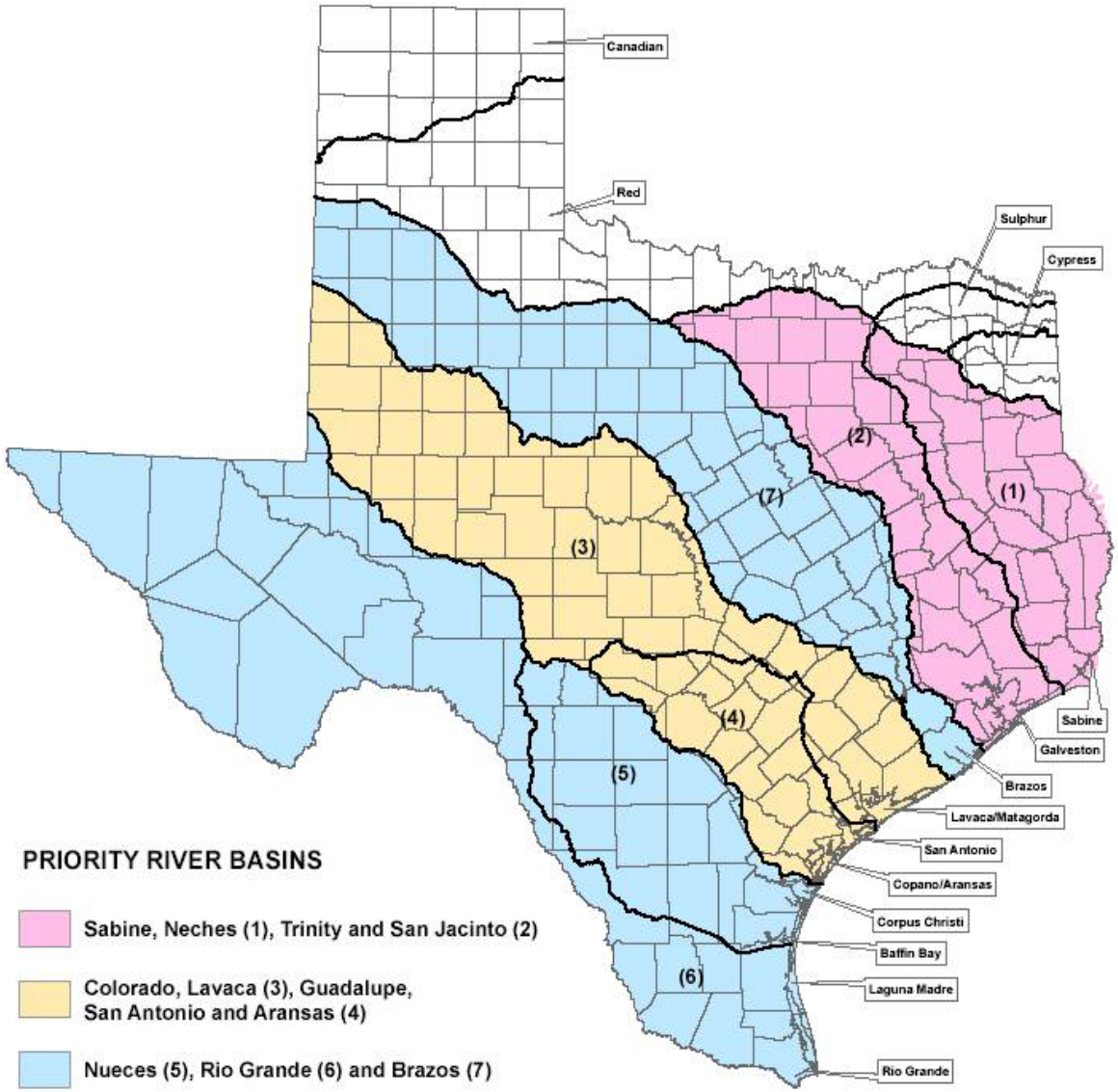
CADDO LAKE INSTITUTE

