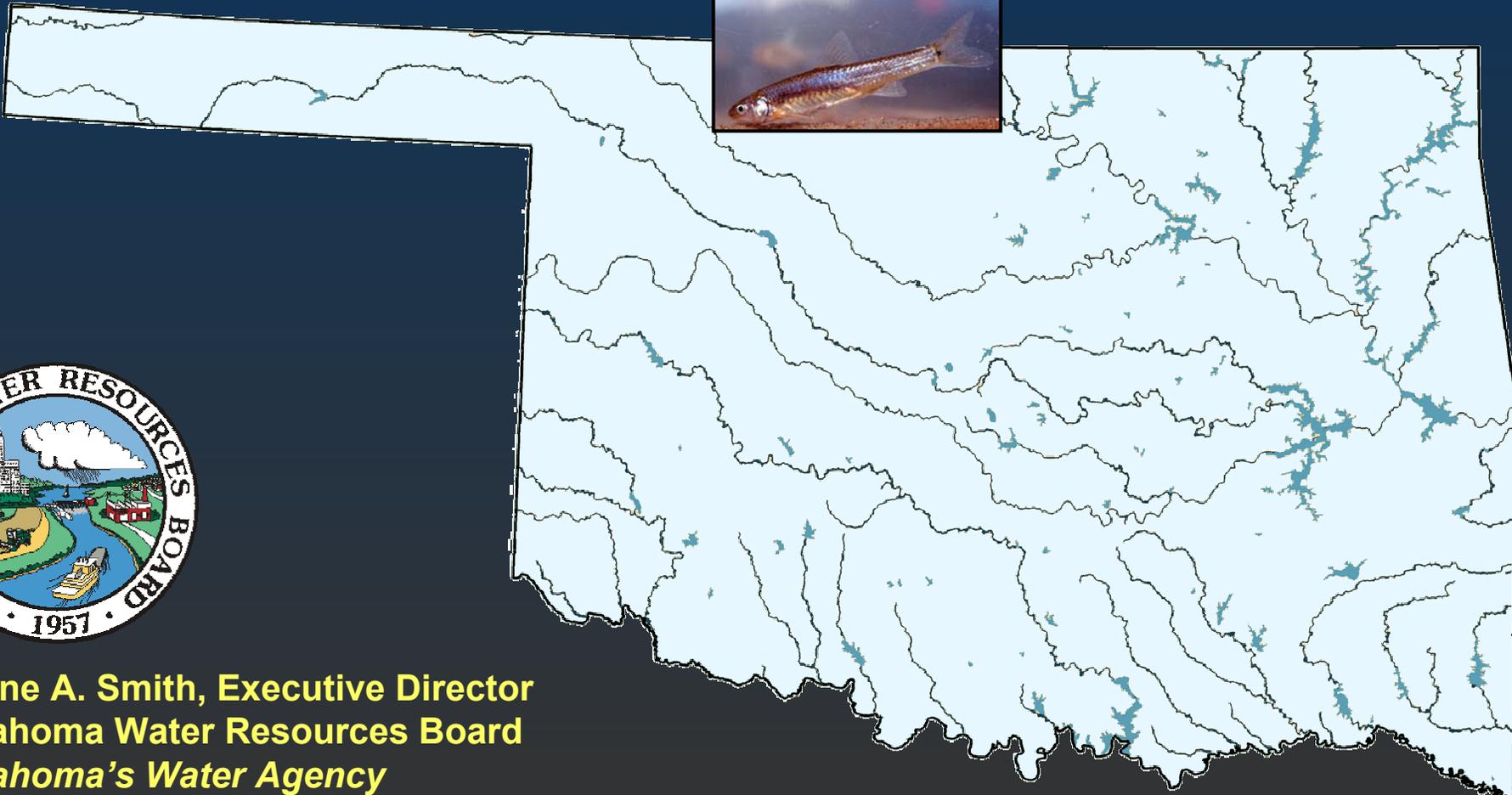


The Arkansas River Shiner

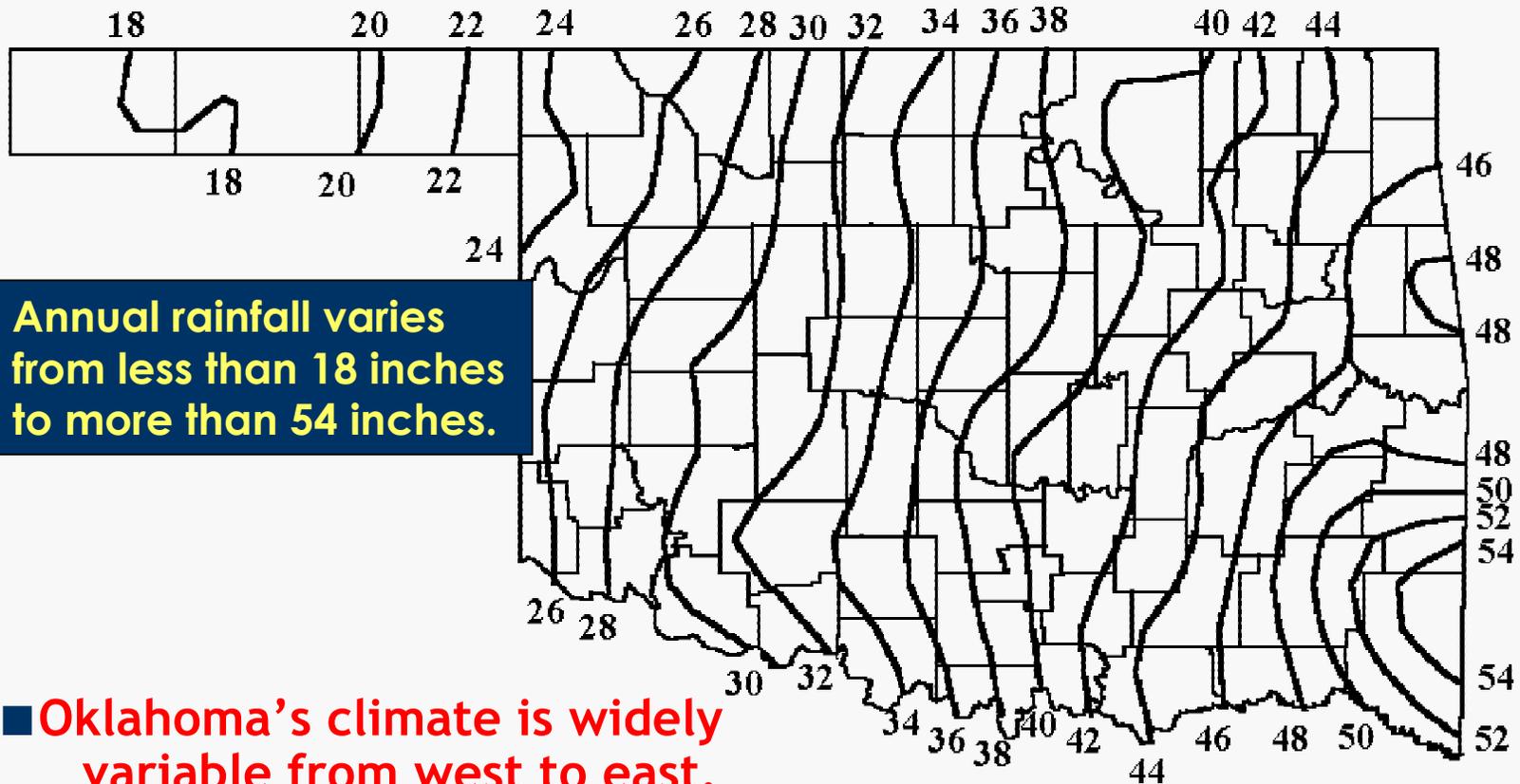
Impacts on Oklahoma Water Management



Duane A. Smith, Executive Director
Oklahoma Water Resources Board
Oklahoma's Water Agency

Oklahoma's Water Resources

Normal Annual Precipitation Oklahoma (1971-2000)

