Drought in Texas

How the State Prepares for and Responds to Drought

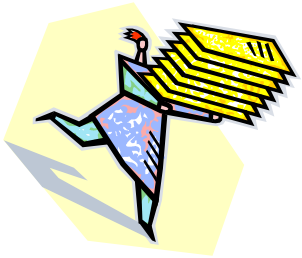
Brenner Brown

Texas Water Development Board

South Texas AWWA/WEAT Summer Seminar

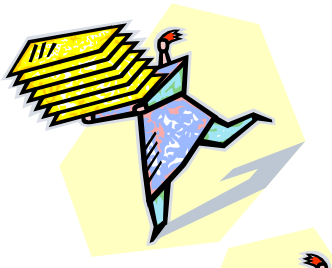
“Joe, looks like rain, don’t you think?”
“Sam, long as you’ve lived in West Texas you ought to know better’n that .”
“But Joe, just look at those big clouds over there.”
“Hell Sam, they’re just empties coming back from Florida.”

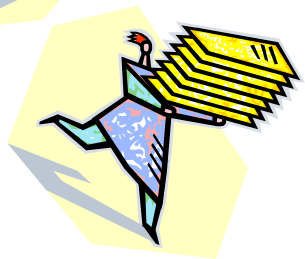
From Fine Wool and Clippings SGR 1953

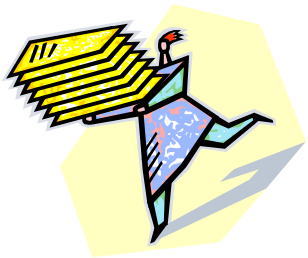


Here a plan, there a plan, everywhere a plan plan!

- **Regional water plans**
  regional water planning groups
- **State water plan**
  texas water development board
- **Water conservation plans**
  certain retail public water providers





