



THE MEADOWS CENTER FOR WATER AND THE ENVIRONMENT

No natural resource is more important to our future than Water. Water is what we do.

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THE MEADOWS CENTER  
FOR WATER AND THE ENVIRONMENT

TEXAS STATE UNIVERSITY



# State of the Water in the West

Dr. Andrew Sansom, Executive Director



# Climate

Floods, Droughts, and Unpredictability

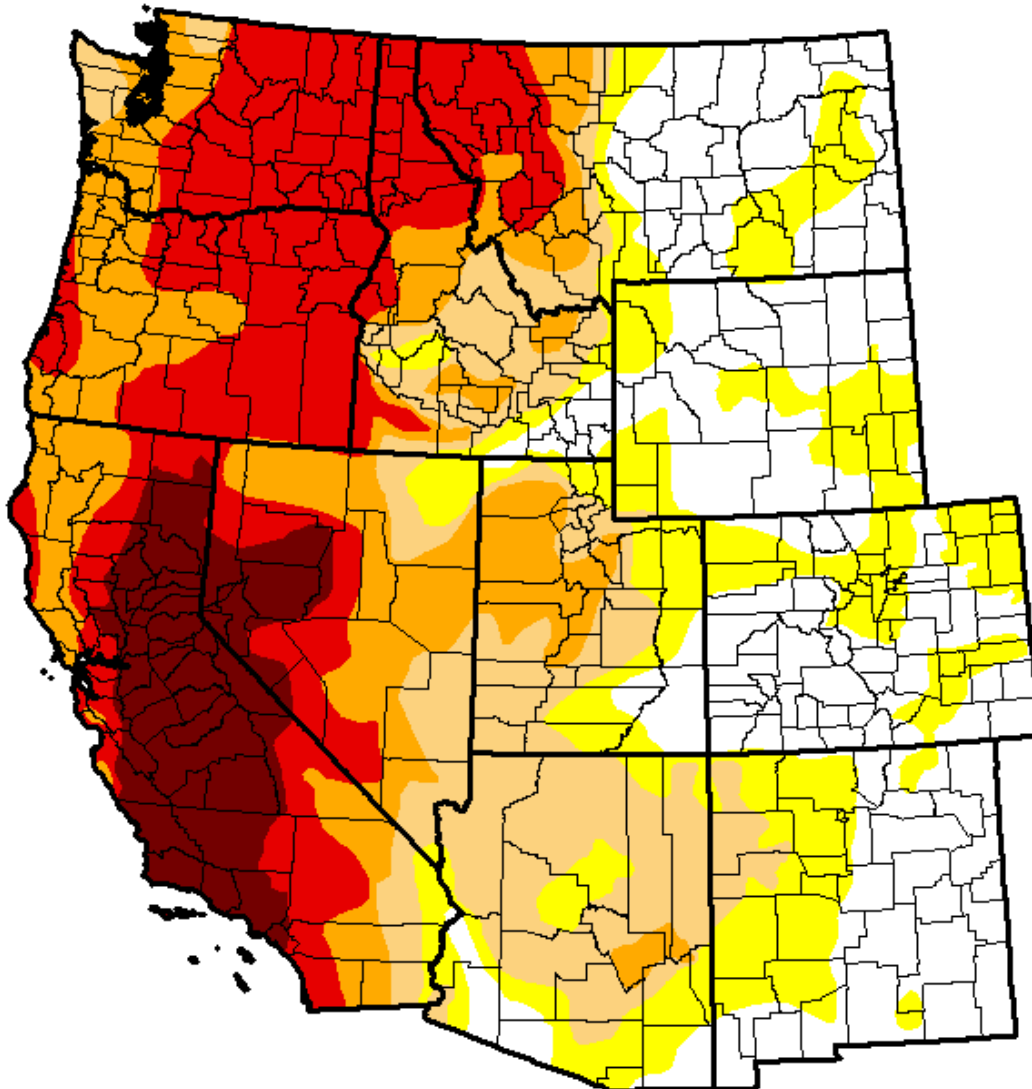
# U.S. Drought Monitor West

## October 13, 2015

(Released Thursday, Oct. 15, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	25.31	74.69	57.06	41.92	26.44	7.62
<b>Last Week</b> <i>10/6/2015</i>	25.71	74.29	57.06	42.43	26.44	7.62
<b>3 Months Ago</b> <i>7/14/2015</i>	25.49	74.51	61.37	43.76	18.87	7.17
<b>Start of Calendar Year</b> <i>12/30/2014</i>	34.76	65.24	54.48	33.50	18.68	5.40
<b>Start of Water Year</b> <i>9/29/2015</i>	22.77	77.23	57.81	42.42	26.50	7.62
<b>One Year Ago</b> <i>10/14/2014</i>	31.95	68.05	55.56	35.07	19.75	8.90