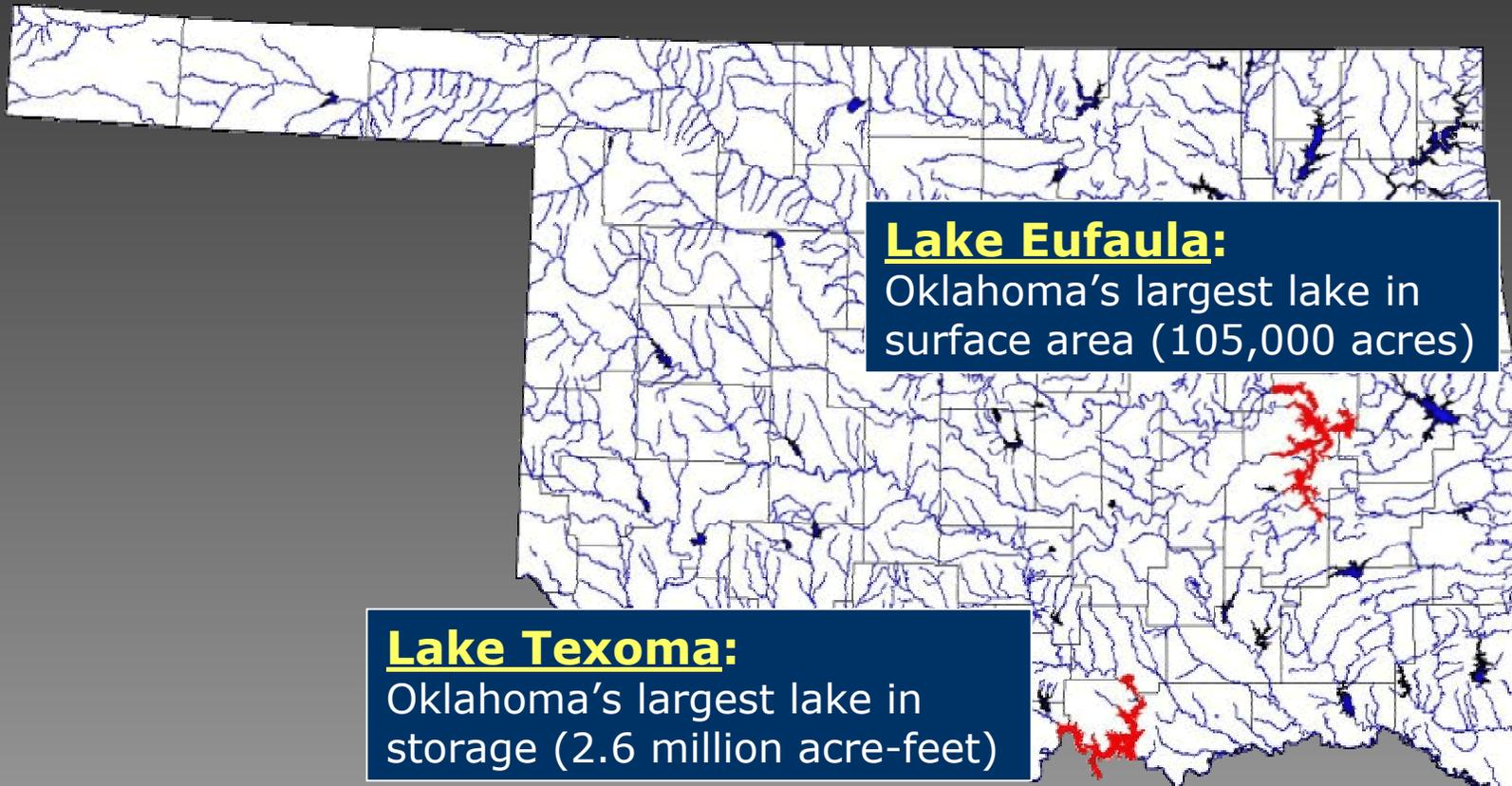


Annual rainfall varies from less than 18 inches to more than 54 inches.

Oklahoma's climate is widely variable from west to east.

