

# Guadalupe Blanco River Authority



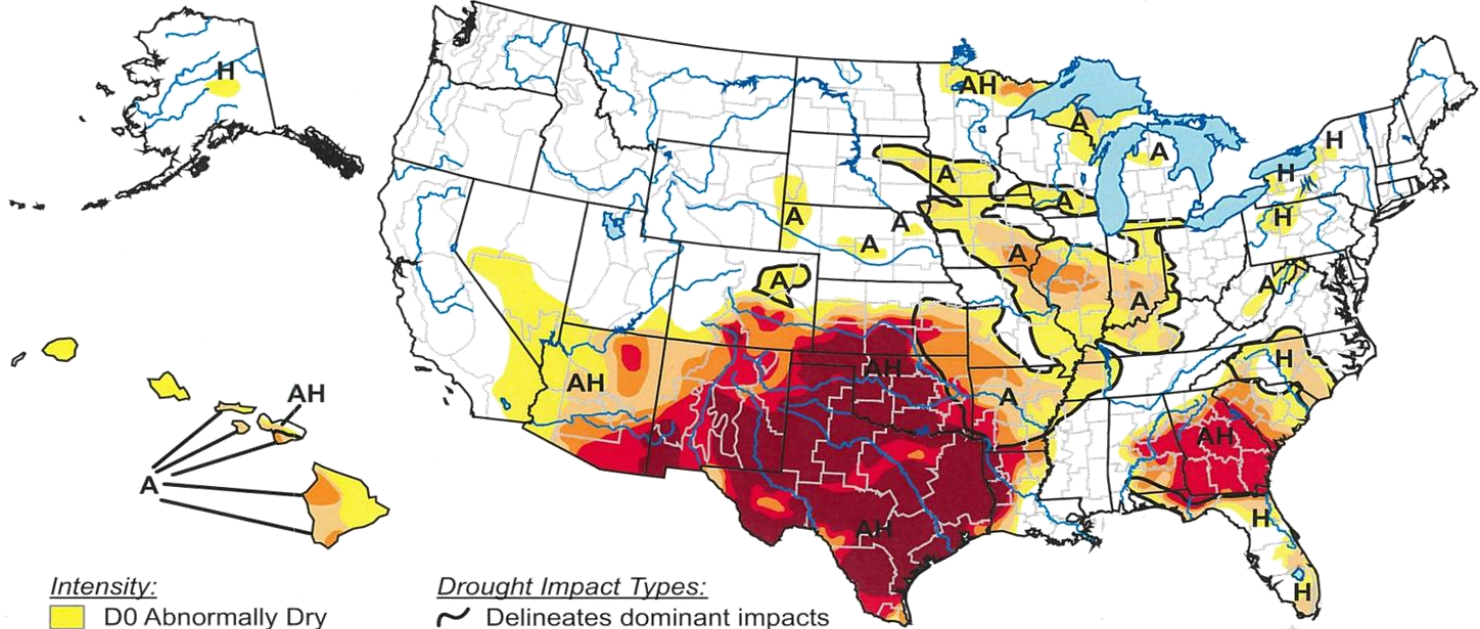
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**Guadalupe-Blanco River Authority**  
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# U.S. Drought Monitor