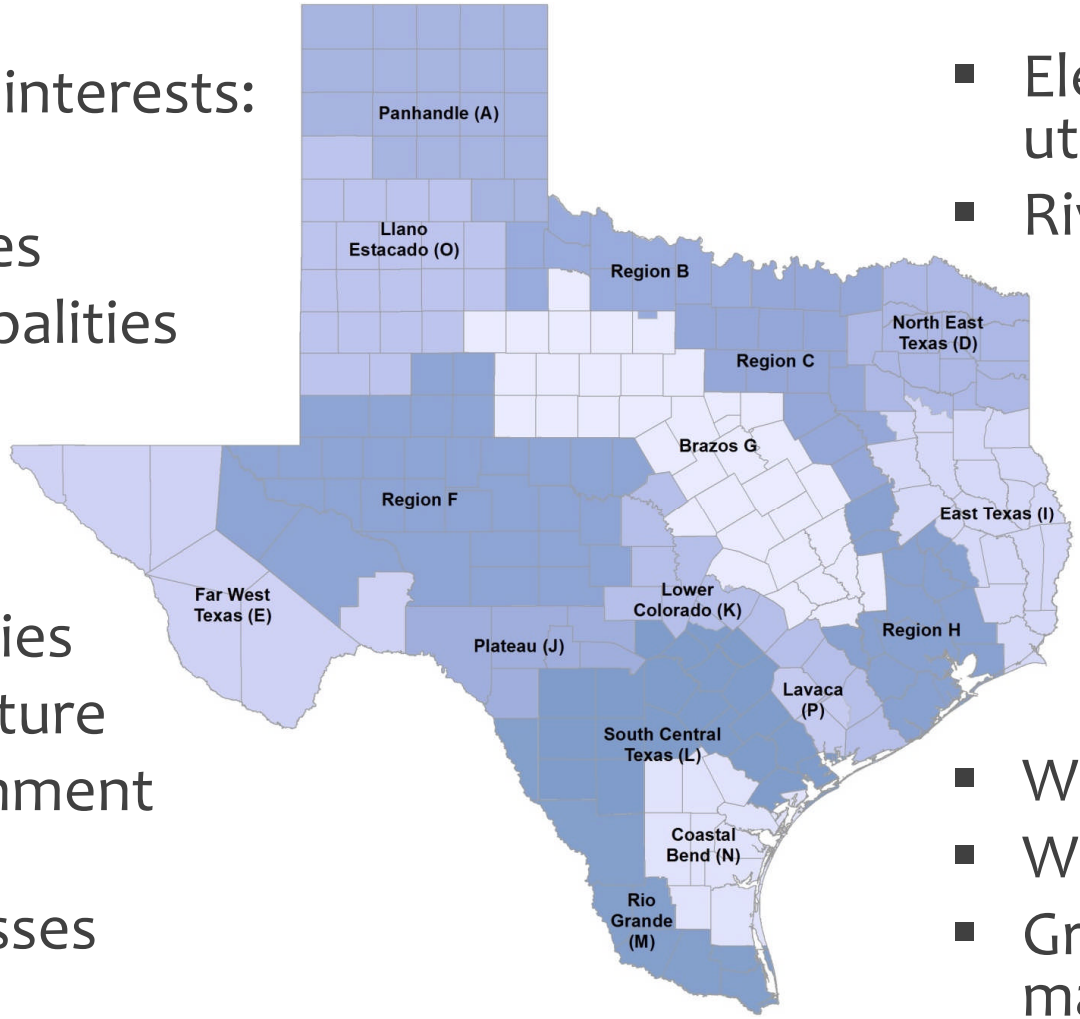


Regional Water Planning

Statutory interests:

- Public
- Counties
- Municipalities

- Industries
- Agriculture
- Environment
- Small businesses



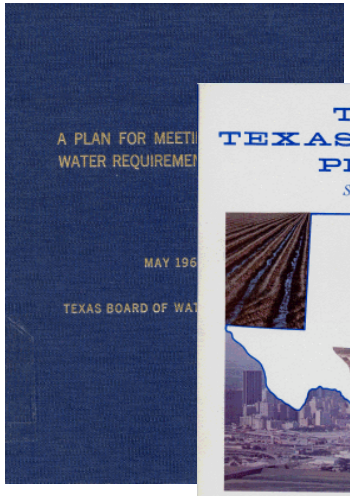
- Electric-generating utilities
- River authorities

- Water districts
- Water utilities
- Groundwater management areas

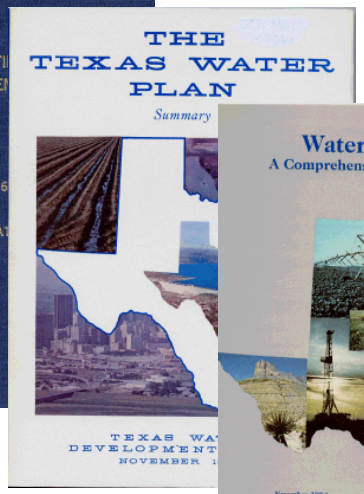
In response to the 1950s drought:

- Our Legislature authorized the sale of $200 million in state bonds for water projects
- Our Legislature created the Texas Water Development Board to administer the funds
- Our Legislature created a Water Resources Planning Division to plan for water on a statewide basis (now part of the TWDB)
- Texas learned that Texas needs to be ready for drought.