Oklahoma's Water Resources

- 34 major reservoirs store 13 million acre-feet of water



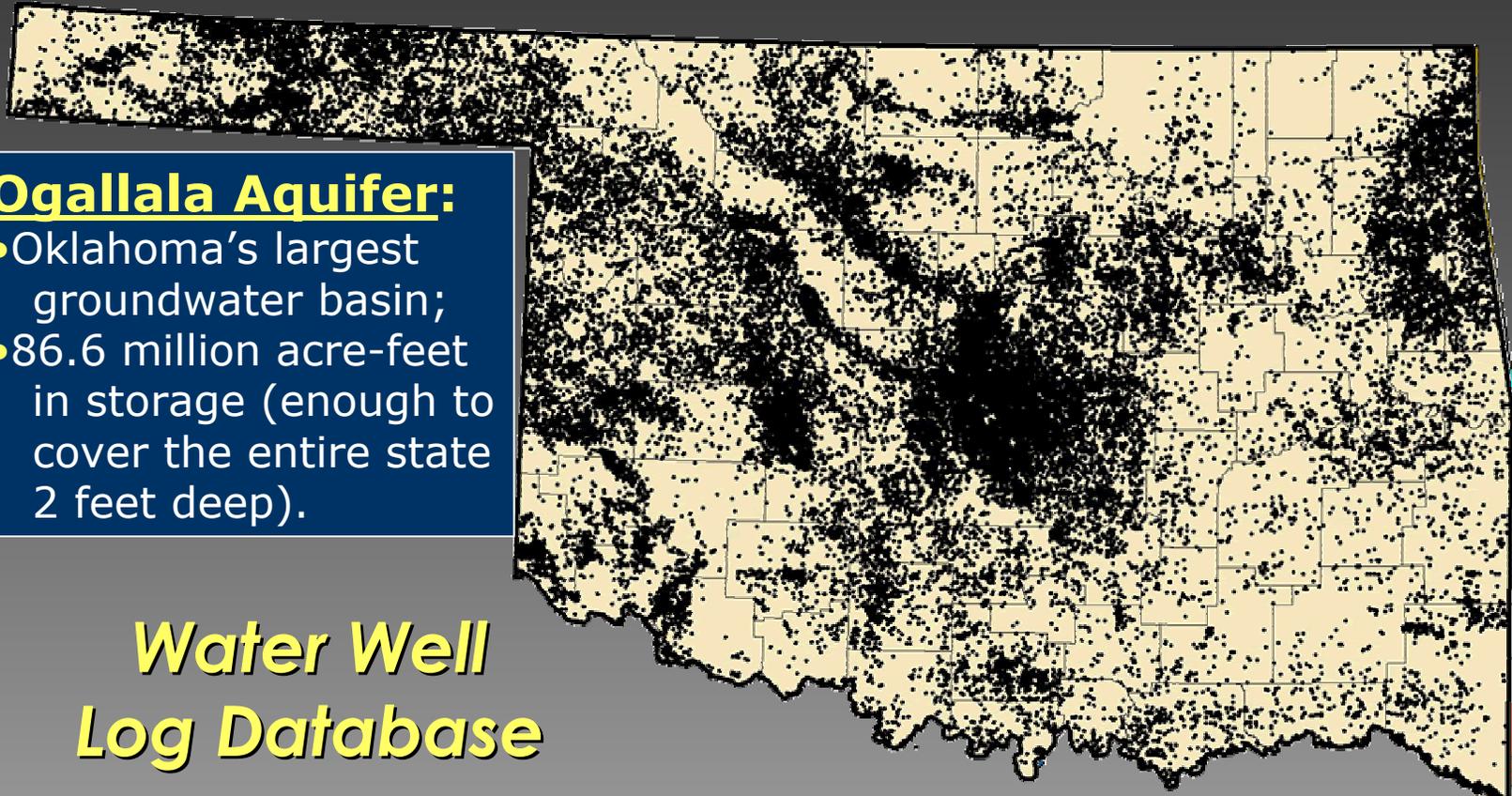
Oklahoma's Water Resources

- 23 major groundwater aquifers store 320 million acre-feet of water

Ogallala Aquifer:

- Oklahoma's largest groundwater basin;
- 86.6 million acre-feet in storage (enough to cover the entire state 2 feet deep).

*Water Well
Log Database*



Oklahoma's Water Resources

- Irrigation is the #1 use of water in Oklahoma:
 - ◆ accounts for 49 percent of total withdrawals:
 - ◆ water supply = 32 percent
 - ◆ stock watering = 8 percent
 - ◆ accounts for 80 percent of groundwater withdrawals.



During a peak irrigation day (assuming 1,000 wells pumping at 1,000 gallons per minute), Texas County uses as much water as New York City during an average day.

Oklahoma's Water Resources

- 2,600 stream water use permits on file (OWRB):
 - ◆ appropriate 2.4 million ac-ft/year
- 9,500 groundwater permits:
 - ◆ allocate 3.2 million ac-ft/year

		<u>Authorized</u>	<u>Annual Use</u>
City of Tulsa	=	324,778 ac-ft/yr	139,000 ac-ft
City of Oklahoma City	=	215,463 ac-ft/yr	136,000 ac-ft

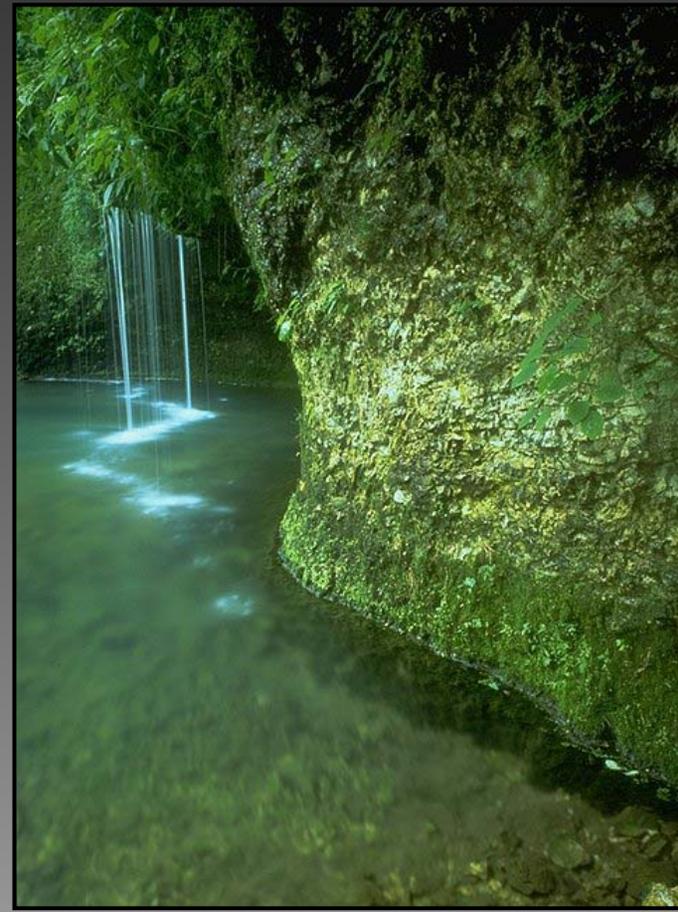
Annual Withdrawals:

Texas/Cimarron/Beaver Counties	=	701,000 ac-ft
State Municipal Water Supply	=	637,000 ac-ft

Overview

Oklahoma Stream Water Law

- Stream water is considered to be publicly-owned and subject to appropriation by the OWRB:
 - ◆ “First in time, first in right”: first person to apply for the water right establishes a right superior to later appropriators.



Overview

Oklahoma Groundwater Law

- Groundwater is considered private property that belongs to the overlying surface owner, although it is subject to reasonable regulation by the OWRB:
 - ◆ The amount of groundwater apportioned is based upon the amount of land owned, generally 2 acre-feet of water per acre of land.