September 6, 2011

Valid 8 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



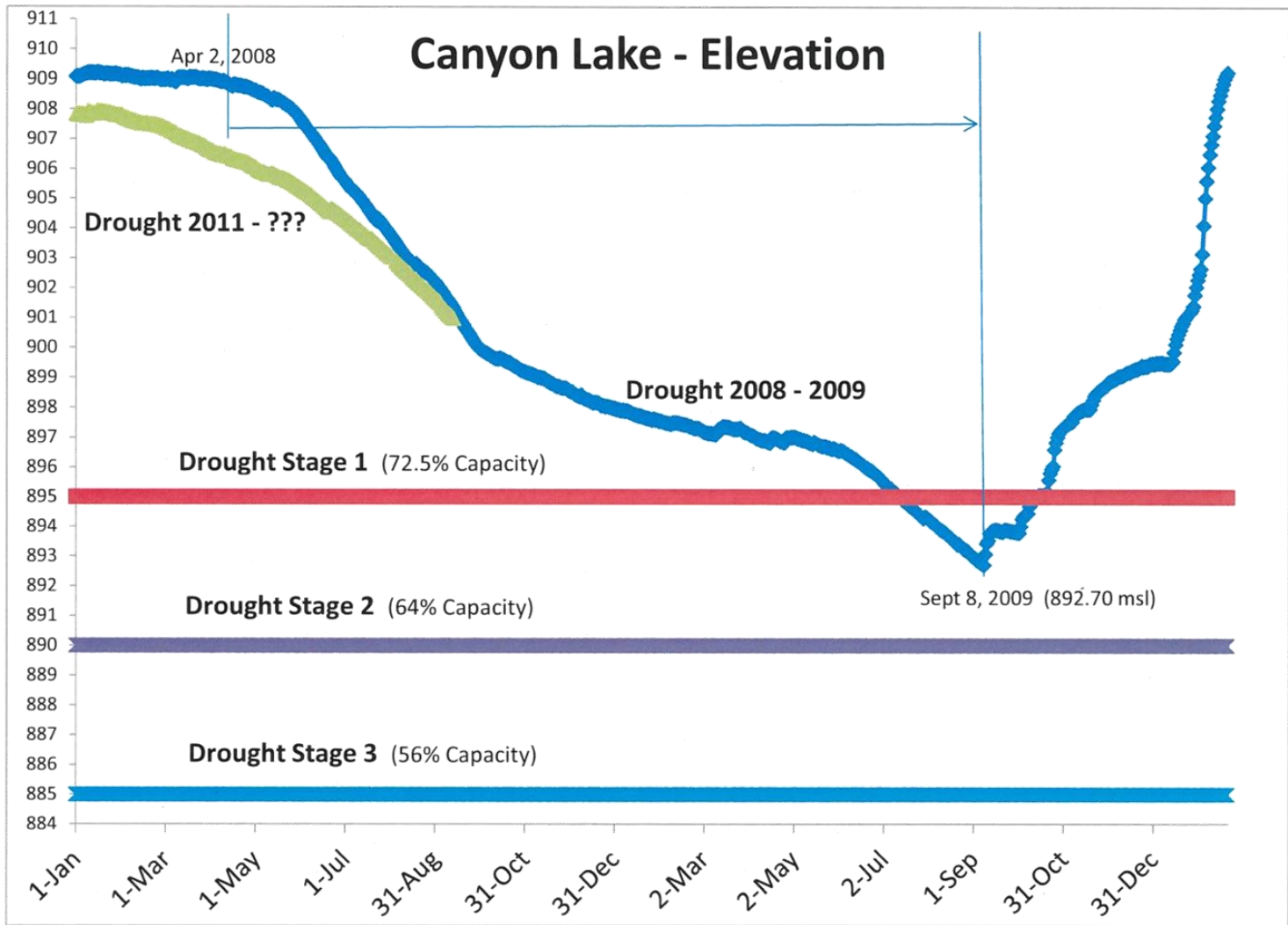
Released Thursday, September 8, 2011

Author: Mark Svoboda, National Drought Mitigation Center



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