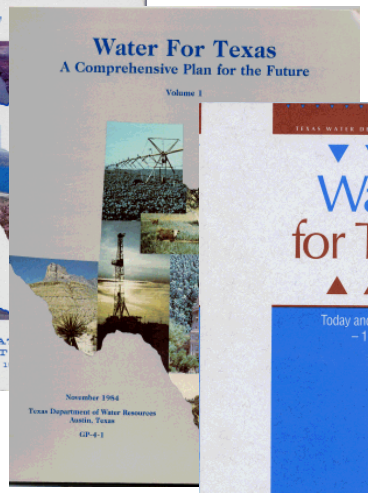
State Water Plans



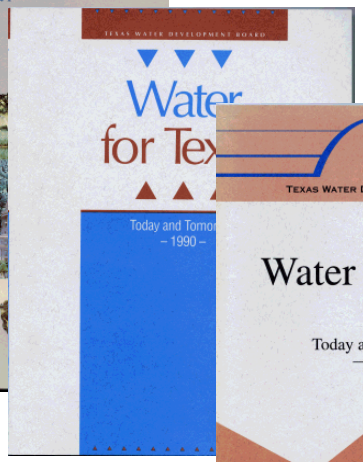
1961



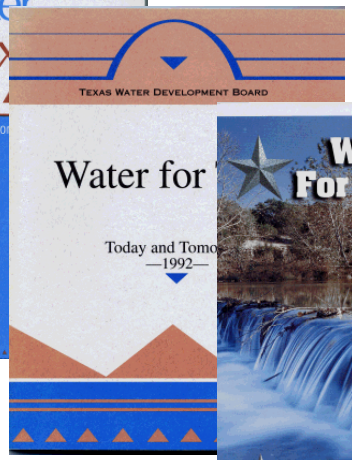
1968



1984



1990

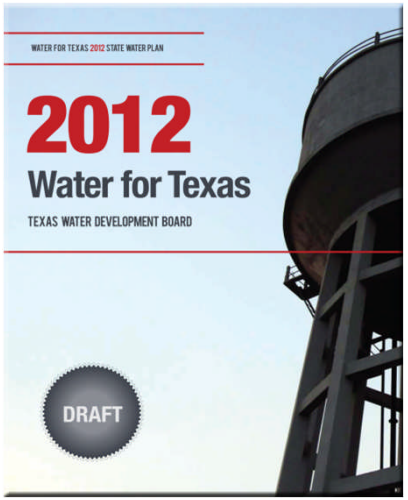


1992

1997

2002

2007



Water Conservation Plans

WHO IS REQUIRED TO SUBMIT?

- Those with financial assistance more than $500,000 from the Texas Water Development Board.
- Those with 3,300 or more retail service connections.

- Those with a non-irrigation surface water right of 1,000 ac/ft or more from the Texas Commission on Environmental Quality.

- Those with an irrigation surface water right of 10,000 ac/ft or more from the Texas Commission on Environmental Quality.

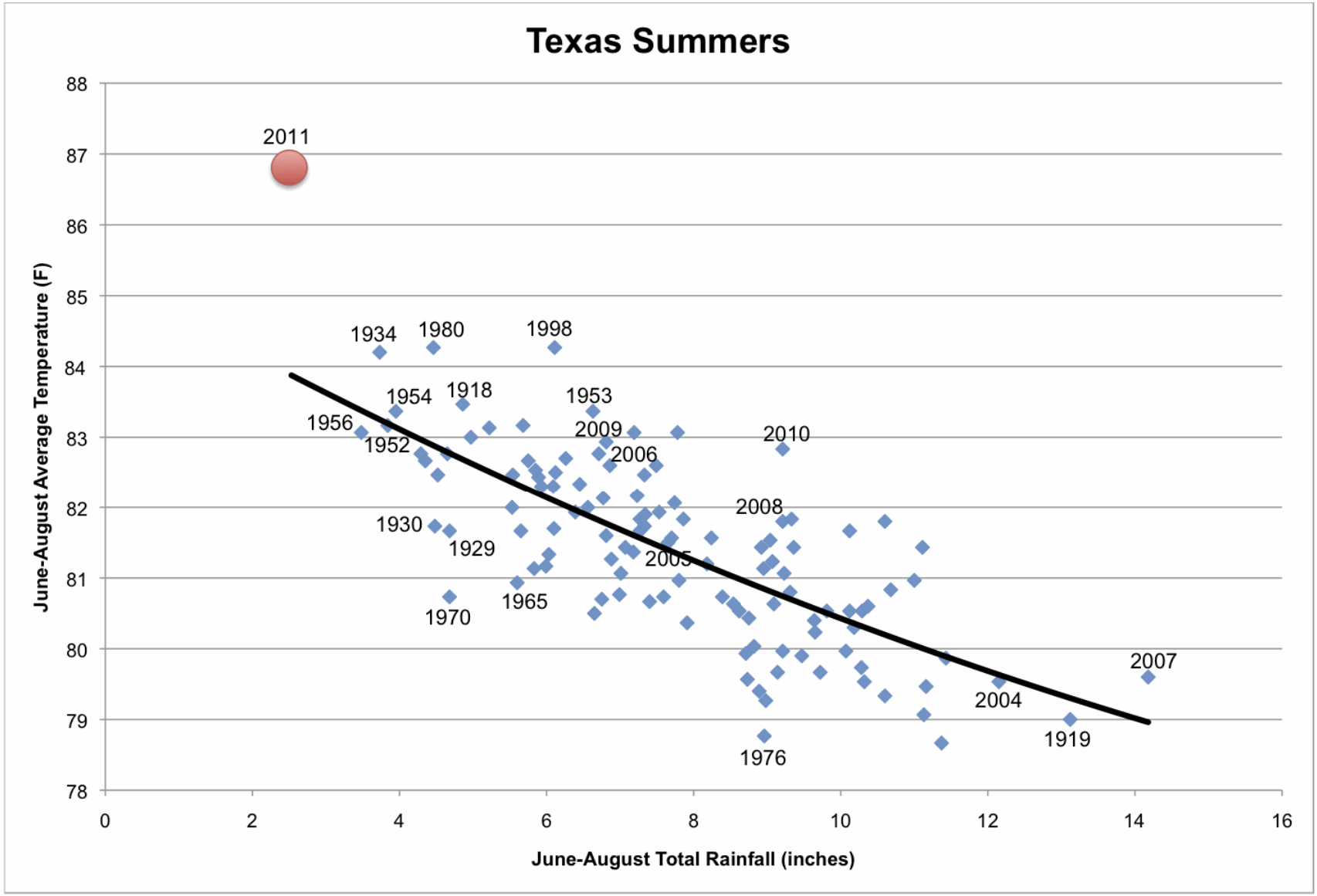
WATER CONSERVATION PLAN (WCP)