The Arkansas River Shiner ***(Notropis girardi)***



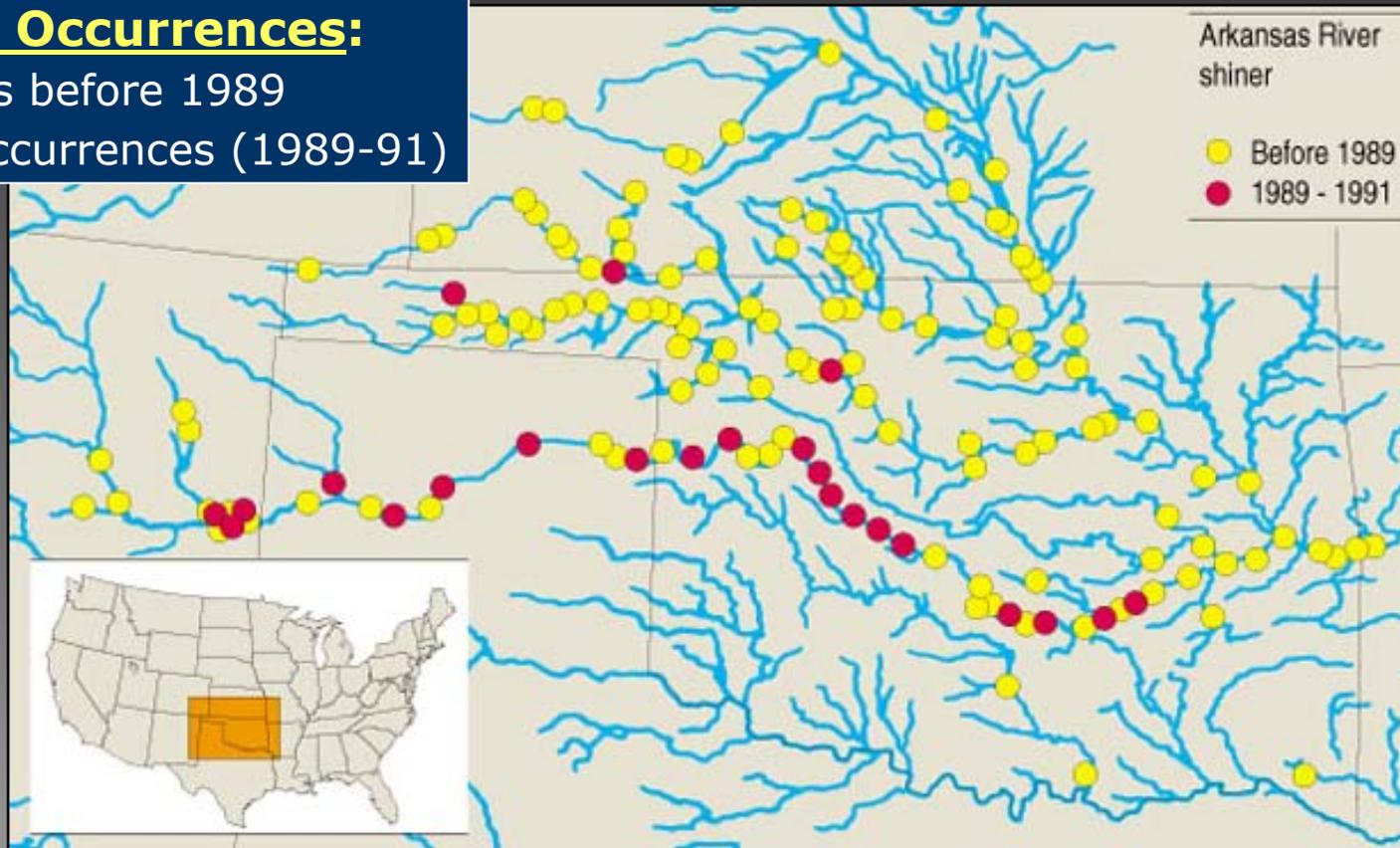
- Small minnow (maximum length = 2 inches).
- Once inhabited wide, sandy-bottomed rivers/streams throughout the Arkansas River Basin (Kansas, New Mexico, Oklahoma, Texas, and Arkansas).
- Requires at least 80 consecutive river miles to complete its life cycle.

The Arkansas River Shiner

- Within the last 20 years, the species has disappeared from over 80% of its historic range.

Historical Occurrences:

- collections before 1989
- current occurrences (1989-91)



The Arkansas River Shiner

■ Timeline:

- ◆ November 1998--U.S. Fish and Wildlife Service lists ARS as “threatened” species.
- ◆ April 2001--USFWS designates critical habitat for ARS:
 - ◆ “specific geographic areas that are essential to the conservation of a threatened or endangered species and that may require special management considerations”.
 - ◆ the designation prohibits federally-sponsored actions on those lands that are likely to adversely modify a listed species' critical habitat.

