

Introduction

As the building blocks for the Cypress are refined, the focus needs to shift somewhat to include issues of implementation. The actual constraints on flows, interests of stakeholders, and future needs in the watershed need to be considered. Thus, for example, whether water is available now or will be in the future to satisfy the building blocks is one critical issue. This document provides some of the information needed to evaluate the issue. One other paper will be provided that uses TCEQ's Water Availability modeling and other methods to evaluate the issue also. Jointly, they seek to help resolve the following questions:

1. How much water is currently subject to water rights in the basin and watershed?
2. Is there available water (water that has not been appropriated and subject to water rights) or other water that can be provided for flows?
3. What are the projected future water needs in the basin?

There are a number of questions not addressed, such as how the watershed or the State of Texas should address shortfalls if there is not sufficient water for existing uses, environmental flows and future needs. Stakeholders and scientists are going to need to resolve a number of such policy and technical issues.

Sources of Information

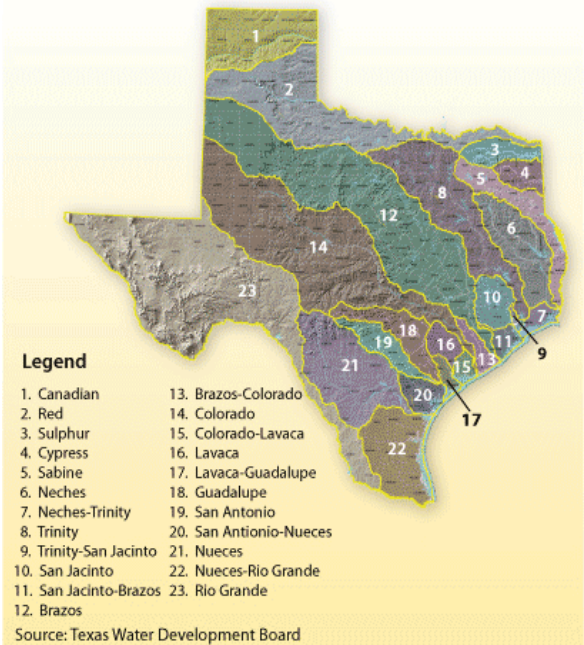
As the regulator of water rights in Texas, TCEQ is the logical place to go to find the answers to questions 1&2 above. TCEQ sources include the Water Availability Model (WAM) and tables of water right permits.

The Texas Water Development Board and the Region D Water Planning Group can provide some perspective on question 3, although there are disagreements within and outside of those entities over projections for population growth, water savings through conservation, etc. There is also significant uncertainty about projections on potential large water needs, such as where new industrial facilities, including power plants, will be located in the future.