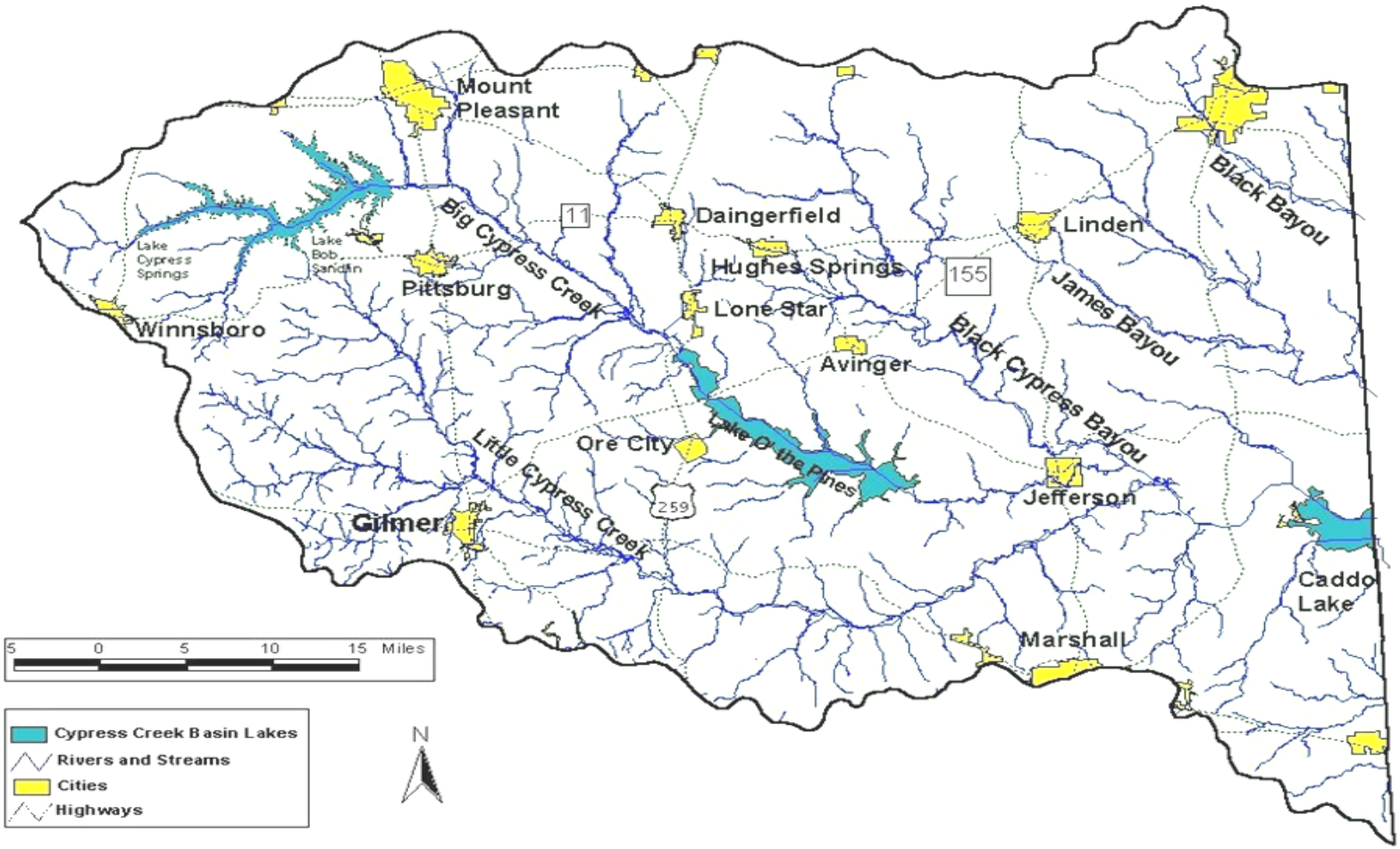
ENVIRONMENTAL FLOWS IN THE CYPRESS RIVER BASIN