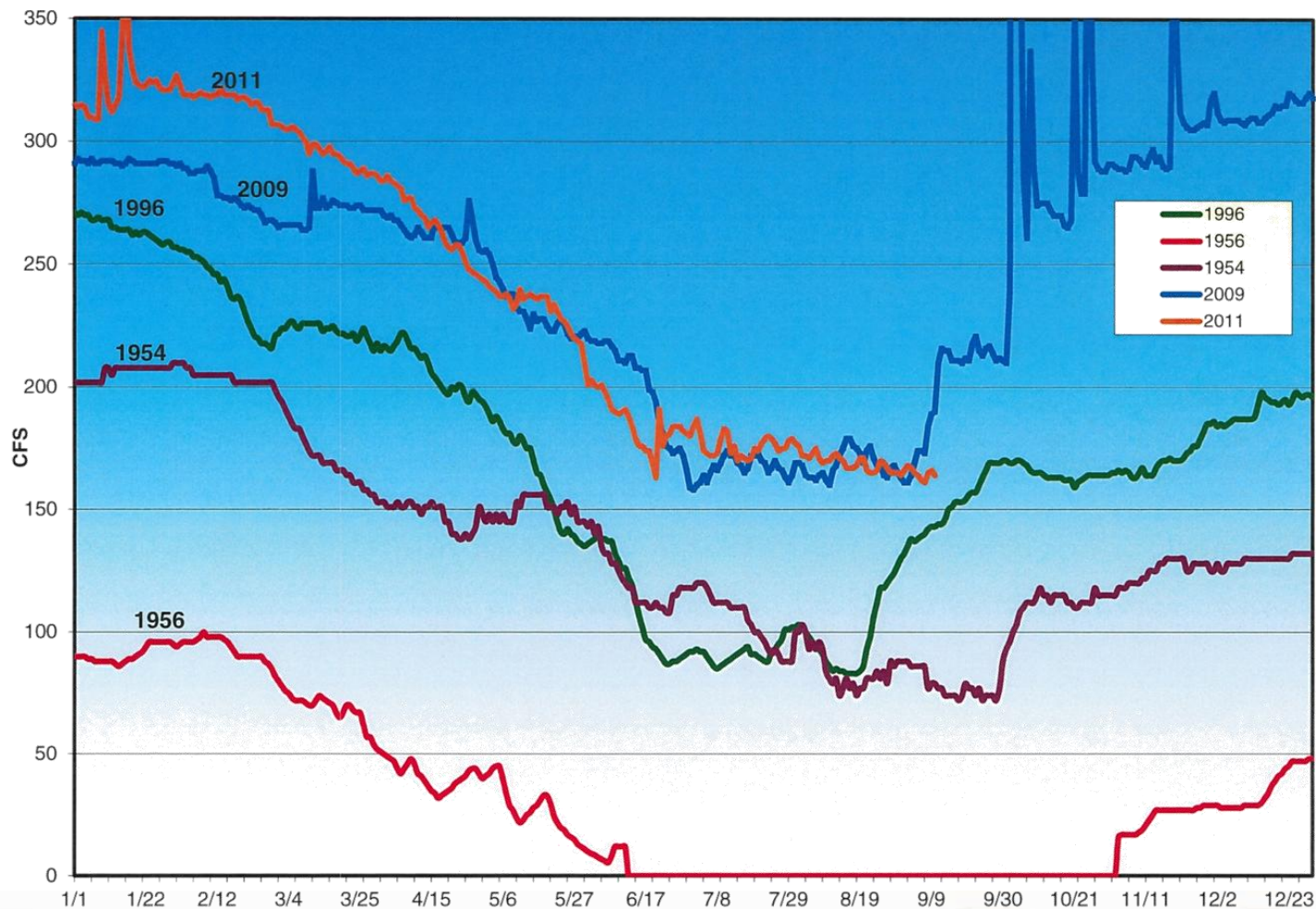
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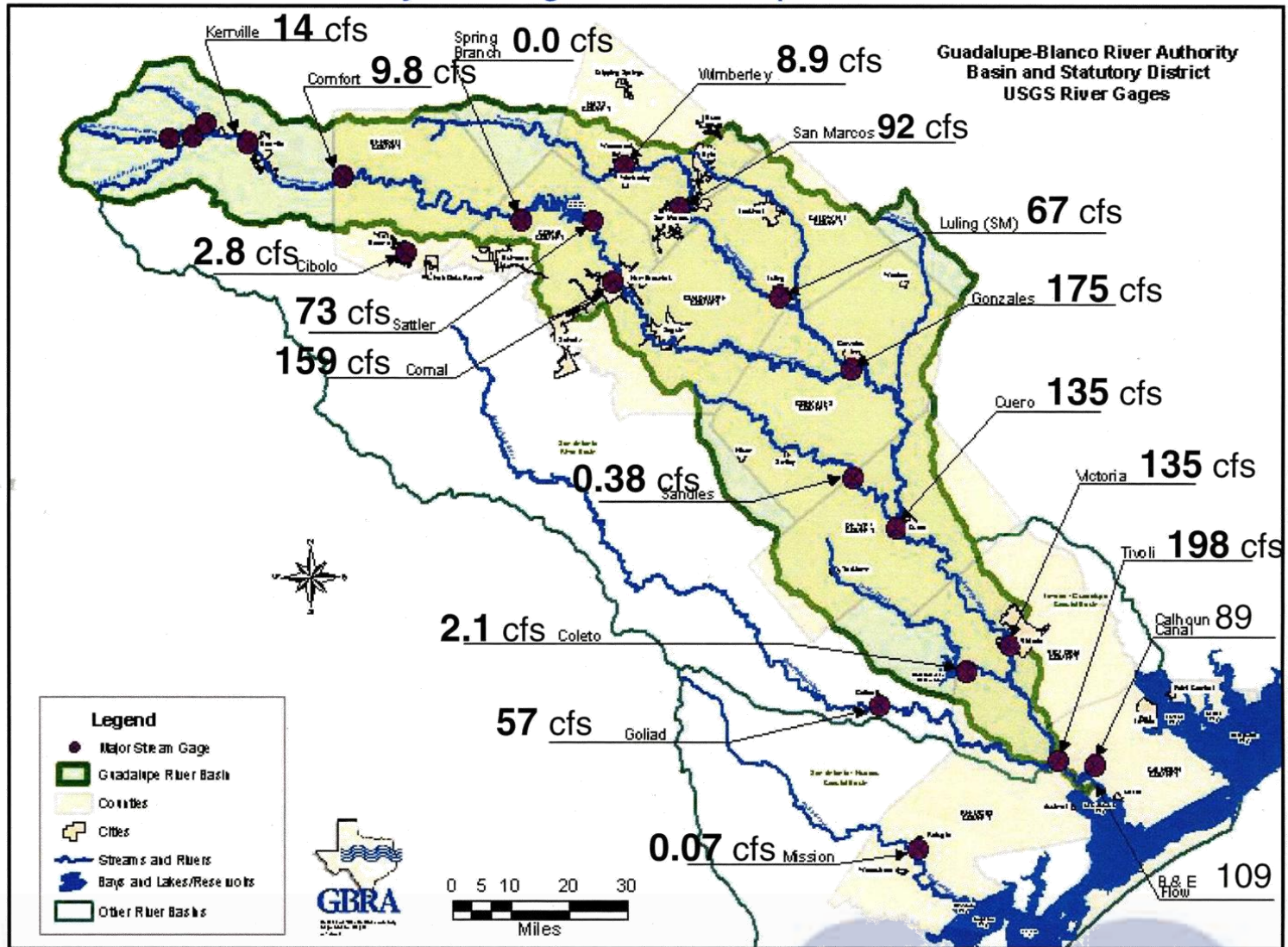
# Comal Springs at New Braunfels



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# Daily Average Flow - Sept 14, 2011