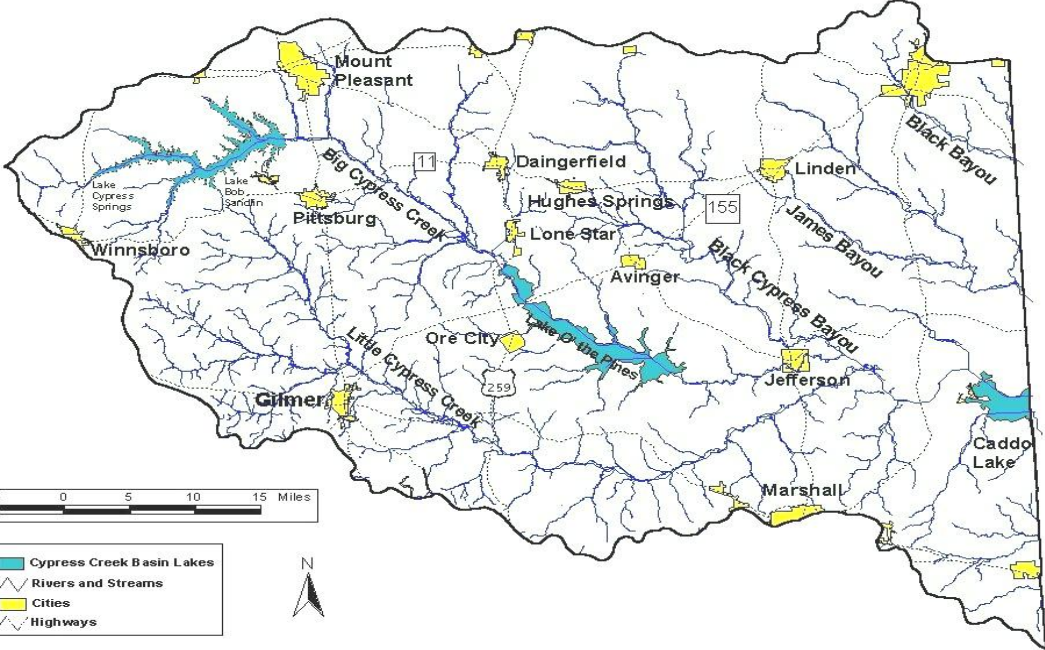
Finally, there is the issue of the water shared with Louisiana. Caddo Lake, James Bayou and some smaller creeks are located in both Texas and Louisiana. Louisiana also has another reservoir in the Cypress basin, Cross Lake. The issue of the impact of the rights of Louisiana to take water from the Cypress basin or protect flows in rivers and lakes in Louisiana is not, however, addressed in detail here because of the findings by TCEQ in the Water Availability Model for the Cypress Basin. In brief, TCEQ determined that the Red River Compact "does not have any effect on the water right diversions in the Cypress Basin as it currently is permitted." Louisiana shares the water in Caddo Lake, with each getting 50% of the water in the Lake. The WAM report also states:

Until both Marshall Reservoir [on Little Cypress] (with an estimated capacity of 782,300 acre-feet and yield of 325,000 ac-ft annually) and Black Cypress Reservoir (with an estimated capacity of 824,000 ac-ft and yield of 220,000 ac-ft annually) have been constructed, it will be virtually impossible for Texas to deplete runoff in excess of that authorized.

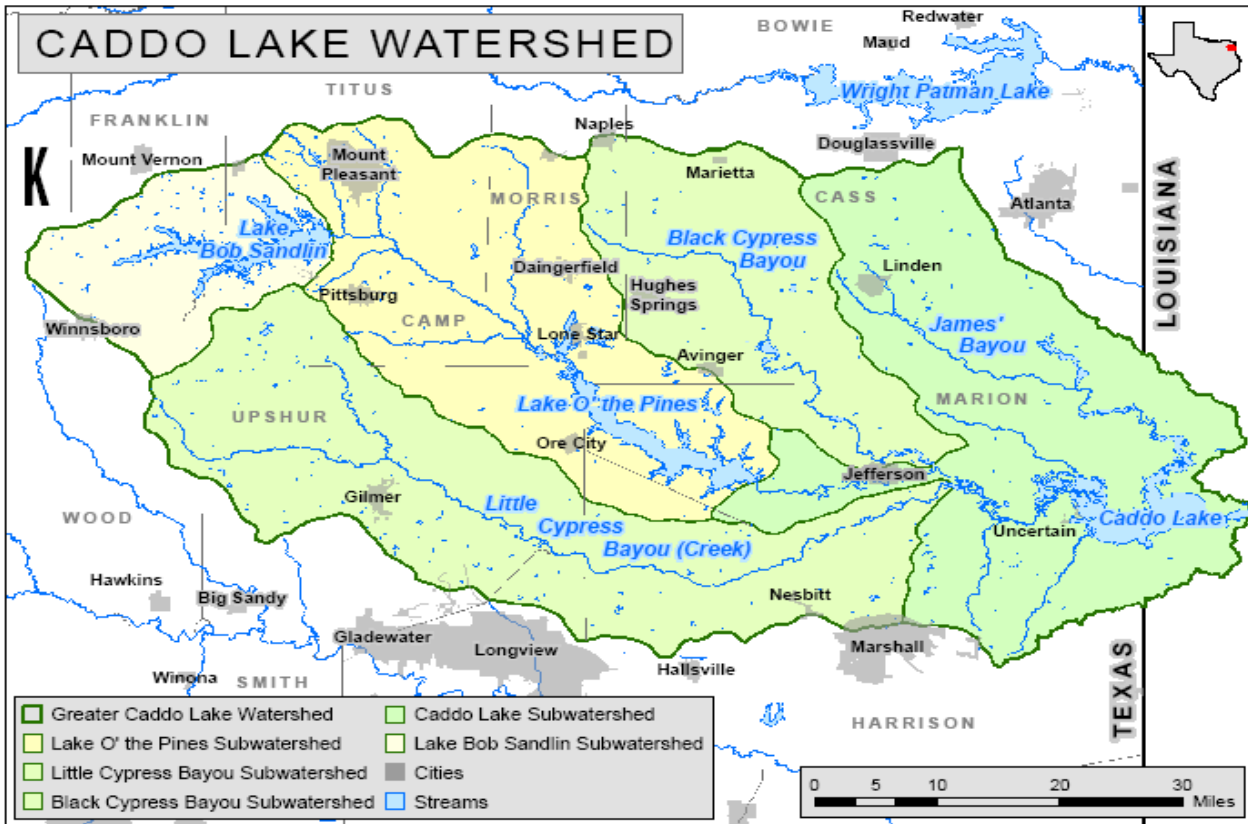
Texas River Basins:



