMSYSIEM	Drainage Area	1 otal Esumated	Dependable Viold from	Lotal Sediment Pool	Adjusted Lotal
	or Stream System	(TEAW) in	Reservoirs within	Structures within	$C_{\text{Sufficient}}$
	Subsystem or	Stream System	Stream System or	Stream System or	within Stream System
	Watershed	or Subsystem	Subsystem	Subsystem	or Subsystem (acre-
	(mi <sup>2</sup> ) [A]	(acre-feet) [B]	(acre-feet) [C]	(acre-feet) [D] *	feet) [E] = [B-C-D] **
RED RIVER BASIN					
1-1 Main Stem of Red					
River					
11140106020	175	177,333.48	0.00	0.00	177,333.48
11140106040	183	185,440.15	0.00	0.00	185,440.15
11140106050	52	52,693.38	0.00	1,249.00	51,444.38
Total	410	415,467.00	0.00	1,249.00	414,218.00
1-2 Little River					
1140108010	15	19,153.56	0.00	0.00	19,153.56
1140108030	46	58,737.58	0.00	0.00	58,737.58
1140108040	226	288,580.26	0.00	0.00	288,580.26
1140108050	225	287,303.36	196,000.00	0.00	91,303.36
1140108060	81	103,429.21	0.00	0.00	103,429.21
1140107010	322	411,163.03	0.00	0.00	411,163.03
1140107020	308	393,286.37	94,080.00	0.00	299,206.37
1140107030	118	150,674.65	0.00	0.00	150,674.65
1140107040	345	440,531.81	0.00	0.00	440,531.81
1140107050	314	400,947.80	0.00	0.00	400,947.80
1140109170	61	77,891.13	0.00	0.00	77.891.13
1140109180	36	45,968.54	0.00	0.00	45,968,54
1140109190	43	54,906.86	0.00	0.00	54,906.86
1140109200	64	81,721.84	0.00	0.00	81.721.84
Total	2,204	2,814,296.00	290,080.00	0.00	2.524.216.00
1-3 Kiamichi River					
11140105010	246	276.753.65	0.00	173.00	276.580.65
11140105020	172	193,502.55	0.00	1.803.00	191.699.55
11140105030	275	309.379.08	156.800.00	1.100.00	151.479.08
11140105040	314	353.254.66	0.00	0.00	353.254.66
11140105050	176	198.002.61	0.00	0.00	198,002,61
11140105050	204	229.503.02	0.00	0.00	229 503 02
11140105070	311	349,879,61	64.960.00	37.00	222,500.02
11140105090	123	138.376.82	0.00	0.00	138 376 82
T_	1 821	2.048.652.00	221 760 00	3 113 00	1 823 770 00
100	1,621	<u></u> ,0 <del>1</del> 0,032.00	222,700.00	5,115,00	1,040,777.00
1 4 Muddy Pager Diver					
11140103010	201	246 272 10	0.00	2 0/2 00	242 221 10
	<u> </u>	1 240,273.19	<u>1 v.vu</u>	3,042.00	445,451,19