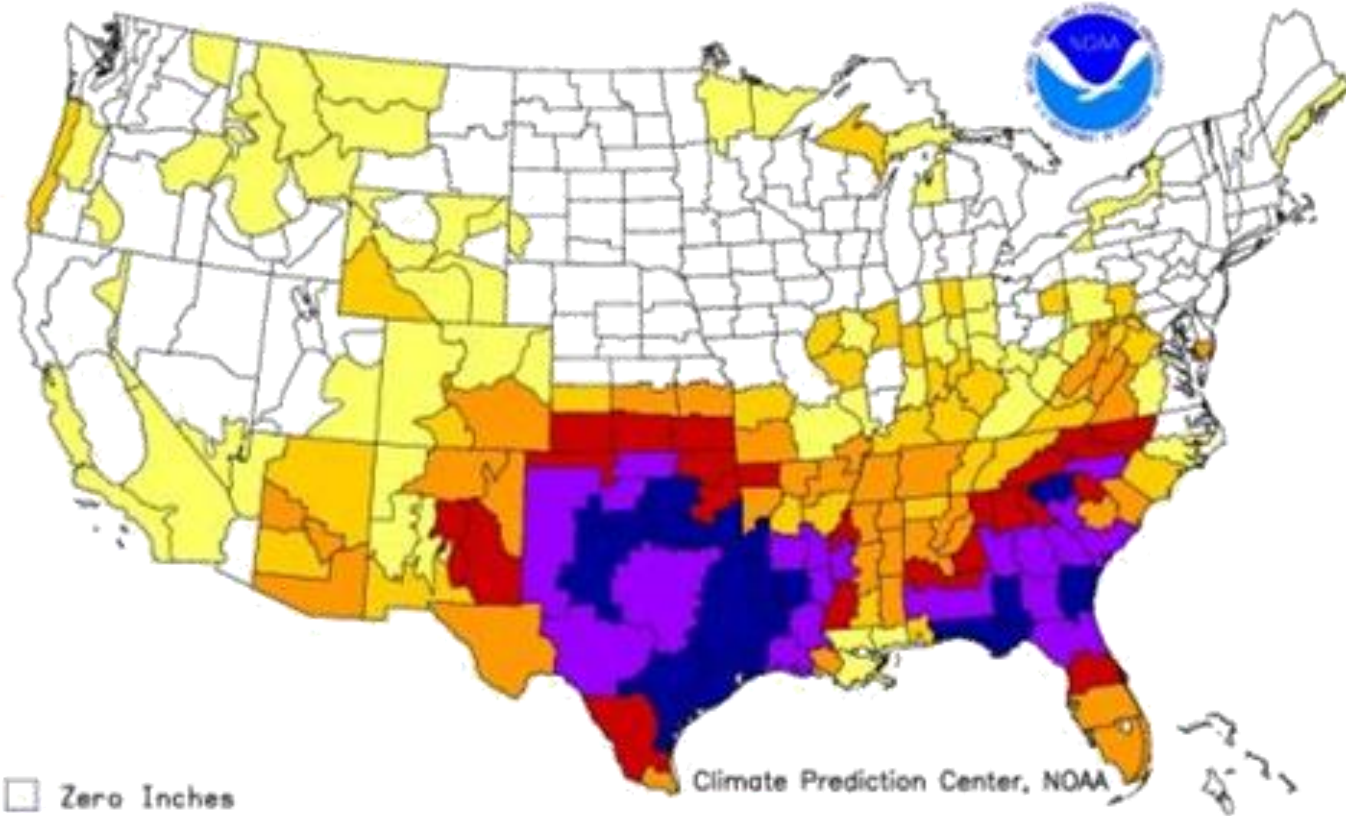


## **Drought outlook Sept. 15, 2011 – Dec. 2011**

was based primarily upon climate anomalies associated with **La Niña** as it is expected to **strengthen** and **continue** throughout this period. Persistence or development can be expected across much of the Southeast excluding North Carolina and areas soaked by Tropical Storm Lee. The **return of La Niña** also elevates the chances for persistence across the exceptional drought areas of the southern Plains. It should be noted that forecast confidence across the western Gulf region and Southeast is tempered due to the potential for heavy rainfall associated with tropical cyclone activity during the fall. The waning of the summer monsoon and enhanced odds for below median precipitation during October – December favor persistence or development across most of the Southwest.



Additional Precip. Needed (In.) to Bring PDI to  $-0.5$   
Weekly Value for Period Ending SEP 3, 2011  
Long Term Palmer Drought Severity Index (PDI)



- |                   |                 |
|-------------------|-----------------|
| Zero Inches       | 9 to 12 Inches  |
| Trace to 3 Inches | 12 to 15 Inches |
| 3 to 6 Inches     | Over 15 Inches  |
| 6 to 9 Inches     |                 |



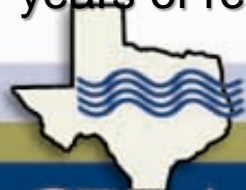
# Severity: greatest deficiency as a percent of mean annual rainfall

## Most Severe:

- |    |            |    |            |
|----|------------|----|------------|
| 1. | 1954-1956★ | 6. | 1933-1934★ |
| 2. | 1916-1918  | 7. | 1950-1952  |
| 3. | 1909-1912  | 8. | 1924-1925  |
| 4. | 1901       |    |            |
| 5. | 1953★      |    |            |

**(Drought of Record: 1947-1957) 1891-**

1954-1956 is most severe, and preceded by #5 and #7, is a continuing series of years. It is considered the most severe drought within the 70 years of records (dated 1959).



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# Tree Ring Study

## Conclusions indicated:

★ ...The analysis of drought in the South Central division, no year of the late 1940s or the 1950s is found in the worst 20 years reconstructed since 1648.

★ ...Combinations of years in the late 1600s and early 1700s appear six times in the decadal droughts (including the three worst).

Malcolm K. Cleaveland, Professor of Geography  
Tree-Ring Laboratory, Geosciences Department  
University of Arkansas



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# Tree Ring Study

★ **...It would appear unwise for civil authorities to assume that the 1950s drought represents the worst case scenario to be used for planning purposes in water resources management in the South Central and Edwards Plateau climate divisions of Texas.**

Malcolm K. Cleaveland, Professor of Geography  
Tree-Ring Laboratory, Geosciences Department  
University of Arkansas



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# Demands / Population Growth

<b>Quick Facts</b>	<b>Texas</b>	<b>U.S.</b>
<b>Population 2010</b>	<b>25,145,561</b>	<b>308,745,538</b>
<b>Population % change 2000 to 2010</b>	<b>20.6%</b>	<b>9.7%</b>
<b>Persons per square mile 2010</b>	<b>96.0</b>	<b>87.3</b>