### Intensity:



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

### Author:

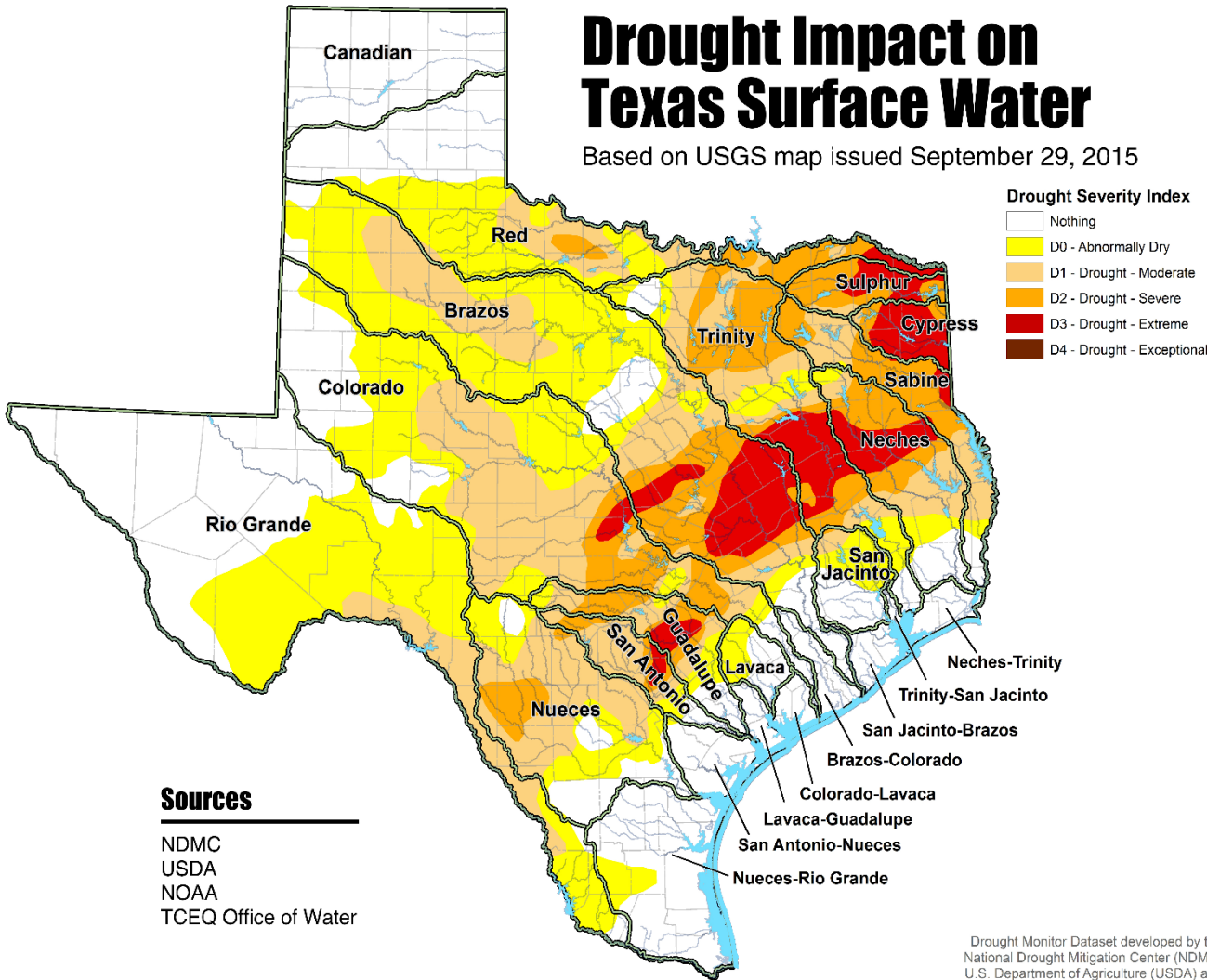
David Miskus

NOAA/NWS/NCEP/CPC



# Drought Impact on Texas Surface Water

Based on USGS map issued September 29, 2015



- In 2015, the most severe drought conditions in Texas have receded.
- The combined storage of the LCRA reservoirs remain at 72% full
- Reservoir storage in Texas as a whole average 79% full



Wildfire Activity Map (Esri October 19, 2015)