- Is a strategy for:
  - Reducing the consumption of water
  - Reducing the loss of water
  - Improving the efficiency of the use of water
  - Increasing the reuse of water
- Contains Best Management Practices (BMPs)to meet identified targets and goals.
- Should be reviewed and updated every 5 years.

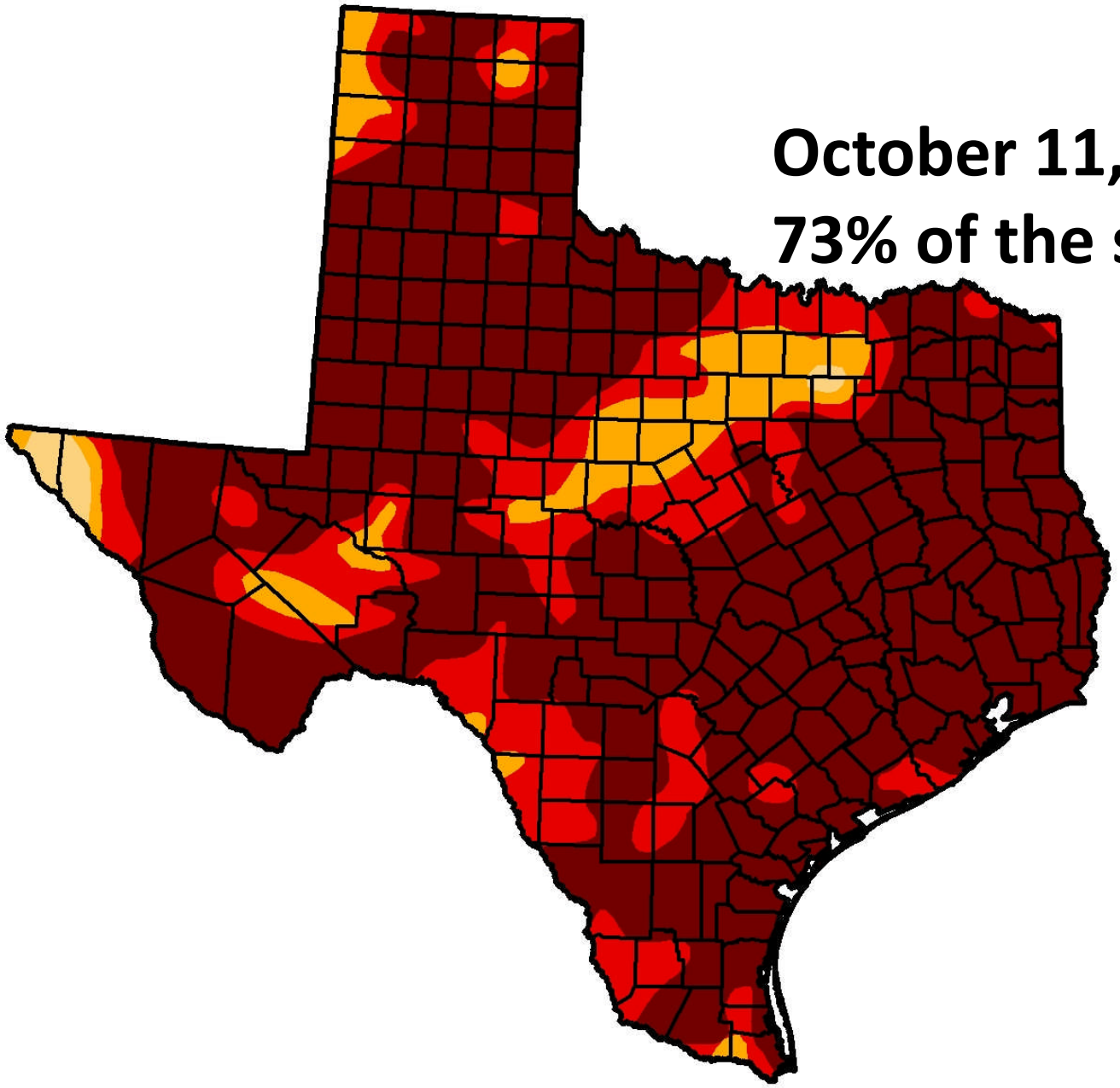
The Current Drought

How we got here and what is being done.