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STREAM SYSTEM	Drainage Area	<b>Total Estimated</b>	Dependable	Total Sediment Pool	Adjusted Total
	of Stream	Available Water	Yield from	for NRCS	Estimated Available
	System,	(TEAW) in	Reservoirs within	Structures within	Water (ATEAW)
	Subsystem or	Stream System	Stream System or	Stream System or	within Stream System
	$(mi^2)$ [A]	or Subsystem	Subsystem	Subsystem	fact) $[\mathbf{E}] \rightarrow [\mathbf{B}_{-}\mathbf{C}_{-}\mathbf{D}] **$
11140103030		(acre-reet) [D]	(acre-reet) [C]	(acre-reet) [D] 700.00	$\frac{[E]}{[E]} = [E^{-}C^{-}D]$ 83 600 42
11140103020	230	211 749 01	92,007.00	700.00	211 548 01
11140103030	193	140 208 72	71 800.00	110.00	<u> </u>
11140103040	103	140,390.73	/1,800.00	94.00	162 553 71
11140103050	201	154 208 44	0.00	120.00	154 088 44
11140103000	351	269 289 37	0.00	7 031 00	262 258 37
11140104010	150	115 080 93	0.00	2 376 00	112 704 93
11140104020	214	164 182 13	0.00	3 122 00	161 060 13
11140104040	200	153 441 24	0.00	159.00	153 282 24
11140104050	89	68,281,35	0.00	243.00	68.038.35
11140104060	124	95 133 57	56,000,00	220.00	38,913,57
Total	2 5 5 1	1 957 143.00	219,867,00	17.417.00	1.719.859.00
	2,001	1,207,140.00	217,007100		1,12,002100
1-5 Main Stem of Red River					
11130101040	111	88,800.00	0.00	0.00	88,800.00
		· · · · ·			
1-6 Blue River					
11140102010	113	58,188.33	0.00	0.00	58,188.33
11140102020	205	105,562.91	0.00	0.00	105,562.91
11140102030	360	185,378.76	0.00	0.00	185,378.76
Total	678	349,130.00	0.00	0.00	349,130.00
1-7 Main Stem of Red					
River					
11140101010	89	52,213.24	0.00	0.00	52,213.24
11140101020	243	142,559.76	0.00	0.00	142,559.76
Total	332	194,773.00	0.00	0.00	194,773.00
1-8 Washita River					
Subsystem 1-8-4					
11130301030	268	8,982.04	0.00	4,008.00	8,982.04
11130301040	332	11,127.01	0.00	10,687.00	11,127.01
11130301050	129	4,323.45	0.00	6,679.00	4,323.45
11130301060	187	6,267.32	0.00	6,843.00	6,267.32
11130301070	111	3,720.18	18,000.00	521.00	(14,279.82)
Total	1,027	34,420.00	18,000.00	28,738.00	16,420.00
					· · · ·
Subsystem 1-8-3					