The Cypress Creek Basin in Texas. (Part of the Red River Basin.)



The Caddo Lake Watershed. The part of the Cypress Creek Basin that serves as the watershed for Caddo Lake is most of the 2,812 square miles in the Basin, including the drainage area of Lake O’ The Pines. Most if, not all, of the water rights that have been granted by the State of Texas in the Cypress Creek Basin are for the main tributaries to Caddo Lake.



Texas Water Rights in the Major Tributaries to Caddo Lake

The water rights authorized in the Basin for consumptive and non-consumptive use total approximately 500,000 acre feet/year (af/yr):

<u>River</u>	<u>Total Water Rights af/yr</u>
Big Cypress Creek	~ 450,000
Little Cypress Creek	~ 25,000
Black Cypress Creek	~ 1,200
James Bayou	~ 200
Total	~ 475,400

In the Final WAM report for the Cypress Basin the total authorized diversions by use, with some non-consumptive uses not included, were about 450,000 af/yr.

Use Category “Authorized Diversion” af/yr

Municipal	~115,000
Industrial	~332,000
Irrigation	~ 3,000
Mining	~ 200
Recreational	0
Other	0
Total	~450,200

The major water right holders for each basin include the following; however, given that some are contract water rights and disagreements between some of the sources of information, these numbers like those above are approximations and are likely to have some errors.

Big Cypress Creek: ~ 470,000 af/yr. About 50,000 af/yr of that amount is for non-consumptive uses, much of that in Caddo Lake. A few examples of water rights are:

AEP/SWEPCO:	~ 45,000 af/yr
Cypress Springs WSC:	~ 2,500 af/yr
Franklin Co. Water District:	~ 12,000 af/yr
U.S. Steel:	~ 23,000 af/yr
Marshall:	~ 16,000 af/yr,
Mt Pleasant:	~ 13,000 af/yr
Mt. Vernon:	~ 3,000 af/yr
TXU	~ 55,000 af/yr
Titus County FWSD No. 1	~ 50,000 af/yr
U.S FWS	~ 30,000 af/yr non consumptive in Caddo Lake.
NETMWD:	~180,000 af/yr in Lake O' the Pines, with 20,000 af/yr for use by its member cites, Jefferson, Avinger, Daingerfield, Ore City, Pittsburg, Hughes Springs, & Lone Star and with sales to other cities and industries, and approximately 40,000 af/yr for interbasin transfers.

In addition, the Caddo Lake Institute has an application for a water right for recreation, navigation and environmental flows in Caddo Lake.

Little Cypress Creek: ~26,000 af/yr, of which about 2,000 af/yr is for non- consumptive uses. The two largest water rights are:

Gilmer:	~ 6,000 af/yr
Snider Ind:	~16,000 af/yr

Current Uses

Current consumptive uses are, however, considerably less, with average use of less than 200,000 af/yr during the last 20 years. The difference in authorized and actual consumptive use is a result of a number of water right holders not using their full right. .