The Arkansas River Shiner

■ Timeline:

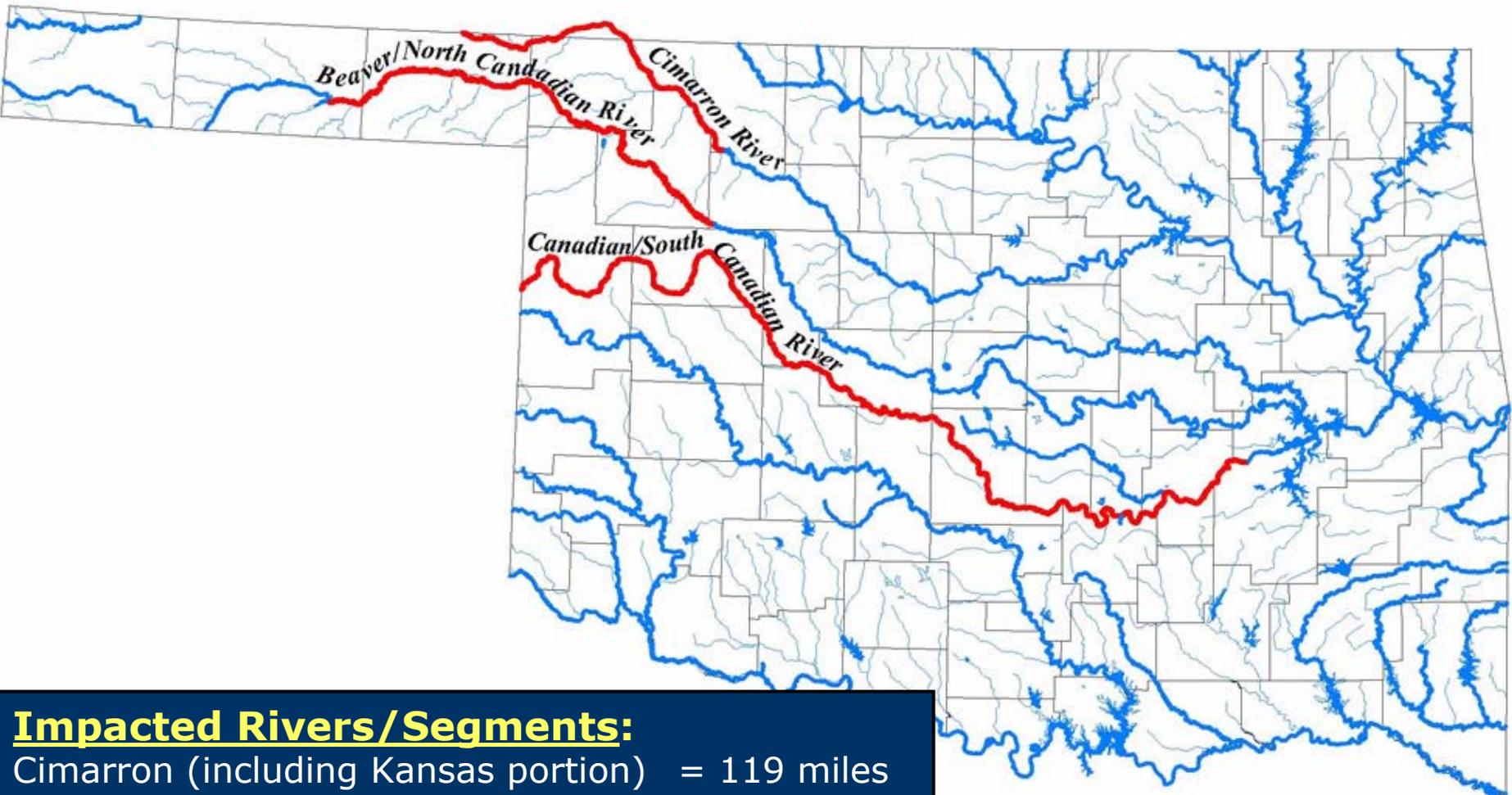
- ◆ April 2002 -- Arkansas River Shiner Coalition (including five Oklahoma farm groups) files lawsuit against USFWS citing endangerment of private property rights.

The Arkansas River Shiner

■ Critical Habitat:

- ◆ 1,148 river miles in four states (New Mexico, Texas, Kansas, and Oklahoma).
- ◆ Includes 300 feet of “riparian corridor” on either side of designated rivers/streams.
- ◆ In Oklahoma:
 - ◆ 721 total miles, most of which includes currently “unoccupied” miles (where species no longer found);
 - ◆ impacts 22 of state’s 77 counties;
 - ◆ 98 percent of critical habitat area held in private ownership.