A municipal water supply perspective



from the Office of the State Climatologist



October 11, 2011 over 73% of the state in D4

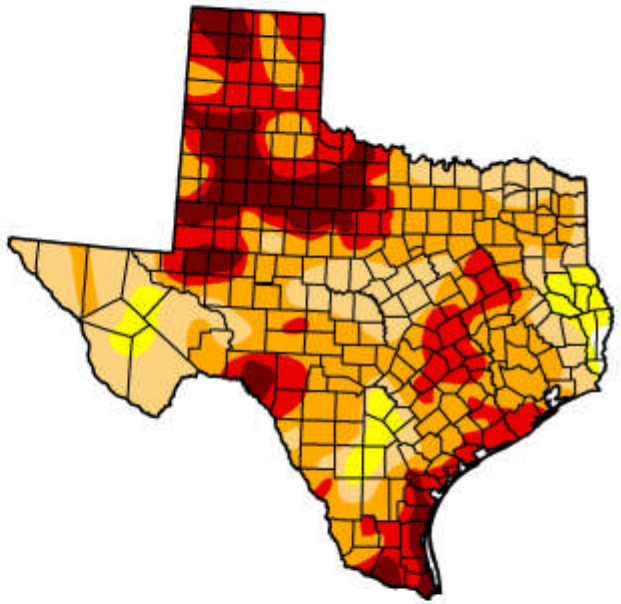
U.S. Drought Monitor

Texas

July 16, 2013
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.30	99.70	94.38	70.99	33.43	12.07
Last Week (07/09/2013 map)	0.58	99.42	91.80	75.22	34.70	12.20
3 Months Ago (04/16/2013 map)	1.29	98.71	91.31	72.30	34.82	12.19
Start of Calendar Year (01/01/2013 map)	3.04	96.96	87.00	65.39	35.03	11.96
Start of Water Year (09/25/2012 map)	9.13	90.87	78.73	57.41	24.91	5.18
One Year Ago (07/10/2012 map)	4.49	95.51	77.23	39.41	9.09	0.00



Intensity:

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

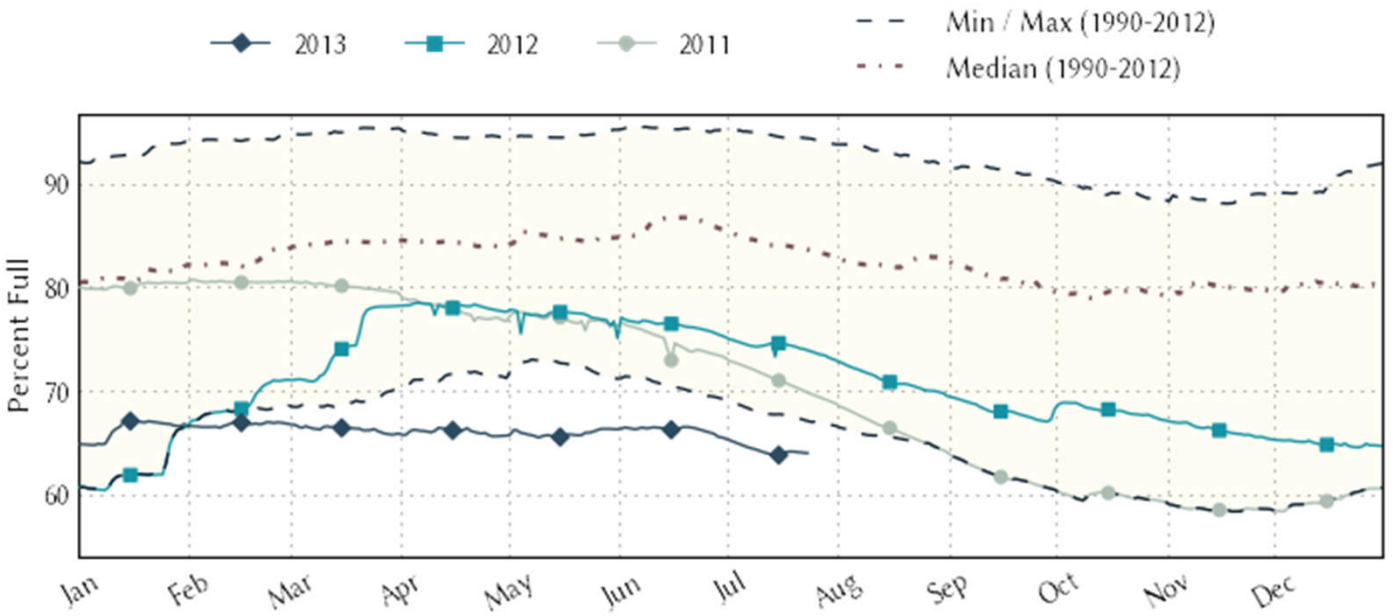
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