U.S. Census Bureau / Texas State Data Center  
University of Texas San Antonio



## Demographer projected population changes from 2000 to 2008

County	2000 Population	2008 Population	Number Change	Percent Change
Caldwell	32,194	35,843	3,649	11.3 %
Calhoun	20,647	20,937	290	1.4 %
<b>Comal</b>	<b>78,021</b>	<b>108,170</b>	<b>30,149</b>	<b>38.6 %</b>
DeWitt	20,013	20,265	252	1.3 %
Gonzales	18,628	19,174	546	2.9 %
Guadalupe	89,023	119,084	30,061	33.8 %
<b>Hays</b>	<b>97,589</b>	<b>142,310</b>	<b>44,721</b>	<b>45.8 %</b>
Kendall	23,743	32,474	8,731	36.8 %
Refugio	7,828	7,386	- 442	- 5.6 %
Victoria	84,088	85,750	2,662	3.2 %

Source: Texas State Data Center and Office of State Demographer (<http://txsdc.utsa.edu>)

## Local 2010 Population Changes

Caldwell County -----> 38,066

**Comal County -----> 108,472**

Guadalupe County ---> 40,141

**Hays County -----> 157,107**



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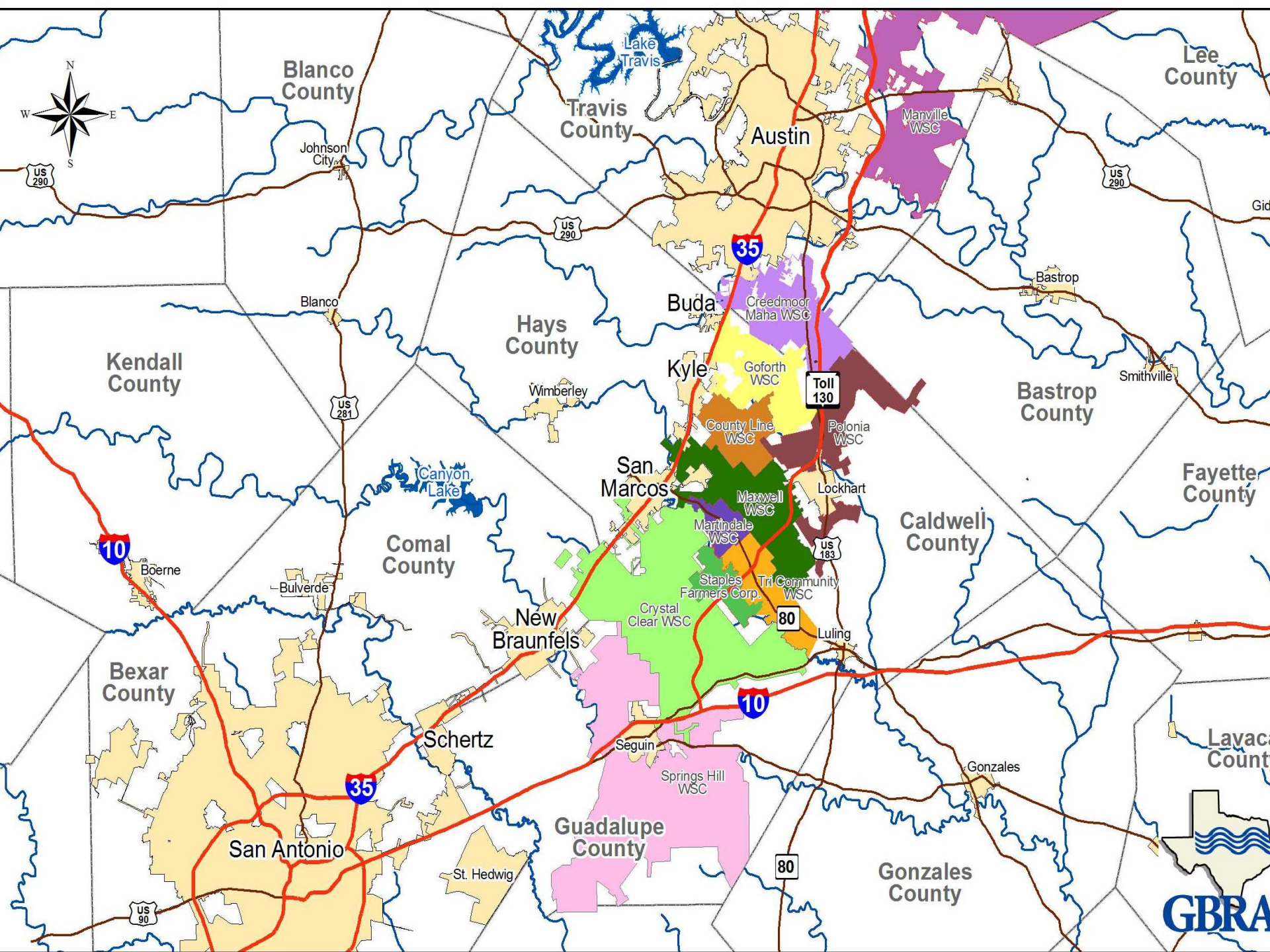
**Projected Municipal, Industrial, and Steam-Electric Demands (ac-ft/yr)**