Aftermath of Blanco River Texas flooding May 2015



Severe Flooding Destroys Infrastructure in Texas on Memorial Day 2015

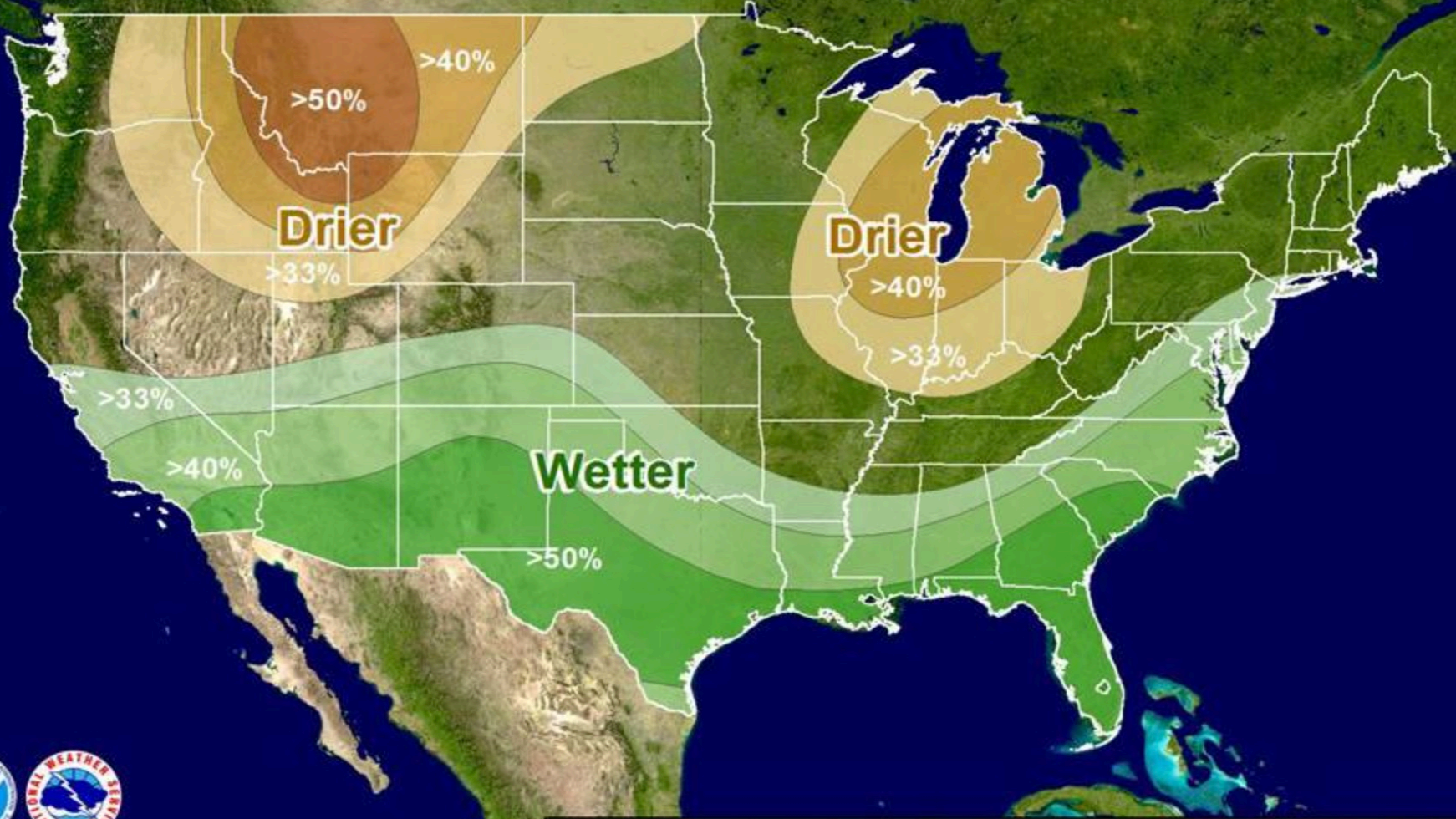




Historic Floods Cause Landslides in California October 15, 2015

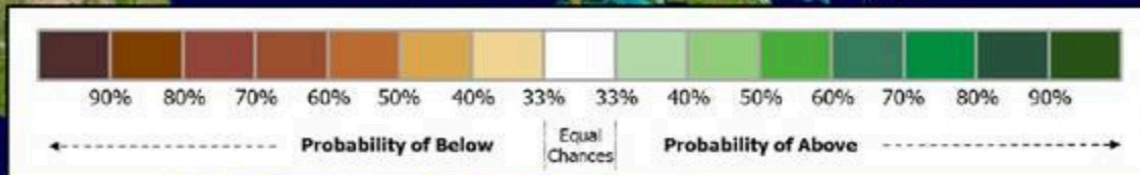
# Seasonal Precipitation Outlook

Dec-Jan-Feb 2015-2016



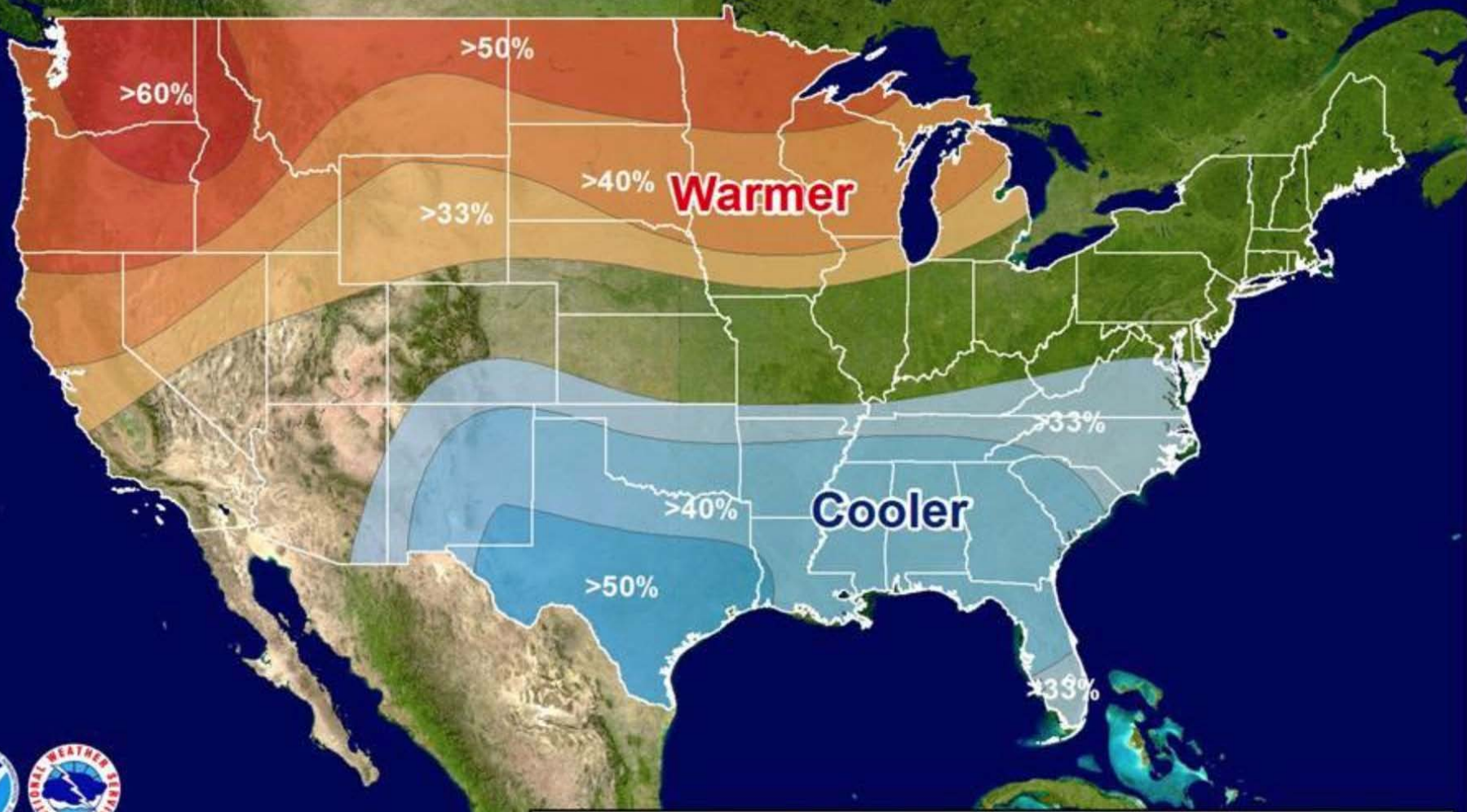
Climate Prediction Center

Issued: 07/16/15