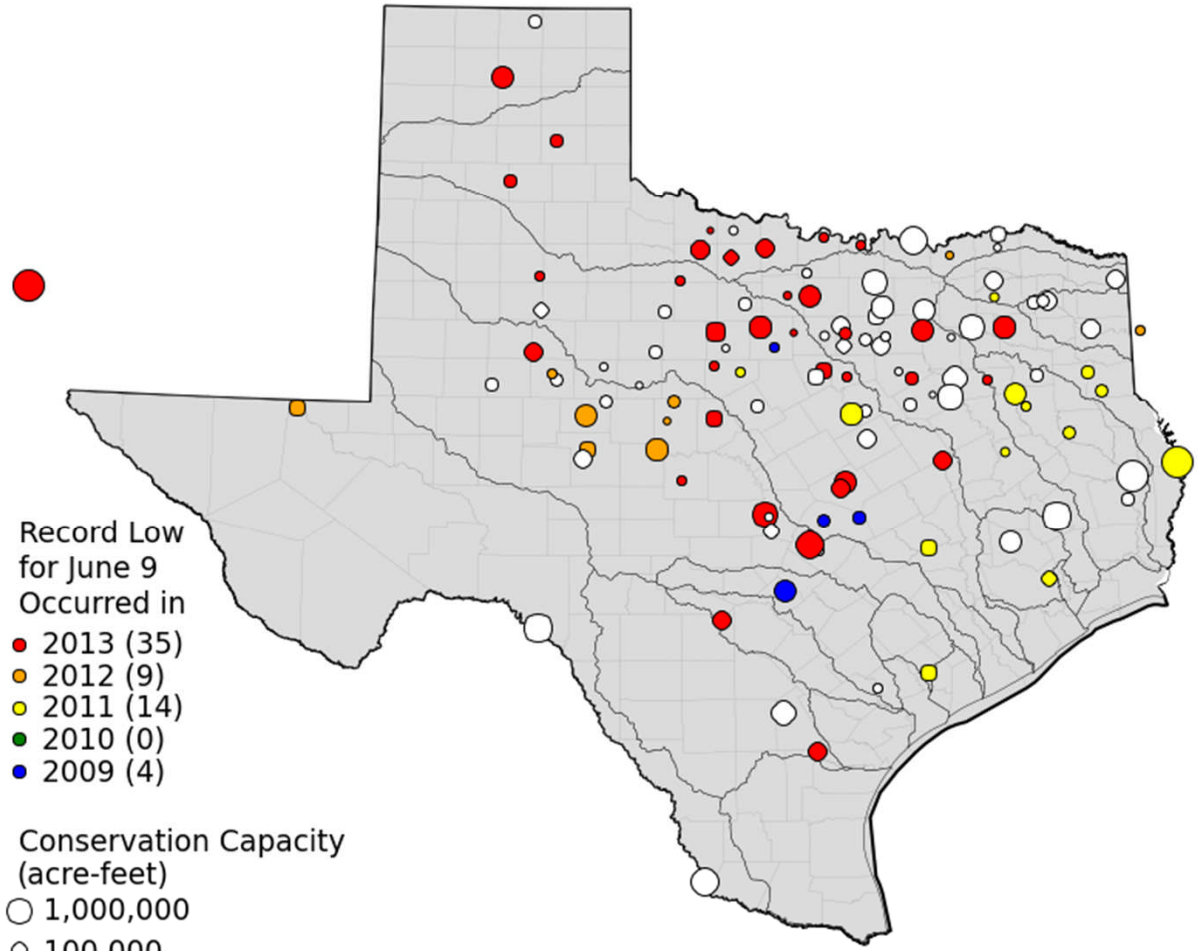
Released Thursday, July 18, 2013
Richard Heim, National Climatic Data Center,/NOAA