<i>Approximate Diversion Location / Service Area</i>	<i>Basin Location</i>	<i>Year</i>						
		<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<b>Western Canyon Project</b>	<b>U</b>	<b>0</b>	<b>12,277</b>	<b>13,272</b>	<b>14,438</b>	<b>12,708</b>	<b>15,104</b>	<b>17,355</b>
<b>Canyon Reservoir Other - Upper Basin</b>	<b>U</b>	<b>4,766</b>	<b>5,536</b>	<b>6,994</b>	<b>9,781</b>	<b>12,538</b>	<b>15,739</b>	<b>18,733</b>
<b>Subtotal Upper Basin</b>		<b>4,766</b>	<b>17,813</b>	<b>20,266</b>	<b>24,219</b>	<b>25,246</b>	<b>30,843</b>	<b>36,088</b>
<b>San Marcos Area</b>	<b>M</b>	<b>12,261</b>	<b>19,913</b>	<b>25,809</b>	<b>27,989</b>	<b>29,803</b>	<b>31,270</b>	<b>32,271</b>
<b>New Braunfels / Lake Dunlap</b>	<b>M</b>	<b>30,284</b>	<b>30,251</b>	<b>30,680</b>	<b>33,926</b>	<b>37,530</b>	<b>40,923</b>	<b>44,632</b>
<b>Luling / Lockhart / Gonzales</b>	<b>M</b>	<b>3,500</b>	<b>3,500</b>	<b>3,500</b>	<b>3,500</b>	<b>3,500</b>	<b>3,500</b>	<b>3,500</b>
<b>Subtotal Mid Basin</b>		<b>46,045</b>	<b>53,664</b>	<b>59,989</b>	<b>65,415</b>	<b>70,833</b>	<b>75,693</b>	<b>80,403</b>
<b>Total</b>		<b>50,811</b>	<b>71,477</b>	<b>80,255</b>	<b>89,634</b>	<b>96,079</b>	<b>106,536</b>	<b>116,491</b>
<b>Demand in Excess of Year 2005</b>			<b>10,333</b>	<b>19,111</b>	<b>28,490</b>	<b>34,935</b>	<b>45,392</b>	<b>55,347</b>
<b>U = Upper = At or Above Canyon Dam      M = Mid = Below Canyon Dam to Above Victoria</b>								