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STREAM SYSTEM         Drainage Area of Stream         Total Estimated Available Water         Dependable Yield from         Total Sediment Pool for NRCS         Adjusted Total Estimated Available           System,         (TEAW) in         Reservoirs within         Structures within         Structures within         Water (ATEAW)           Subsystem or Watershed (mi <sup>2</sup> ) [A]         Stream System or Subsystem         or Subsystem (acre-feet) [C]         (acre-feet) [D] *         (acre-feet) [E] = [B-C-D] **           11130302010         136         19,786.62         0.00         6,131.00         13,655.62           11130302030         206         29,970.91         0.00         5,279.00         12,034.29           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         6,591.00         31,818.32           11130302070         76         11,057.23         0.00         6,591.00         31,818.32           11130302080         264         38,4
of Stream         Available Water         Yield from         for NRCS         Estimated Available           System,         (TEAW) in         Reservoirs within         Structures within         Structures within         Water (ATEAW)           Subsystem or         Watershed         or Subsystem         Stream System or         Stream System or         Stream System or         Subsystem         or Subsystem         Subsystem         Subsystem         or Subsystem or Subsystem         Subsystem         or Subsystem         or Subsystem         or Subsystem         or Subsystem         or Subsystem         Subsystem         or Subsystem         or Subsystem         or Subsystem         or Subsystem         Subsystem         or Subsystem         Subsystem         or Subsystem         or Subsystem         Subsystem<
System, Subsystem or Watershed (m <sup>2</sup> ) [A]         (TEAW) in Stream System or Subsystem         Reservoirs within Stream System or Subsystem         Structures within Stream System or Subsystem         Water (ATEAW) within Stream System or Subsystem           11130302010         136         Stream System (acre-feet) [B]         Stream System (acre-feet) [C]         Stream System or Subsystem (acre-feet) [B] *         within Stream System or Subsystem (acre- feet) [E] = [B-C-D] **           11130302020         119         17,313.29         0.00         6,131.00         13,655.62           11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302100         105         15,276.43         0.00         3,622.50         14,854.71           111303021
Subsystem or Watershed $(m^2)$ [A]Stream System or Subsystem (acre-feet) [B]Stream System or Subsystem (acre-feet) [C]Stream System or Subsystem (acre-feet) [D] *Within Stream System or Subsystem (acre- feet) [E] = [B-C-D] **1113030201013619,786.620.006,131.0013,655.621113030202011917,313.290.005,279.0012,034.291113030203020629,970.910.005,346.0024,624.91111303020407911,493.700.003,226.008,267.701113030205015222,114.460.002,471.0019,643.461113030206011917,313.290.005,552.5011,760.791113030206011917,313.290.000.003,212.00111303020707611,057.230.000.0011,057.231113030208026438,409.320.003,972.8042,147.481113030210010515,276.430.002,715.2012,561.231113030210010515,276.430.002,562.0020,570.881113030210012718,477.210.003,622.5014,854.711113030213020229,388.9518,000.00537.1010,851.851113030214020229,388.9518,000.00537.1010,851.85
Watershed (mi <sup>2</sup> ) [A]         of Subsystem (acre-feet) [B]         Subsystem (acre-feet) [C]         Subsystem (acre-feet) [D] *         of Subsystem (acre- feet) [E] = [B-C-D] **           11130302010         136         19,786.62         0.00         6,131.00         13,655.62           11130302020         119         17,313.29         0.00         5,279.00         12,034.29           11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         3,972.80         42,147.48           11130302080         264         38,409.32         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127
Init (A)         (activite) (B)         (activite) (C)         (activite) (D)         (activite) (D)           11130302010         136         19,786.62         0.00         6,131.00         13,655.62           11130302020         119         17,313.29         0.00         5,279.00         12,034.29           11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         2,715.20         12,561.23           11130302100         105         15,276.43         0.00         2,562.00         20,570.88           11130302100         105         15,276.43         0.00         3,622.50         14,854.71
11130302010         136         19,786.62         0.00         6,131.00         13,655.62           11130302020         119         17,313.29         0.00         5,279.00         12,034.29           11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302060         119         17,313.29         0.00         6,591.00         31,818.32           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302100         105         15,276.43         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71
11130302020         119         17,313.29         0.00         5,279.00         12,034.29           11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85 </td
11130302030         206         29,970.91         0.00         5,346.00         24,624.91           11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,562.00         20,570.88           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302130         202         29,388.95         18,000.00         537.10         10,851.85
11130302040         79         11,493.70         0.00         3,226.00         8,267.70           11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,562.00         20,570.88           11130302110         159         23,132.88         0.00         3,622.50         14,854.71           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,574.44         0.00         537.10         10,851.85
11130302050         152         22,114.46         0.00         2,471.00         19,643.46           11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,562.00         20,570.88           11130302110         159         23,132.88         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302130         202         29,388.95         18,000.00         537.10         10,851.85
11130302060         119         17,313.29         0.00         5,552.50         11,760.79           11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,534.44         0.00         537.50         20,570.50
11130302070         76         11,057.23         0.00         0.00         11,057.23           11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,573.44         0.00         537.50         20,570.50
11130302080         264         38,409.32         0.00         6,591.00         31,818.32           11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,574.44         0.00         537.50         20,576.50
11130302090         317         46,120.28         0.00         3,972.80         42,147.48           11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,573.44         0.00         232.50         23.575.50
11130302100         105         15,276.43         0.00         2,715.20         12,561.23           11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,573.44         0.00         938.50         20,570.54
11130302110         159         23,132.88         0.00         2,562.00         20,570.88           11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,574.44         0.00         537.50         20,570.54
11130302120         127         18,477.21         0.00         3,622.50         14,854.71           11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11130302150         203         20,534.44         0.00         938.50         20,574.54
11130302130         202         29,388.95         18,000.00         537.10         10,851.85           11120202150         203         20,534.44         0.00         537.50         20,554.55
11130302130 203 29,534.44 0.00 828.50 28,705.94
Total 2,264 329,389.00 18,000.00 48,834.60 262,554.40
Subsystem 1-8-2
11130302160 192 34,610.89 0.00 1,003.00 33,607.89
11130302170 104 18,747.57 0.00 1,966.50 16,781.07
11130302180 241 43,443.88 0.00 3,806.50 39,637.38
11130302190 293 52,817.66 0.00 437.00 52,380.66
11130303010 192 34,610.89 0.00 3,496.00 31,114.89
11130303020 178 32,087.18 0.00 3,126.40 28,960.78
11130303030 67 12,077.76 0.00 2,755.80 9,321.96
11130303040 68 12,258.02 538.00 3,674.40 8,045.62
11130303050 87 15,683.06 0.00 1,195.40 14,487.66
11130302140 238 42,903.08 0.00 0.00 42,903.08
Total 1,660 299,240.00 538.00 21,461.00 277,241.00
Subsystem 1-8-1
11130303060 199 31,822.53 0.00 1,509.75 30,312.78
11130303070 264 42,216.82 0.00 1,187.80 41.029.02
11130303080 256 40,937.52 6,653.00 35,252.40 (967.88)
11130303090 201 32,142.35 0.00 10,068.40 22,073.95
11130303100 177 28,304.46 0.00 1,484.75 26,819.71
11130303110 154 24,626.48 0.00 2,605.90 22,020.58
11130303120 350 55,969.27 0.00 13,627.00 42.342.27
11130303130 317 50,692.16 3,427.00 5,894.00 41,371.16