Statewide Storage

Monitored Water Supply Reservoirs are 64.1% full on 2013-07-23



Year of Record Lowest Reservoir Storage Since 1989



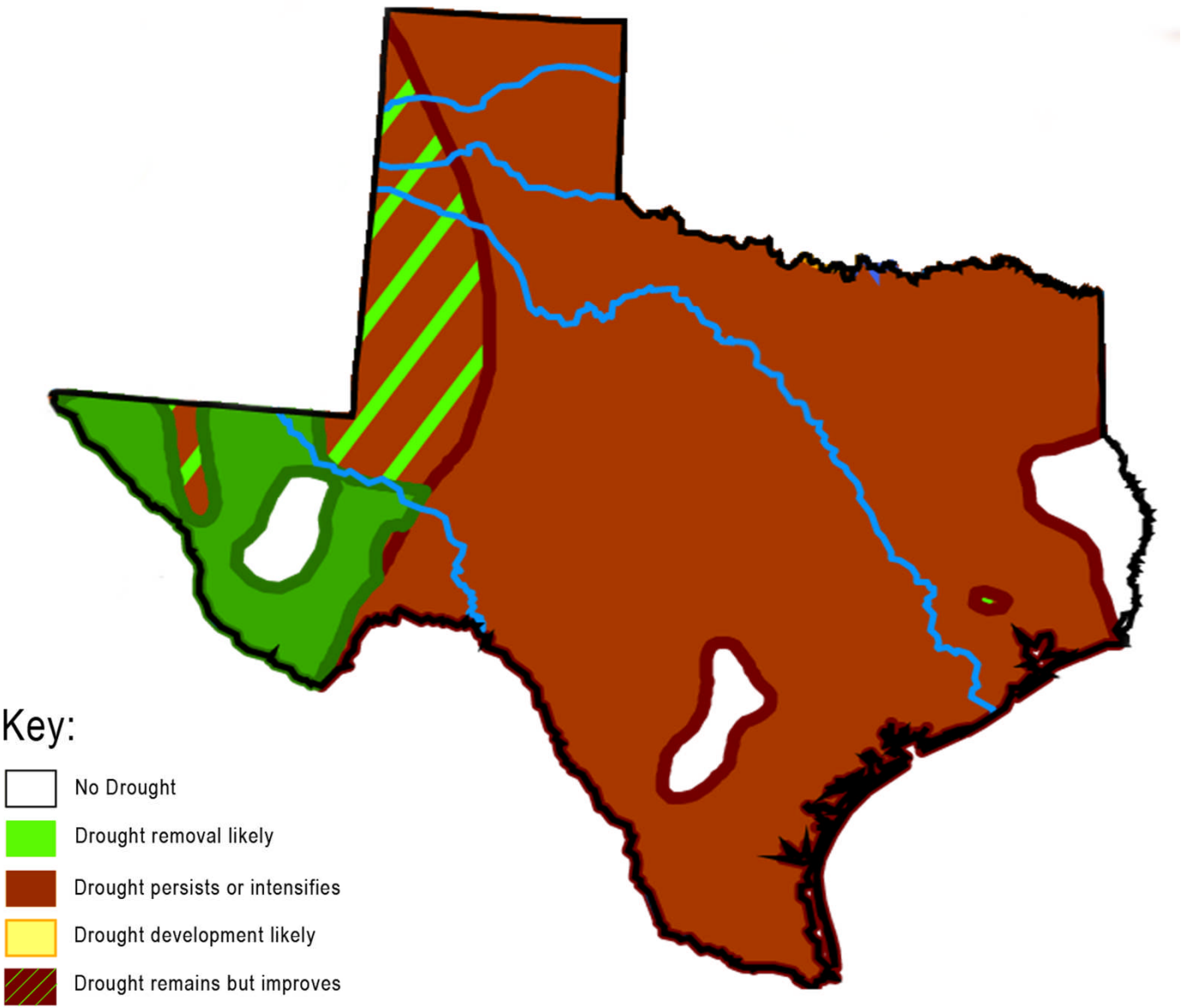
2013 Reservoirs

Reservoir (days)