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Blanco County

Travis County

Lee County

Austin

Johnson City

Manville WSC

US 290

US 290

US 290

Blanco

Hays County

Buda

Kyle

I-35

Creedmoor Maha WSC

Bastrop

Kendall County

US 281

Wimberley

Goforth WSC

County Line WSC

Polonia WSC

Bastrop County

Smithville

Fayette County

Canyon Lake

San Marcos

Maxwell WSC

Martindale WSC

Lockhart

Caldwell County

I-10

Boerne

Bulverde

Comal County

New Braunfels

Staples Farmers Corp. WSC

Crystal Clear WSC

Tri Community WSC

Luling

US 183

Bexar County

US 281

Schertz

I-10

US 80

New Braunfels

Seguin

Springs Hill WSC

Gonzales

Lavaca County

San Antonio

Guadalupe County

St. Hedwig

Gonzales County

US 90

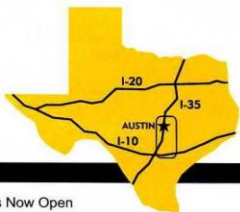
US 80



**A new choice  
for Central  
Texas motorists**

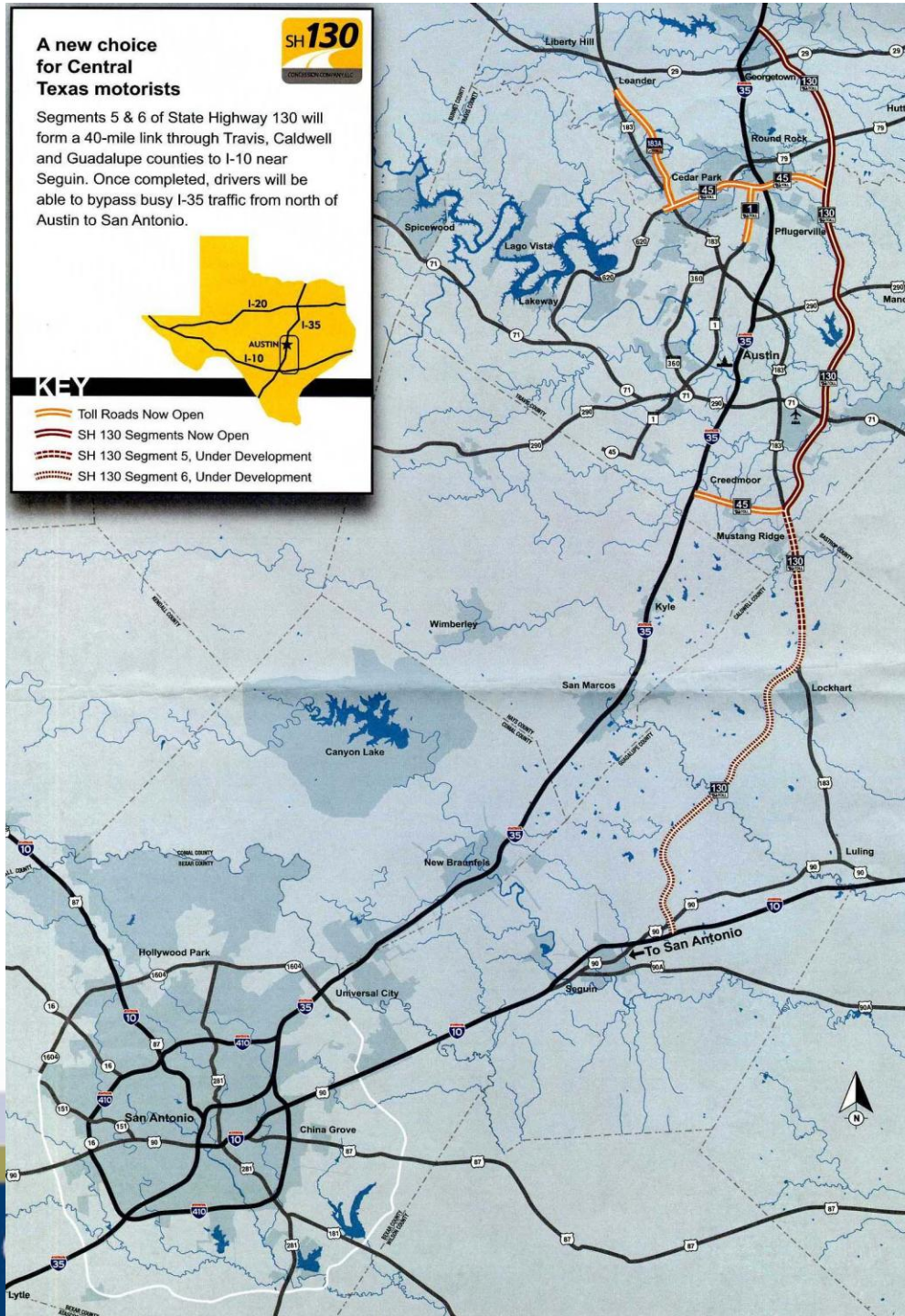


Segments 5 & 6 of State Highway 130 will form a 40-mile link through Travis, Caldwell and Guadalupe counties to I-10 near Seguin. Once completed, drivers will be able to bypass busy I-35 traffic from north of Austin to San Antonio.



**KEY**

- Toll Roads Now Open
- SH 130 Segments Now Open
- SH 130 Segment 5, Under Development
- SH 130 Segment 6, Under Development



# Additional Water Supplies

**Conservation**

**Lifestyle Changes**

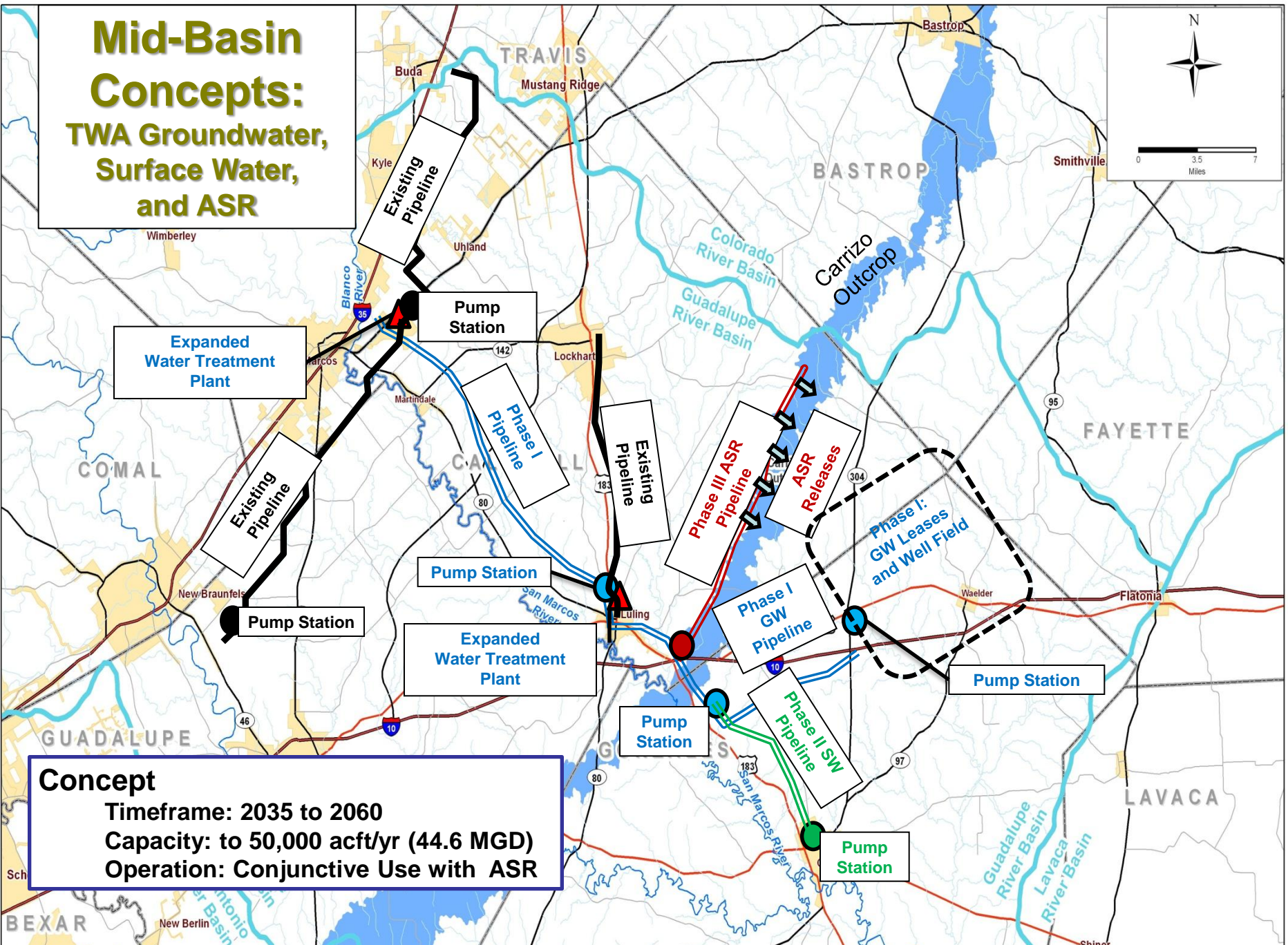
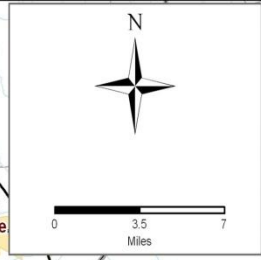
★ **Mid-Basin Project**