Arkansas River Shiner Critical Habitat in Oklahoma Impacted Rivers



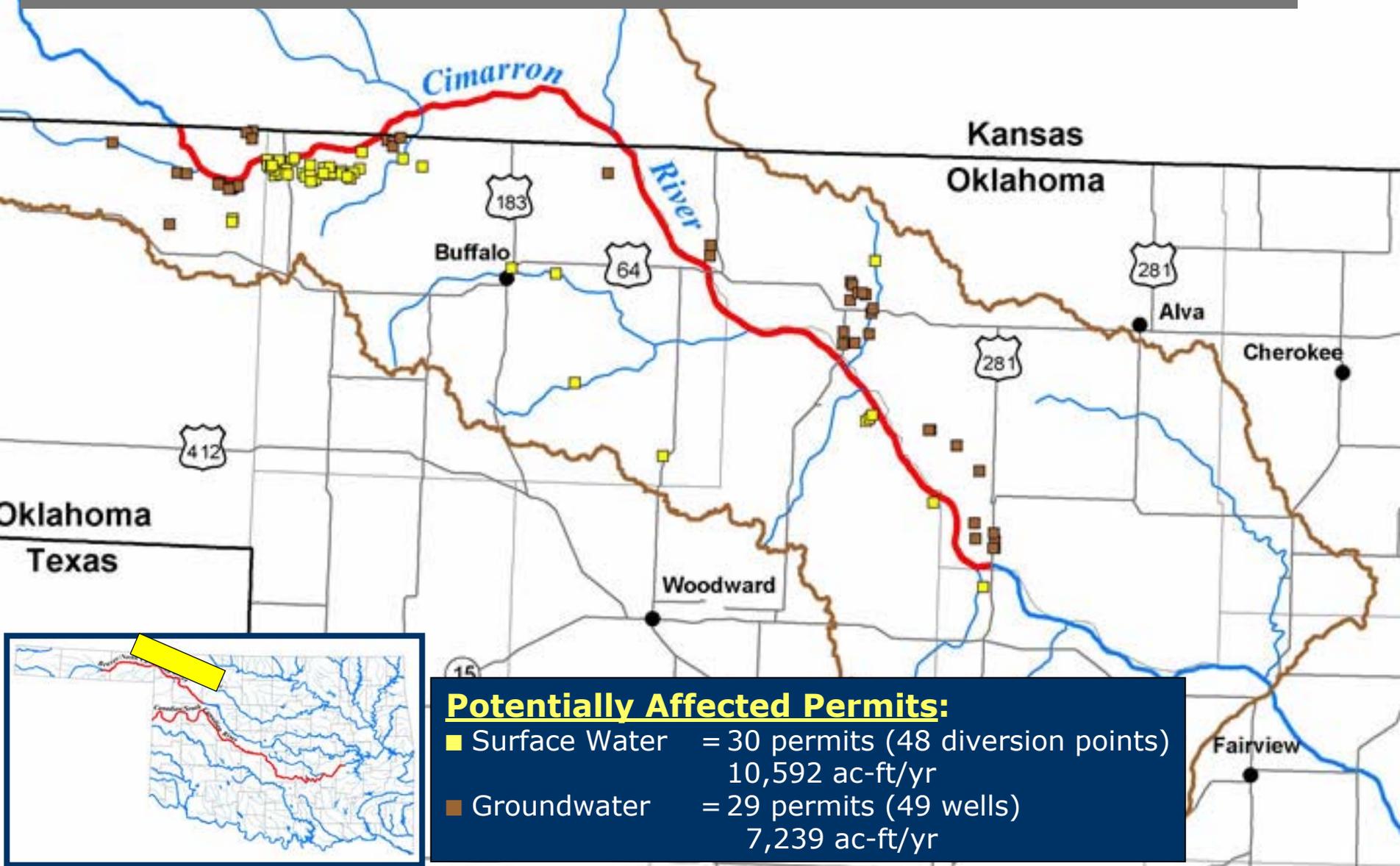
Impacted Rivers/Segments:

Cimarron (including Kansas portion)	= 119 miles
Beaver/North Canadian	= 210 miles
Canadian/South Canadian	= 392 miles
Total	= 721 miles

Arkansas River Shiner Critical Habitat in Oklahoma Cimarron River



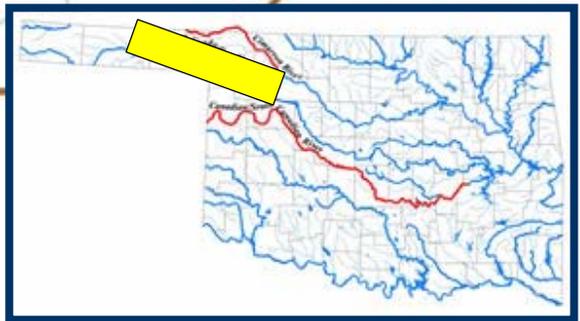
Arkansas River Shiner Critical Habitat in Oklahoma Cimarron River