STREAM SYSTEM	Drainage Area	Total Estimated	Dependable	<b>Total Sediment Pool</b>	Adjusted Total
	of Stream	Available Water	Yield from	for NRCS	Estimated Available
	System,	(TEAW) in	Reservoirs within	Structures within	Water (ATEAW)
	Subsystem or	Stream System	Stream System or	Stream System or	within Stream System
	Watershed	or Subsystem	Subsystem	Subsystem	or Subsystem (acre-
	(mu <sup>-</sup> ) [A]	(acre-leet) [B]	(acre-feet) [U]	(acre-leet) [D] *	$[\text{teet}][E] = [B \cdot C \cdot D]^{++}$
11130304010	103	16,470.96	0.00	666.60	15,804.36
11130304020	97	15,511.48	0.00	100.00	15,411.48
11130304030	201	32,142.35	0.00	80.00	32,062.35
11130304040	126	20,148.94	0.00	469.40	19,679.54
11130304050	197	31,502.70	52,382.00	86.00	(20,965.30)
Total	2,642	422,488.00	62,462.00	73,032.00	286,994.00
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1-9 Main Stem of Red					
River					
11130210010	279	89,280.00	1,008.00	0.00	88,272.00
11130210020	295	94,400.00	115,618.00	0.00	(21,218.00)
11130210030	76	24,320.00	0.00	0.00	24,320.00
Total	650	208,000.00	116,626.00	. 0.00	91,374.00
1-10 Walnut Bayou					
Стеек					
11130201080	193	41,173.14	0.00	0.00	41,173.14
11130201090	144	30,719.86	0.00	0.00	30,719.86
Total	337	71,893.00	0.00	0.00	71,893.00
1-11 Mud Creek					
11130201020	79	20,890.70	0.00	0.00	20,890.70
11130201030	133	35,170.42	0.00	0.00	35,170.42
11130201040	303	80,125.09	0.00	0.00	80,125.09
11130201050	123	32,526.03	0.00	0.00	32,526.03
11130201060	136	35,963.74	0.00	0.00	35,963.74
11130201070	88	23,270.65	0.00	1,401.00	21,869.65
11130201100	76	20,097.38	0.00	0.00	20,097.38
Total	938	248,044.00	0.00	1,401.00	246,643.00
1-12 Beaver Creek					
11130208010	208	54,809.69	0.00	0.00	54,809.69
11130208020	76	20,026.62	0.00	0.00	20,026.62
11130208030	196	51,647.59	0.00	400.00	51,247.59
11130208040	193	50,857.07	0.00	518.00	50,339.07
11130208050	189	49,803.03	40,549.00	502.00	8,752.03
Total	862	227,144.00	40,549.00	1,420.00	185,175.00
1-13 Cache Creek	2,032	477,470.00	47,000.00	13,033.00	417,437.00