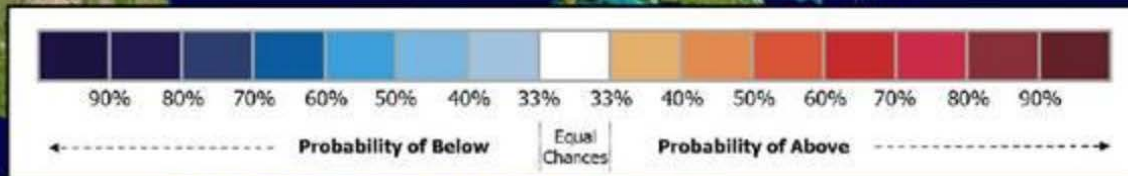
# Seasonal Temperature Outlook

Dec-Jan-Feb 2015-2016

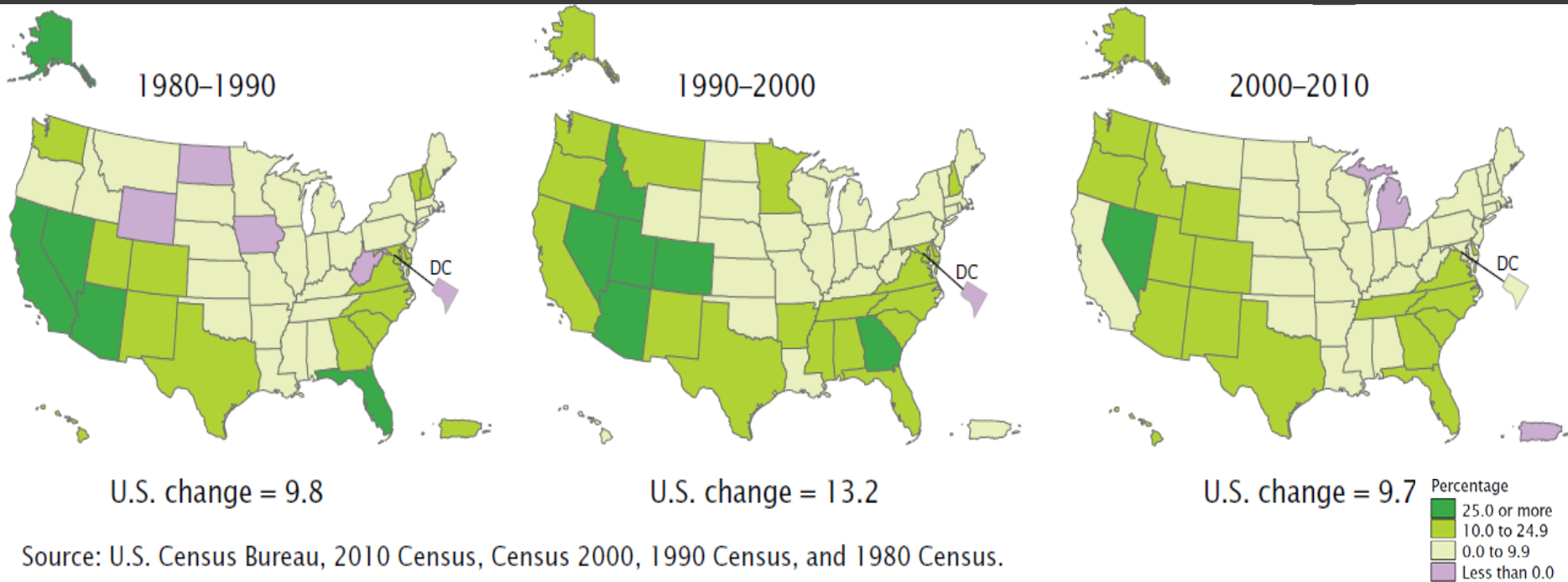


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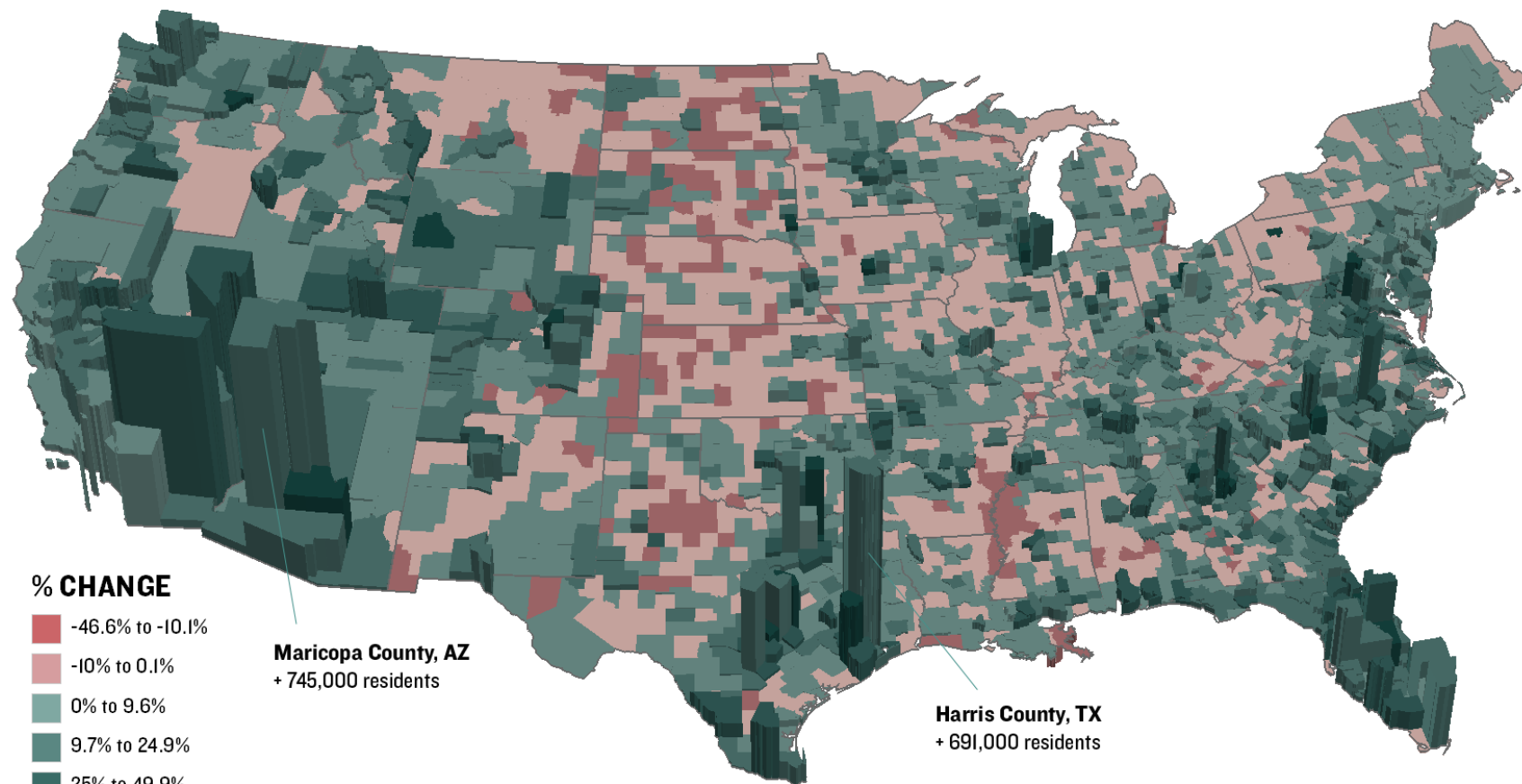
# US Population Growth



Nevada was the fastest-growing state between 2000 and 2010 (35.1%), followed by Arizona (24.6 %), Utah (23.8 %), Idaho (21.1 %), and Texas (20.6 %)