Science Advisory Committee

July 11, 2010

PRIORITY RIVER BASIN AND BAY SYSTEMS

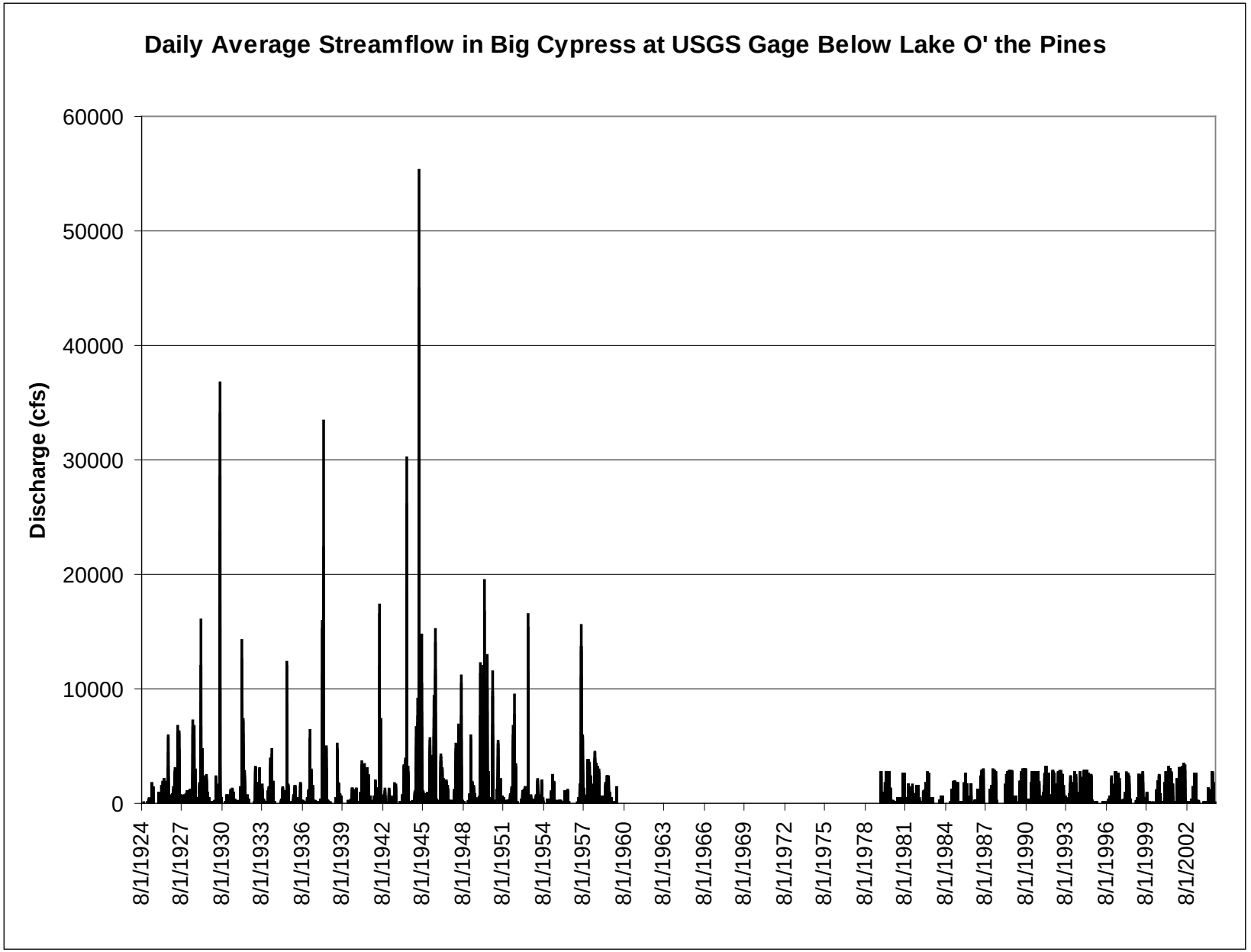



Mount Pleasant
Lake Cypress Springs
Lake Bob Sandlin
Big Cypress Creek
11
Daingerfield
Hughes Springs
155
Linden
Black Bayou
Pittsburg
Lone Star
James Bayou
Winnsboro
Avinger
Black Cypress Bayou
Lake O' the Pines
Ore City
Little Cypress Creek
259
Jefferson
Gilmer
Caddo Lake
Marshall
5 0 5 10 15 Miles
Cypress Creek Basin Lakes
Rivers and Streams
Cities
Highways
N

Senate Bill 3

In a “basin” for which there is no ongoing flow process, the law also allows:

“an effort to develop information on environmental flow needs and ways in which those needs can be met by a voluntary consensus-building process.”
Sec. 11.02362(e).