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STREAM SYSTEM	Drainage Area	Total Estimated	Dependable	Total Sediment Pool	Adjusted Total
	of Stream	Available Water	Yield from	for NRCS	Estimated Available
	System,	(TEAW) in Stream System	Reservoirs within	Structures within	Water (ATEAW)
	Watershed	or Subsystem	Subsystem	Subsystem	or Subsystem (acre-
	$(mi^2)$ [A]	(acre-feet) [B]	(acre-feet) [C]	(acre-feet) [D] *	feet) $[E] = [B-C-D] **$
Subsystem 1-13-2					
11130203010	75	15,767.51	0.00	0.00	15,767.51
11130203020	143	30,063.38	0.00	5,213.20	24,850.18
11130203030	90	18,921.01	0.00	7,819.80	11,101.21
11130203040	140	29,432.68	0.00	0.00	29,432.68
11130203050	· 181	38,052.25	0.00	0.00	38,052.25
11130203060	288	60,547.23	0.00	0.00	60,547.23
11130203070	184	38,682.95	0.00	0.00	38,682.95
Total	1101	231,467.00	0.00	13,033.00	218,434.00
Subsystem 1-13-1					
11130202010	117	30,915.52	0.00	0.00	30,915.52
11130202020	188	49,676.22	23,500.00	0.00	26,176.22
11130202030	137	36,200.23	23,500.00	0.00	12,700.23
11130202040	223	58,924.46	0.00	0.00	58,924.46
11130202050	139	36,728.70	0.00	0.00	36,728.70
11130201010	127	33,557.87	0.00	0.00	33,557.87
Total	931	246,003.00	47,000.00	0.00	199,003.00
1-14 Main Stem of Red River					
11130102010	104	12,202.76	0.00	0.00	12,202.76
11130102020	68	7,978.73	0.00	0.00	7,978.73
11130102030	208	24,405.52	0.00	0.00	24,405.52
Total	380	44,587.00	0.00	0.00	44,587.00
1-15 North Fork Red River	2,256	247,631.00	63,100.00	8,565.00	175,966.00
Subsystem 1-15-2					
11120302040	91	9,590.55	0.00	85.00	9,505.55
11120302050	3	316.17	0.00	97.00	219.17
11120302060	235	24,766.81	0.00	770.00	23,996.81
11120302070	297	31,301.04	0.00	860.00	30,441.04
11120302080	234	24,661.42	47,100.00	496.00	(22,934.58)
Total	860	90,636.00	47,100.00	2,308.00	41,228.00
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Subsystem 1-15-1					
11120303010	118	13,270.35	0.00	57.00	13,213.35
11120303020	197	22,154.74	0.00	4,058.00	18,096.74

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STREAM SYSTEM	Drainage Area	Total Estimated	Dependable	Total Sediment Pool	Adjusted Total
	of Stream	Available Water	Yield from	for NRCS	Estimated Available
	System,	(TEAW) in	Reservoirs within	Structures within	Water (ATEAW)
	Subsystem or Wotorchod	Stream System	Stream System or	Stream System or	or Subsystem (acre-
	$(mi^2)$ [A]	(acre-feet) [B]	(acre-feet) [C]	(acre-feet) [D] *	feet) $[E] = [B-C-D] **$
11120303030	88	9.896.53	0.00	613.00	9.283.53
11120303040	104	11.695.90	0.00	614.00	11.081.90
11120303050	106	11,920.82	0.00	610.00	11.310.82
11120303060	84	9,446.69	0.00	75.00	9.371.69
11120303070	137	15,407.10	0.00	120.00	15,287.10
11120303080	287	32,276.19	16,000.00	110.00	16,166.19
11120303090	252	28,340.07	0.00	0.00	28,340.07
11120101070	23	2,586.59	0.00	0.00	2,586.59
Total	1396	156,995.00	16,000.00	6,257.00	134,738.00
1-16 Salt Fork Red					
River					
11120202040	116	31,337.38	0.00	1,345.80	29,991.58
11120202050	130	35,119.48	0.00	91.10	35,028.38
11120202060	314	84,827.06	0.00	2,323.95	82,503.11
11120202070	154	41,603.08	0.00	68.00	41,535.08
Total	714	192,887.00	0.00	3,828.85	189,058.15
1-17 Prairie Dog Town Fork of Red River					
11120105060	12	480.00	0.00	0.00	480.00
11120101030	111	4,440.00	0.00	0.00	4,440.00
11120101040	180	7,200.00	0.00	0.00	7,200.00
11120101050	43	1,720.00	0.00	0.00	1,720.00
11120101060	146	5,840.00	0.00	0.00	5,840.00
Total	492	19,680.00	0.00	0.00	19,680.00
1-18 Elm Fork of Red					
River					
11120304020	42	5,135.70	0.00	0.00	5,135.70
11120304030	69	8,437.23	0.00	0.00	8,437.23
11120304040	209	25,556.24	0.00	0.00	25,556.24
11120304050	137	16,752.18	0.00	0.00	16,752.18
11120304060	110	13,450.65	0.00	0.00	13,450.65
Tota	567	69.332.00	0.00	0.00	69,332.00

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#### Note:

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\* The column 'Total Sediment Pool for NRCS Structures within Stream System or Subsystem' listed by Hydrologic Unit Codes (HUC) are approximate. A detailed summary of NRCS structures and their total sediment pool by counties in each stream systems is presented in Appendix C.