# 2010 CENSUS: TOTAL POPULATION GROWTH: RAW VS. RATE



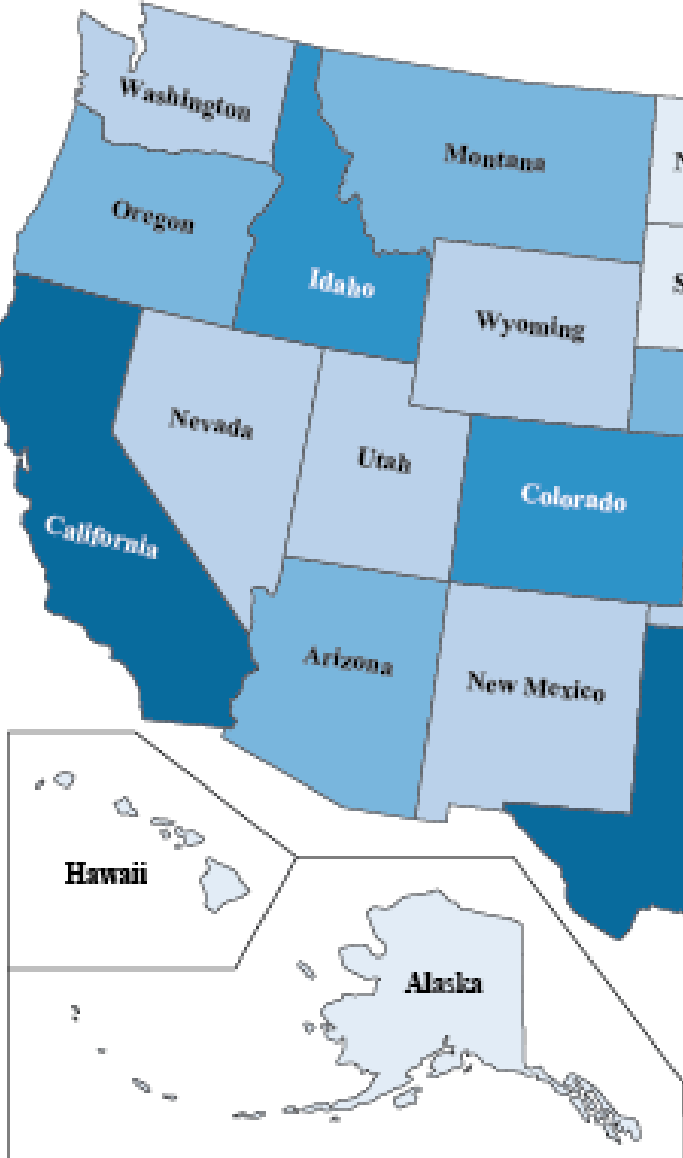
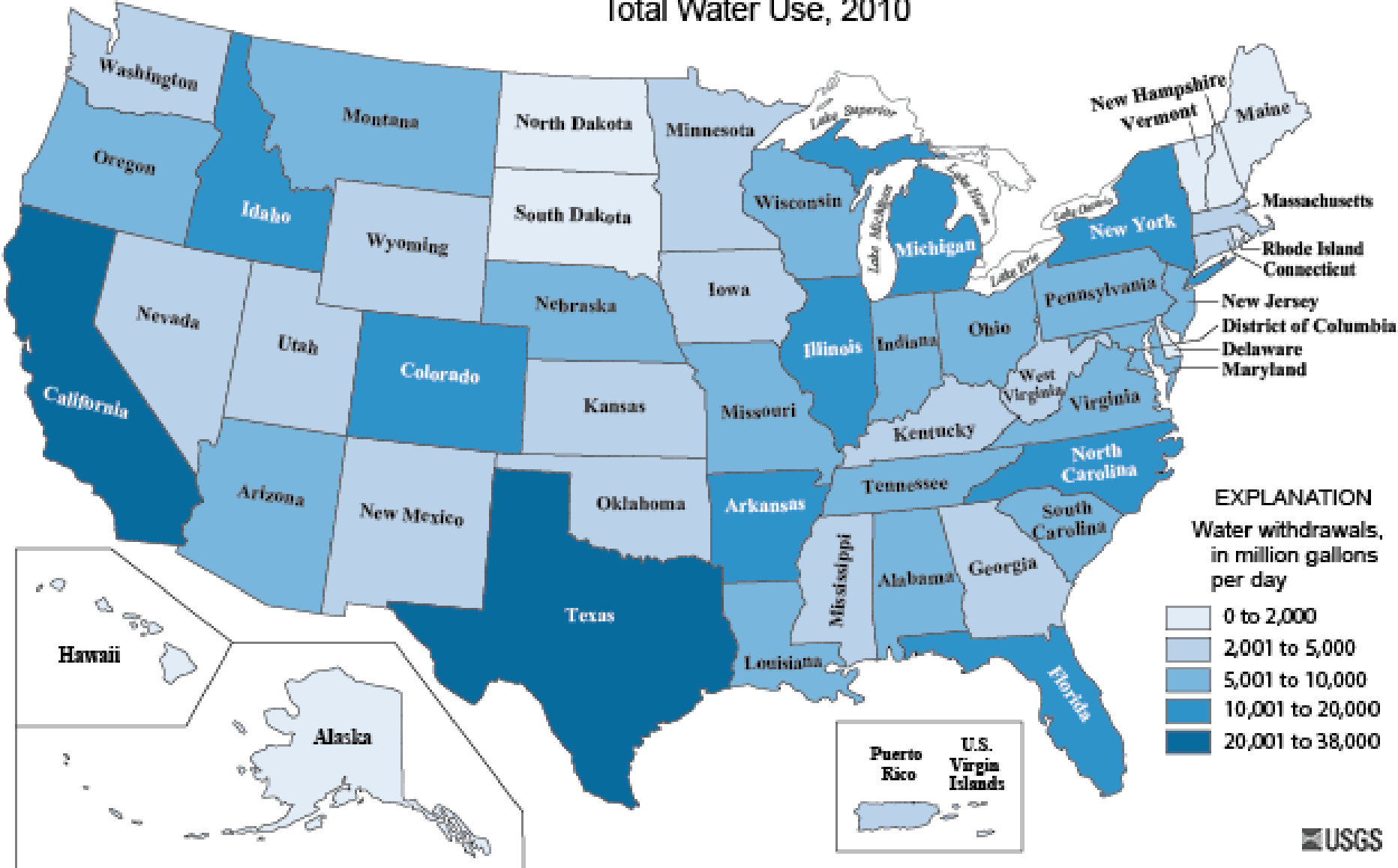
## % CHANGE

- 46.6% to -10.1%
- 10% to 0.1%
- 0% to 9.6%
- 9.7% to 24.9%
- 25% to 49.9%
- 50% to 110.4%