Based on the WAM (with figures that do not entirely match figures for water rights shown above) a few examples of differences between uses and authorizations are:

Water Right Holder	Authorization	“Current Use”	Projected Use
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NETMWD	~180,000 af-yr	~50,000 af-yr	~90,000 af-yr
Titus County FWSD 1	~ 48,500 af-yr	~20,000 af/yr.	~20,000 af/yr
US Steel Tubular Products	~ 23,000 af/yr	~ 2,500 af/yr	~ 2,500 af/yr
City of Marshall	~ 16,000 af/yr	~ 7,500 af/yr	~ 7,500 af/yr
Franklin Co Water Dist.	~ 12,000 af/yr	~ 3,000 af/yr	~ 3,000 af/yr

As discussed below, the projected use figures can range widely. The current use figures are for the t990s.

Future Water Needs

While projections can vary widely, the amount of water needed in the Basin by 2050 is not likely to be more than about 50% above current uses. Moreover, such a projected need in the Basin for 2050 will remain less than or equal to 50% of the authorized water rights.

Projecting needs for water for the future, 25 or 50 years out, is difficult. For some purposes, such as municipal planning, the tendency may be to be conservative, projecting more than is likely to avoid the risks of running out of water. There are also significant complications in projections in a small basin such as the Cypress, as there could be needs out of the basin that are both hard to predict in the absolute, and where the source of the water will be hard to predict. Predicting when, if ever, there will be new electric power generating facilities or other large users of industrial water is also often very difficult. The following two state projections provide some of the basics.

The WAM for the Cypress basin, for example, stated that, “Total water use in the basin is projected to increase by about 4% over the period 1990-2050, i.e. from 195,000 acre-feet in 1990 to 202,000 acre-feet in 2050.” Significant reductions are predicted for manufacturing use.¹ Conservation was predicted to reduce water needs by about 6,000 af/yr in 2050. The WAM also predicted that about “56,000 acre-feet per year of future water needs would be met through (wastewater) reuse by the year 2050.” The most recent WAM run for the basin projects 217,963 acre feet in

In contrast, the Region D Planning Group’s figures predict water use in 2050 of 250,000 acre-feet. The 2006 report from this Group projects an increase in water use from 165,000 acre-feet in 2000 to 250,000 acre-feet in 2050, or about a 50% increase. The projected increase for manufacturing is 55%, and, for steam electric, 60%. It projects an increase in municipal use in the Basin from 21,000 to 27,000 af/yr for this 50 year period, a 25% increase. Projections for irrigation and livestock are almost flat with an increase for both from 7,200 to 7,400 af/yr.

These analyses are for uses in the basin. There are currently at least 40,000 af/yr of water authorized for use outside the basins. Moreover NETMWD recently requested expressions of interests for purchase of water from Lake O; the Pines. The District received responses seeking water, including some requests for all the water that is available. The responses came from Dallas, AEP, the North Texas Municipal Water District, TWTA LP, the Titus County FWSD No 1, and Longview. Sales to a number of these entities would involve use in other basins.

Releases from Lake O’ the Pines and Bob Sandlin

¹ The WAM report stated that between 1980 and 1990 manufacturing use had already dropped by about 68,000 acre-feet. Water use in 1980 had been around 250,000 acre feet.

There have been significant releases from the two largest reservoirs in the Basin except in times in drought, such as 2006. For the last 10 years, releases, in acre-feet, were reported as follows.

<u>Year</u>	<u>Lake O' the Pines</u>	<u>Bob Sandlin</u>
2007	242,616	0
2006	38,357	0
2005	126,464	0
2004	244,566	39,105
2003	184,707	42,081
2002	541,713	124,314
2001	1,023,145	256,318
2000	329,113	82,257
1999	324,102	57,168
1998	499,096	103,612

On an annual basis the releases averaged, in acre-feet:

5 Year Ave.	167,342	16,237
10 Year Ave.	355,388	70,486
15 Year Ave.	420,051	88,633
20 Year Ave.	480,469	101,256