\*\* Except for Stream Subsystem 1-8-4, column [E] = column[B] - column[C]

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### APPENDIX C

SUMMARY OF NRCS STRUCTURES BY COUNTY WITHIN THE RED RIVER BASIN

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Stream System	County	Total Sediment Pool for NRCS Structures within Stream System or Subsystem (acre-feet)
1-1 Main Stem of Red River	McCurtain	1,249
	Total	1,249
1.7 Little River	LeFlore	
	Pushmataha	
	McCurtain	
	Choctaw	
	Total	0
1.3 Kiamichi River	LeFlore	173
	Latimer	2.903
	Pittshurg	
	Pushmataha	
	Choctaw	37
	Total	3,113
1-4 Muddy Boggy River	Pontotoc	3,931
	Hughes	1,721
	Pittsburg	
	Coal	7,622
	Johnston	1,376
	Atoka	2,708
	Bryan	59
	Choctaw	(
	Total	
1-5 Main Stem of Red River	Choctaw	
	Bryan	
	Total	(
1-6 Blue River	Pontotoc	
	Johnston	(
	Вгуал	
	Atoka	
	Total	· (
1-7 Main Stem of Red River	Bryan	
	Total	
1-8 Washita Piver		
12-0 TT ASILIA XYVI		4

Stream System	County	Total Sediment Pool for NRCS Structures
		within Stream System or Subsystem (acre-feet)
Subsystem 1-8-4	Roger Mills	26,717
	Custer	2,021
	Total	28,738
Subsystem 1-8-3	Custer	15,125
	Washita	21,210
	Caddo	2,914
	Kiowa	6,288
	Dewey	3,298
	Total	48,835
Subsystem 1-8-2	Caddo	2,843
	Grady	8,740
	McClain	9,186
	Garvin	692
	Total	21,461
Subsystem 1-8-1	Stephens	43,753
	Garvin	5,339
		3,844
	Carter	19,110
	Johnston	986
	Marshall	6
	Bryan	C
	Total	73,032
1-9 Main Stem of Red River	Carter	
	Love	
	Marshall	
	Total	
	<u></u>	
1-10 Walnut Bayou Creek		
	Love Total	
1-11 Mud Creek	Stephens	<u>C</u>
	Jefferson	<u>ر</u>
	Carter	0
	Love	1,401
	Total	1,401
IL		

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Stream System	County	Total Sediment Pool for NRCS Structures
		within Stream System or Subsystem
		(acre-feet)
1-12 Beaver Creek	Grady	0
	Cotton	0
	Stephens	718
	Jefferson	702
	Total	1,420
1 12 Cooke Crook		
	Viana	
Subsystem 1-13-2	Nowa	0
	Comanche	
		U
	iuman	13,033
	I otal	
Subsystem 1-13-1	Comanche	
	Caddo	
	Cotton	
	Total	
1-14 Main Stem of Red River	Tillman	0
	Cotton	0
	Total	0
1-15 North Fork Red River		
Subsystem 1-15-2	Beckham	2,308
	Greer	0
	Total	2,308
		2,550
Subsystem 1-15-1	Decknam Washita	
	Washita	2,253
	Kiowa	440
	Tillmon	
	Tutuai	 
	10141	0,437
1-16 Salt Fork Red River	Harmon	2,493
	Greer	991
	Jackson	345
	Total	3,829
1-17 Prairie Dog Town Fork of	Нагтор	0
Red River		

Stream System	County	Total Sediment Pool for NRCS Structures within Stream System or Subsystem (acre-feet)
	Jackson	0
	Total	0
1-18 Elm Fork of Red River	Harmon	0
	Greer	0
	Total	