★ **State Pipeline  
Project**



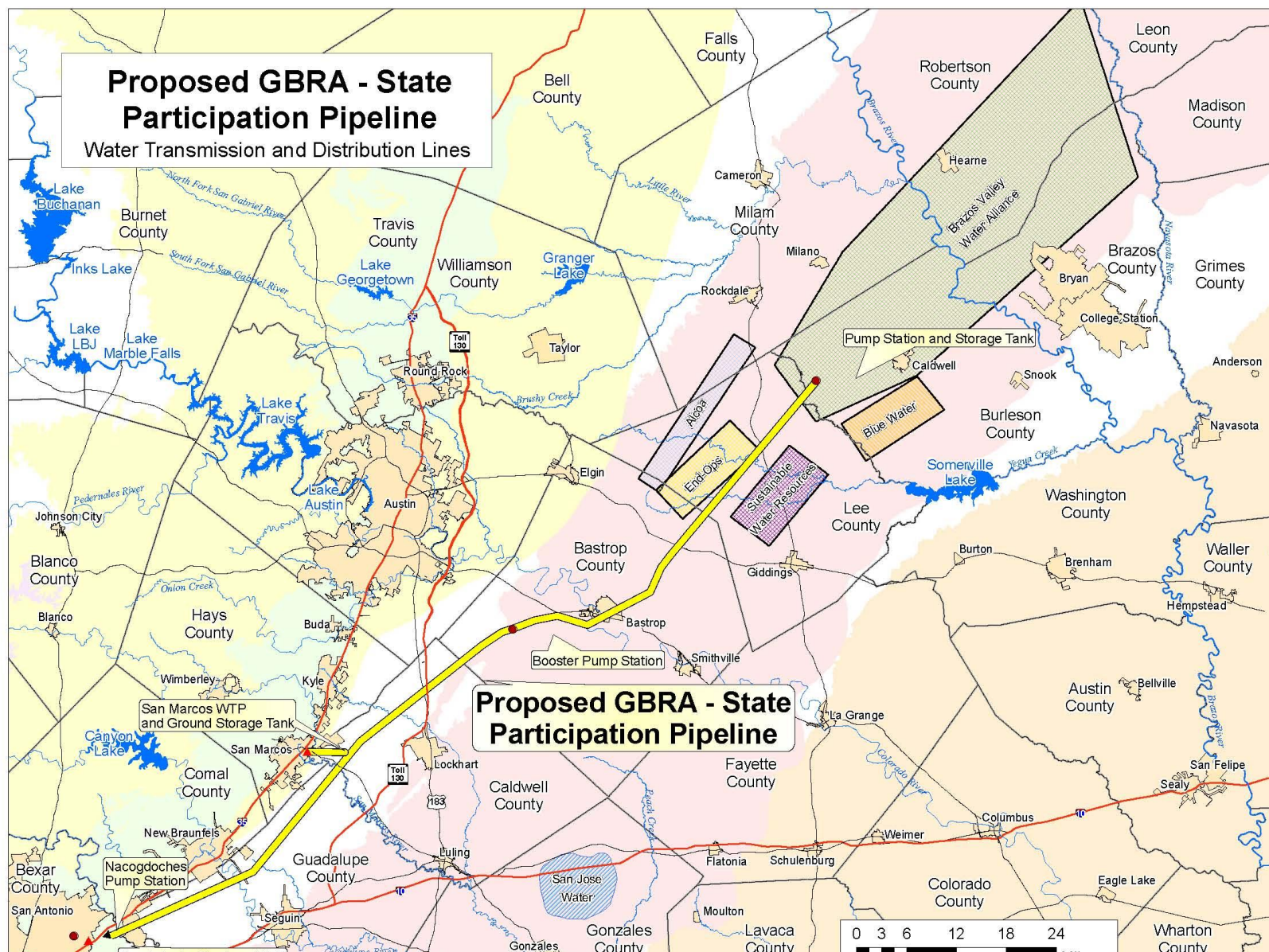


# Mid-Basin Concepts: TWA Groundwater, Surface Water, and ASR



**Concept**  
Timeframe: 2035 to 2060  
Capacity: to 50,000 acft/yr (44.6 MGD)  
Operation: Conjunctive Use with ASR

# Proposed State Participation Pipeline



**Proposed GBRA - State Participation Pipeline**  
Water Transmission and Distribution Lines

**Proposed GBRA - State Participation Pipeline**

**Aquifers:**

- Carrizo
- Edwards
- Edwards-Trinity
- Gulf Coast
- Trinity

**Background Data**

- Interstate
- Toll Road
- Major Roads
- Rivers and Streams
- Lakes
- City Boundary
- County

**Planned Groundwater Developments:**

- Alcoa
- Blue Water
- Brazos Valley Water Alliance
- End Ops
- San Jose Water
- Sustainable

0 3 6 12 18 24 Miles

**GBRA**  
Groundwater Bank for the Republic of Texas  
www.gbra.org  
10000 State Parkway  
Austin, Texas 78703  
(512) 475-2000

# Guadalupe Blanco River Authority

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**Q & A**

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