Daily Average Streamflow in Big Cypress at USGS Gage Below Lake O' the Pines
Discharge (cfs)
60000
50000
40000
30000
20000
10000
0
8/1/1924
8/1/1927
8/1/1930
8/1/1933
8/1/1936
8/1/1939
8/1/1942
8/1/1945
8/1/1948
8/1/1951
8/1/1954
8/1/1957
8/1/1960
8/1/1963
8/1/1966
8/1/1969
8/1/1972
8/1/1975
8/1/1978
8/1/1981
8/1/1984
8/1/1987
8/1/1990
8/1/1993
8/1/1996
8/1/1999
8/1/2002

Current Goals

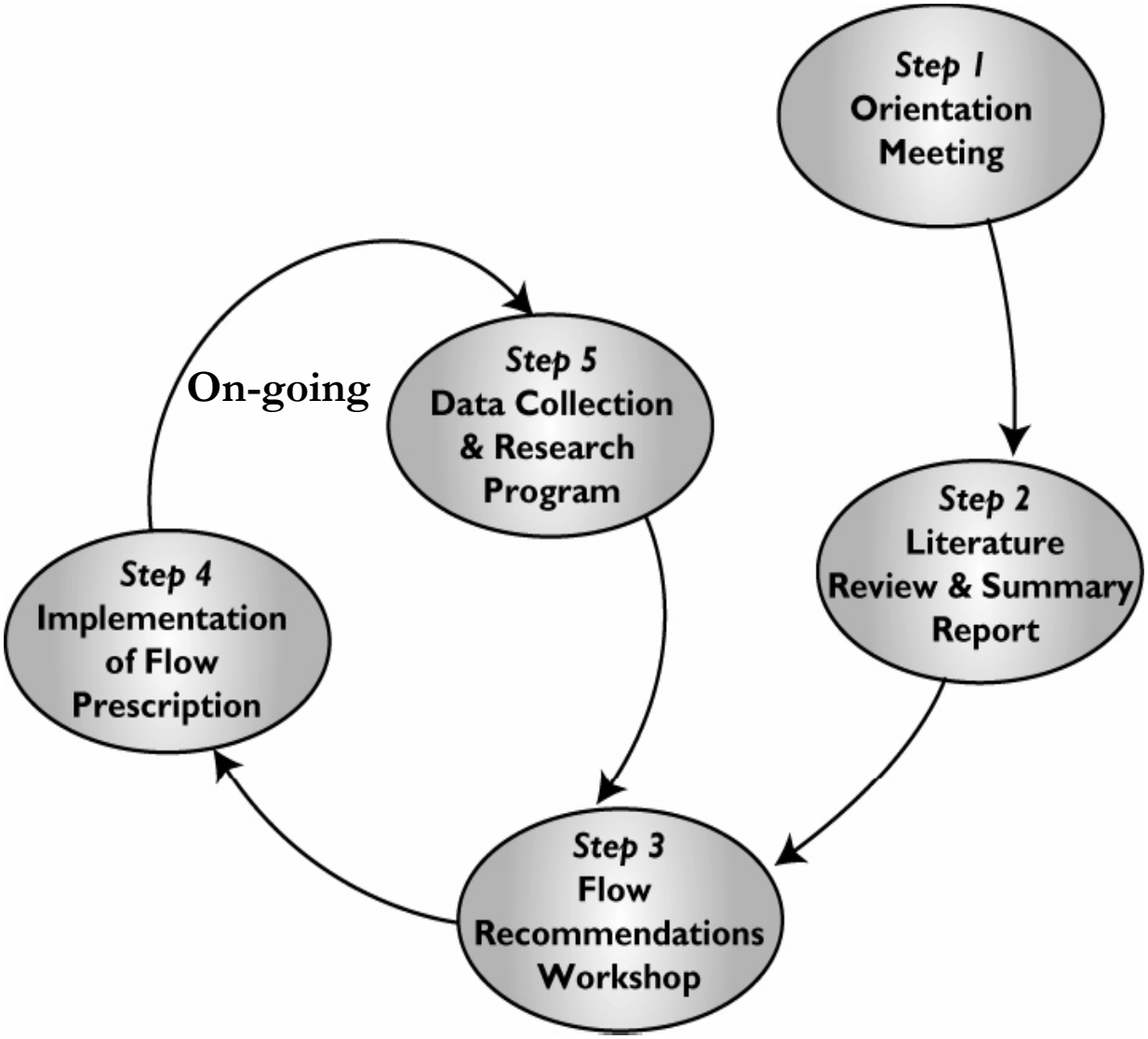
1. **Seek TCEQ rulemaking for the environmental flow standard that is the result of the work of the scientists and stakeholders.**

2. **Implementation of strategies to help achieve those flows, such as**

   A new operating plan for releases from Lake O' the Pines

   An extended period for a recreational pool in Lake O’ the Pines to provide additional water needed for the flows.