Arkansas River Shiner Critical Habitat in Oklahoma Beaver/North Canadian River



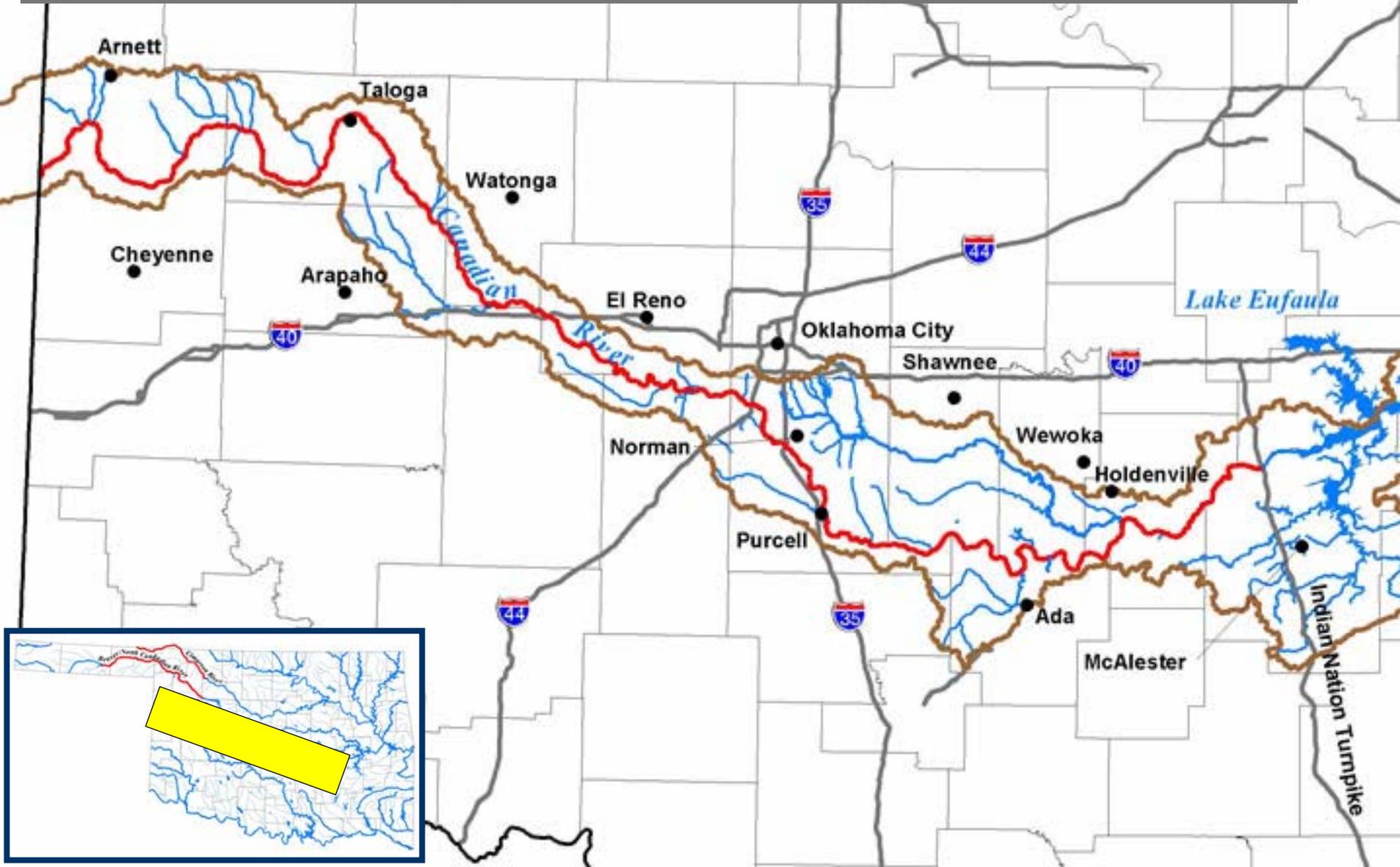
Arkansas River Shiner Critical Habitat in Oklahoma Beaver/North Canadian River



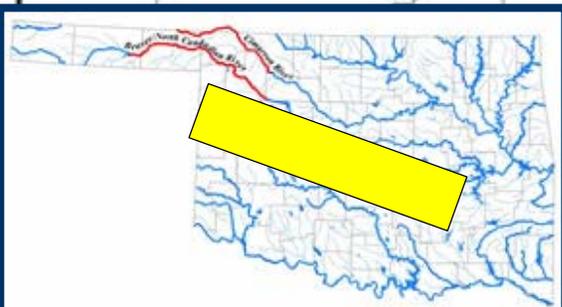
Potentially Affected Permits:

- Surface Water = 37 permits (67 diversion points)
14,077 ac-ft/yr
- Groundwater = 154 permits (491 wells)
85,836 ac-ft/yr

Arkansas River Shiner Critical Habitat in Oklahoma Canadian/South Canadian River



Arkansas River Shiner Critical Habitat in Oklahoma Canadian/South Canadian River



Potentially Affected Permits:

■ Surface Water	= 102 permits (220 diversion points)
	124,709 ac-ft/yr
■ Groundwater	= 145 permits (403 wells)
	68,354 ac-ft/yr

The Critical Habitat Designation Impacts on Water Management

■ Private property rights:

- ◆ use of groundwater;
 - ◆ use of stream water - domestic riparian and vested appropriation.
- ➔ *How will the use of water disturb or negatively impact the shiner's habitat?*

The Critical Habitat Designation Impacts on Water Management

■ Problems:

- ◆ Water in alluvium outside cut banks is privately owned groundwater; use of alluvium groundwater can affect stream flow.
- ◆ Actions in 300-foot riparian corridor includes use of groundwater from alluvium water wells and use of appropriation rights to divert stream water.
- ◆ “Takings” issues--groundwater and stream water appropriations.

The Critical Habitat Designation Impacts on Water Management

■ Problems:

- ◆ Takings issues--potential restrictions on groundwater use and stream water appropriations.
- ◆ Establishment of criteria to determine actions likely to modify critical habitat.
- ◆ Impacts of alluvial groundwater use versus stream water use.
- ◆ CRP payments and federal funding to municipalities relying on groundwater.

Summary

- Balance state water use with requirements for species protection.
- Critical habitat designations should involve comprehensive economic analyses of potential impacts on water management.



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