**Maricopa County, AZ**  
+ 745,000 residents

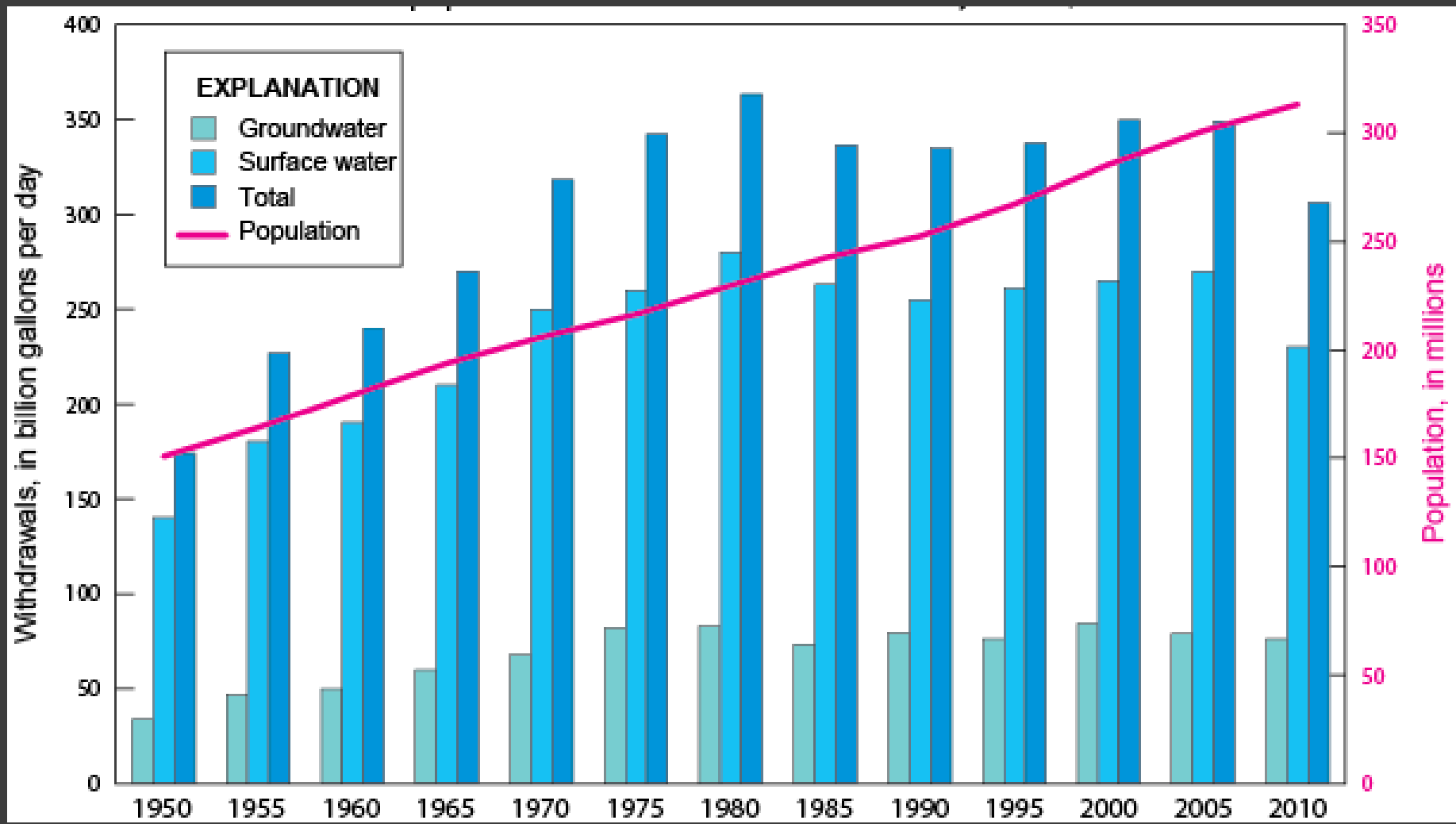
**Harris County, TX**  
+ 691,000 residents

# Total Water Use, 2010

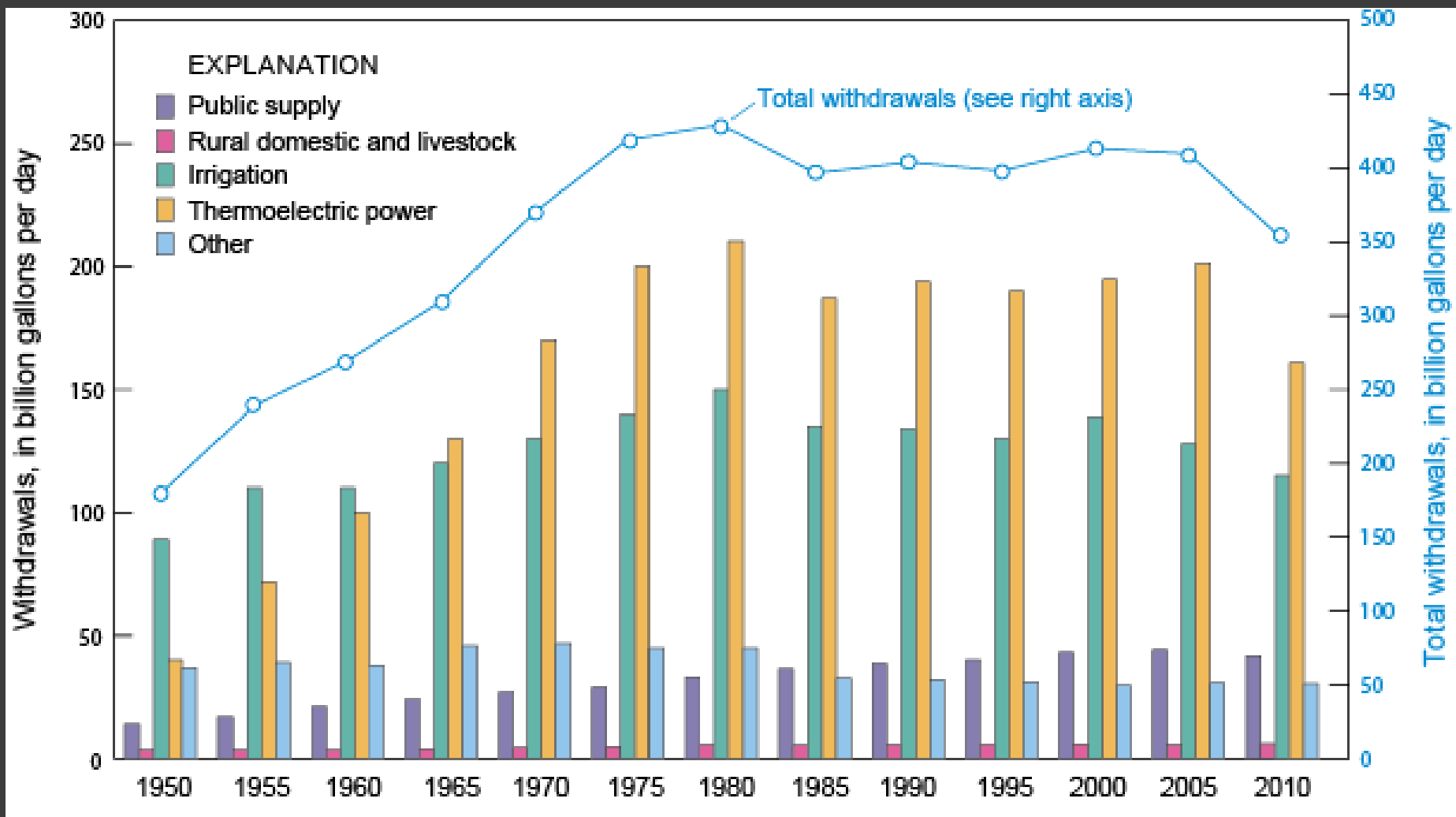


**EXPLANATION**  
 Water withdrawals, in million gallons per day

- 0 to 2,000
- 2,001 to 5,000
- 5,001 to 10,000
- 10,001 to 20,000
- 20,001 to 38,000