3. **Develop and fund a long-term adaptive management process.**


Step 1
Orientation
Meeting
December 2004
Step 5
Data Collection
& Research
Program
On-going
Step 2
Literature
Review & Summary
Report
Spring 2005 &
Fall 2006
Step 4
Implementation
of Flow
Prescription
Step 3
Flow
Recommendations
Workshop
May 2005, October 2006 & December 2008

Implementation of Flow Prescription & Data Collection and Research Program

- Installation of new stream gage on Big Cypress at Karnack
- Museum study of historical fish data
- Characterize segment and reach-scale channel geomorphologic features
- Baseline collections of the fish assemblage
- Establish instrumented cross-sections at non-gauged locations & experimental releases from Lake O' the Pines.
- Modeling to develop flow-habitat response curves & habitat time Series
- Measurements to quantify overbank discharge
- Cross section surveys on Big Cypress to support Corps' HEC-RAS development
- **Develop circulation model for flow and nutrients in Caddo Lake (WPP)**
- **Floodplain inundation mapping**
- **Development of indicator and base line data collection**

Time Table for Major Activities

- **December 2004: Orientation** Meeting. (~60 Scientists and Stakeholders)
- **April 2005:** Texas A&M Summary Report on Past Scientific Studies. (Updated **Sept 2006**.)
- **May 2005:** First Project **Workshop.** (~90 Scientists and Stakeholders)
- **April & May 2006:** Science Planning Meetings – Two (at Caddo and Austin) to Guide Research.
- **October 2006:** Historic Trends in Fish Community, Cypress Basin**.** Texas State University.
- **October 2006:** Second Project **Workshop**. (~80 Scientists and Stakeholders) Joint with WPP Process.
- **May & June 2007:** Science Planning Meetings – Two (at Caddo and Austin) to Guide Research.
- **July 2008:** Science Planning Meeting – In Austin to Guide Research.
- **December 2008:** Third Project **Workshop**. (~ 75 Scientist and Stakeholders) Also, joint with WPP.
- **January 2009:** Science Planning Meeting – In Austin to Guide Research by USGS for the Corps of Eng.
- **January 2010:** Science Planning Meeting – In Austin to Guide Research for Future Project Workshop.
- **May 2010:** Science Planning Meeting – In Austin to Guide Research on Indicators of Success

Instream Flow Building Blocks

Big Cypress Creek

Floods

20,000 cfs for 2-3 days
Every 10 years
*For channel migration

3,000-10,000 cfs for 2-3 days
Every 3-5 years
*Maintain aquatic habitat in floodplain
* Riparian seed dispersal
* Inhibition of upland vegetation for both creek & lake
*Seed dispersal
* Vegetation removal

High Flow Pulses

2,500 cfs for 2-3 days
Every 2 years
* For channel maintenance
* Oxbow connectivity

1,500 cfs for 2-3 days
3-5X a year every year
* 1 occurring in March for Paddlefish
* Sediment transport
•Waterfowl habitat flushing
(Includes December)

Low Flows

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maintain biodiversity and connectivity (backwater & oxbows)											
396	500	536	445	264	140	70	41	**40**	49	94	275
Pre-dam median		Benthic drift & dispersal, fish spawning				Fish habitat			Pre-dam median		
268	347	390	330	150	79	35	**40**	**40**	**40**	**90**	117
Fish habitat		Spawning habitat				Maintain aquatic diversity			Fish habitat		
90	**90**	218	198	114	49	13	**8.4**	**8.4**	**40**	**90**	**90**

Key

- Wet Year
- Avg Year
- Dry Year

Examples of 175+ Participants in the Work to Date, Including over 60 Experts)

- **Local & Regional Governments** – e.g. NETMWD, CVND, & local counties and cities.
- **Tx & La State Agencies** – TPWD, TWDB, TCEQ, TSSWCB, & LaDEQ
- **Federal Agencies** – Corps of Engineers, USGS, & US F&WS
- **Universities** – e.g. Texas A&M, Texas State, LSU Shreveport
- **Reps from Business and Industries** – e.g. AEP, Nestle Waters NA, Caddo Lake Chamber of Commerce
- **Others** – e.g. Red River Valley Assn., Landowners, Bass Clubs, Greater Caddo Lake Assn, Nat. Wildlife Fed.