Trends in Population and Freshwater by Source 1950-2010  
(USGS)



Trends in Total Water Withdrawals by Water-Use Category 1950-2010 (USGS)





# State Policies

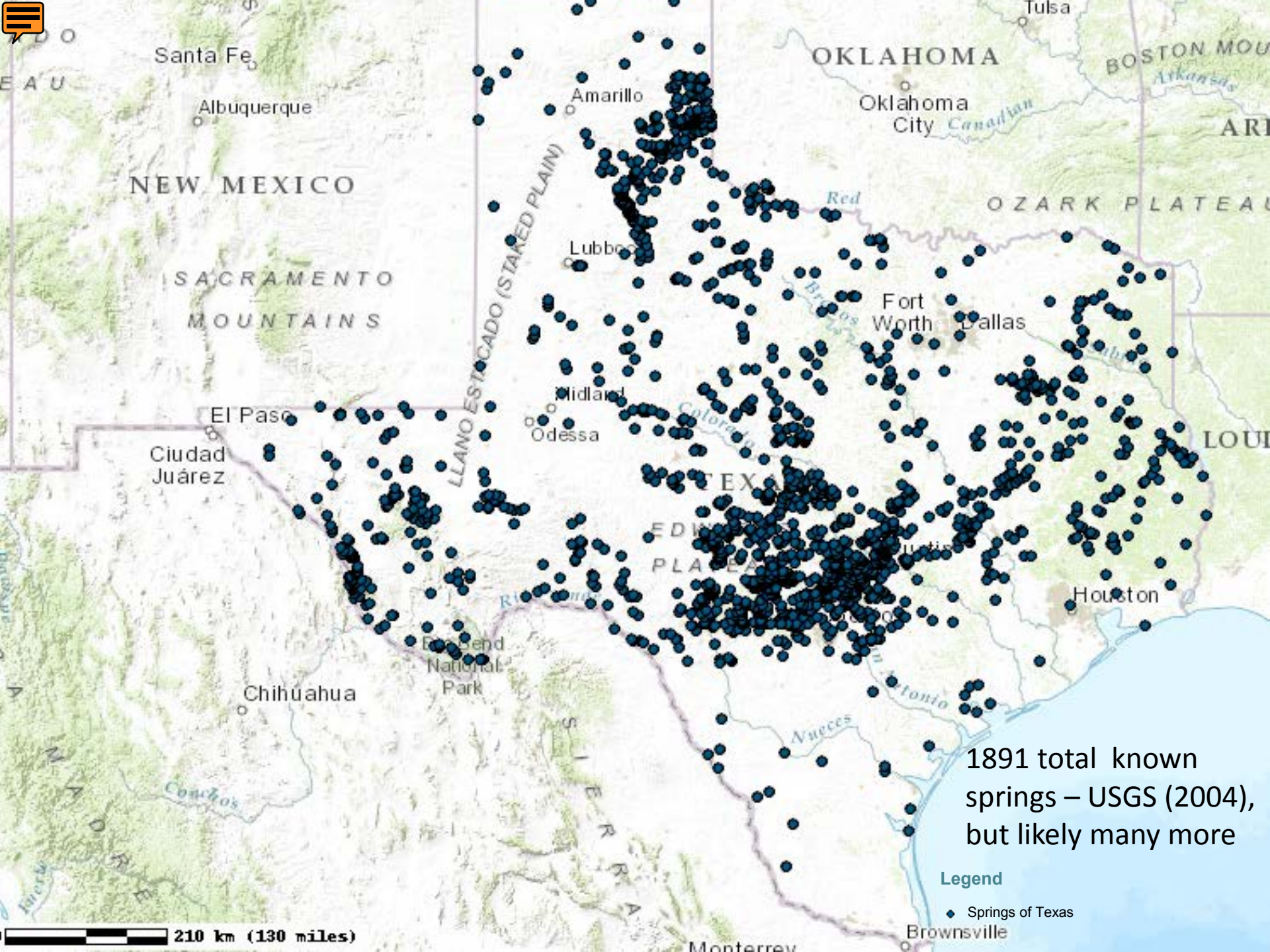
Challenges and Opportunities



Surface Water



Groundwater



1891 total known  
springs – USGS (2004),  
but likely many more

Legend  
◆ Springs of Texas



# Environmental Flows



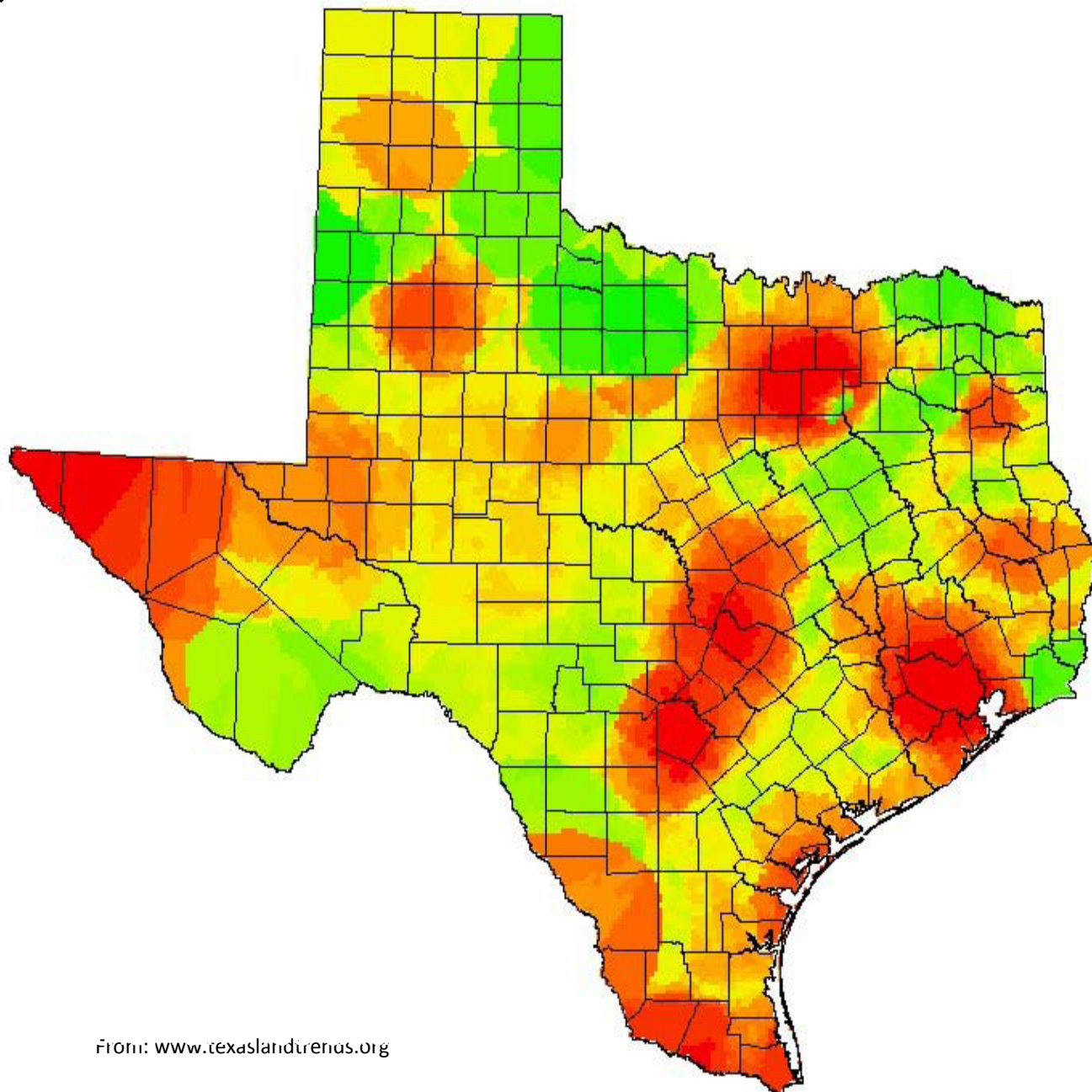
Innovation and Technology



## Land Fragmentation

Nearly 60% of the Western US is Publically Owned

95% of Texas is Privately Owned



Texas  
loses more  
land from rural  
uses each year  
than any other  
state

From: [www.texaslandtrends.org](http://www.texaslandtrends.org)





# Water Conservation

Successful Approaches

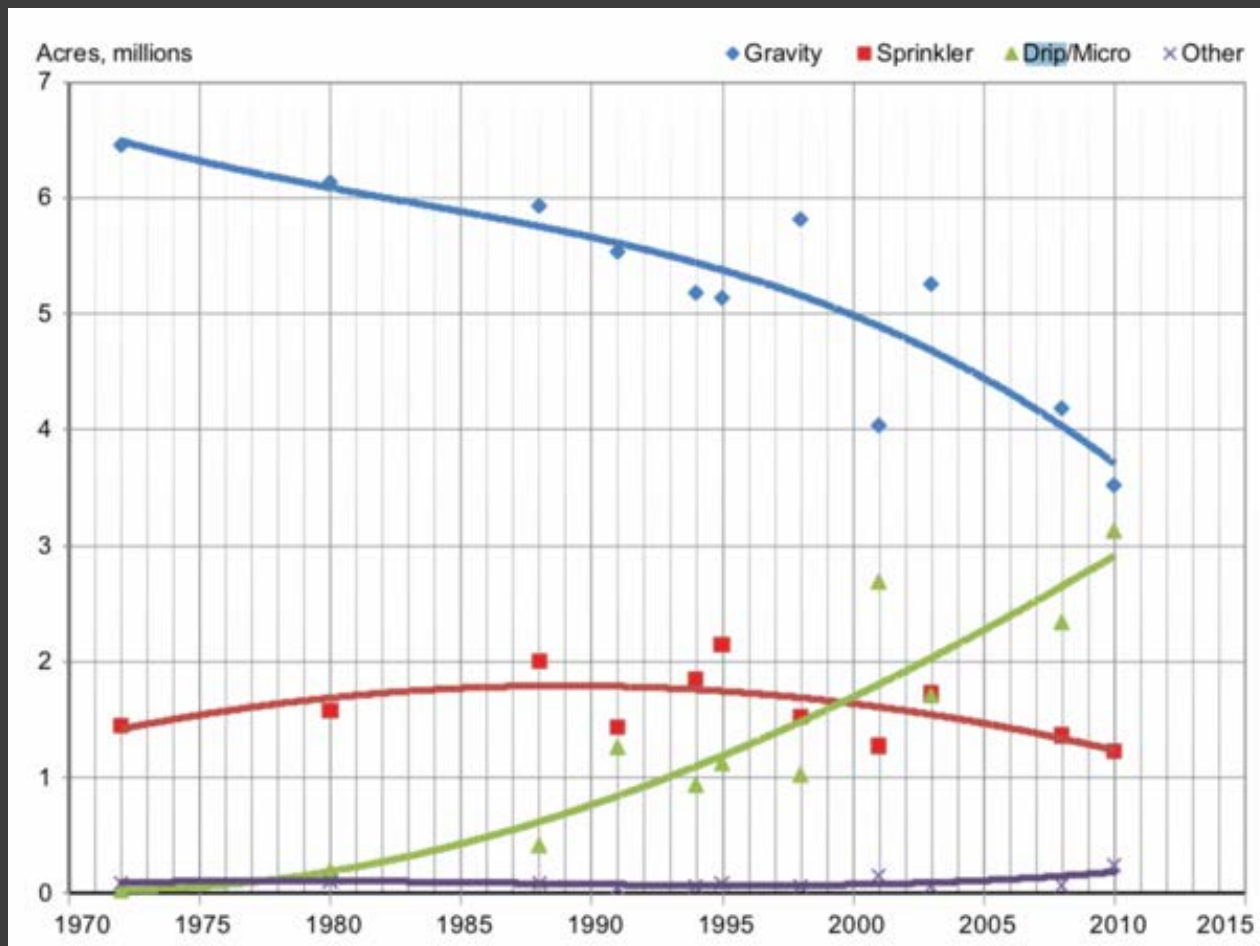


# Las Vegas

- The Southern Nevada Water Authority established a community conservation goal of 199 GPCD by 2035
- Cash for Grass
- Golf Course restrictions
- Reuse
- Infrastructure



# Agricultural Water Conservation



Over the past 30 years, California has invested in agricultural water efficiency and providing incentives to farmers

Change in Irrigation Methods in California (1977-2010) –  
Washington Post



# Philanthropy

Examples in Texas



## Supporting science-based answers to real-world questions

- *How Much Water is in the Hill Country?*
- Water conservation impacts on water supplies
- Impacts of policy on water resources (EP)



Environmental  
Flows Water  
Rights Feasibility  
Study



# Water Grand Challenges





Brokering and Purchasing Land or Conservation Easements





# Thank You



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