- Arrowhead (195)
- Athens (90)
- Bardwell (82)
- Belton (110)
- Brady Creek (231)
- Bridgeport (71)
- Brownwood (91)
- Buchanan (109)
- Cisco (68)
- Corpus Christi (511)
- Electra (225)
- Elephant Butte (65)
- Fork (82)
- Granbury (147)
- Greenbelt (789)
- Hubbard Creek (337)
- Hubert H Moss (2)
- J B Thomas (767)
- Kemp (600)
- Kickapoo (198)
- Limestone (20)
- Lost Creek (84)
- Mackenzie (718)
- Medina (570)
- Meredith (1388)
- Millers Creek (113)
- Mineral Wells (15)
- Nocona (225)
- Pat Cleburne (5)
- Possum Kingdom (35)
- Ray Hubbard (104)
- Stillhouse Hollow (24)
- Travis (101)
- White River (35)
- Worth (10)

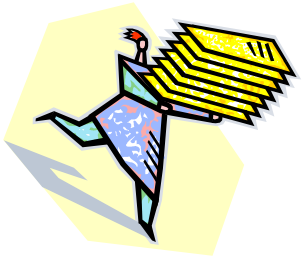
SEASONAL DROUGHT OUTLOOK 7/18/13–10/31/13

The latest drought outlook shows a substantial change from the previous outlook two weeks ago: Persistence of drought in much of the state, including much of east Texas, with improvement and removal from drought in Far West and parts of West Texas. This is the reverse of what the outlooks have been showing for several months now.



Current Priority Calls

San Saba (D & L)	Between July 5 and July 12, TCEQ received five calls in the San Saba Basin from the following individuals: Robert Davee; Nick Singleton; Griff Thomas; Jan N. Hughes, Jack O'Donnell. Staff is evaluating the calls to determine the appropriate response.
Guadalupe Basin (South Texas WM)	On July 9, 2013, the South Texas Watermaster staff received one D&L Call from a land owner on the Guadalupe River near Spring Branch in Comal County. Water right holders have been on a curtailment schedule and due to the call the curtailment schedule has been escalated. No new temporary permits are being approved.
Concho Basin (Concho WM Area)	On July 9, 2013, Concho Watermaster staff received one D & L priority call on Spring Creek in Irion County. Upstream water right holders have been on a curtailment schedule, and no new declarations of intent will be approved at this time.
Brazos River (Dow)	Received a senior call from Dow on June 26, 2013. On July 2, 2013, letters were sent to suspend water rights below Lake Possum Kingdom, junior to Feb. 14, 1942.



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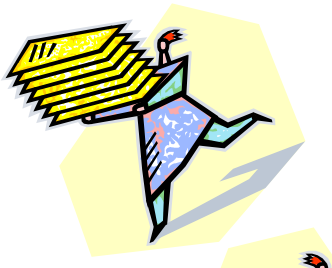
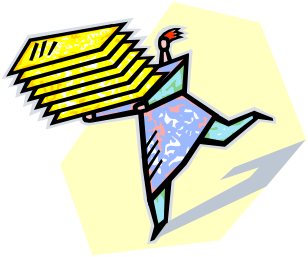
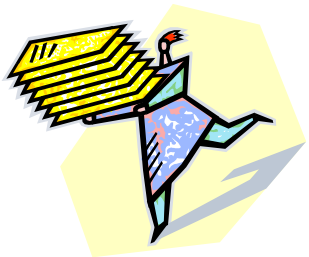
- Water conservation plans
  certain retail public water providers
- **Drought contingency plans**
  certain wholesale, all retail public water providers
- **Drought preparedness plan**
  drought preparedness council
- **Annex A Emergency Drinking Water**
  emergency drinking water task force







Drought Contingency Plan

WHO IS REQUIRED TO SUBMIT?

- TCEQ requires all wholesale public water suppliers, retail public water suppliers serving 3,300 connections or more, and irrigation districts to submit drought contingency plans.

- The TCEQ requires retail public water suppliers serving less than 3,300 connections to prepare and adopt a drought contingency plan and to make the plan available upon request.

DROUGHT CONTINGENCY PLAN (DCP)

- Is a strategy for responding to temporary water supply shortages.
- Must include quantified and specific targets for water reduction during a water shortage.
  - Drought response stages
  - Triggers to begin and end each stage

HB 3604

- Should be reviewed and updated every 5 years.
- Can be part of your WCP.

Implementation

- 1,020 PWSs implementing restrictions
  - 691 mandatory
  - 329 voluntary
  - 44 have prohibited all outside watering

Drought Preparedness Plan

- integrated approach to minimize the impacts of drought
- Identifies the local, state, federal and private sector entities
- Defines a process to be followed in addressing drought-related activities
- Identifies long and short-term activities

Annex A Emergency Drinking Water

- This Annex is a supplement to the State Drought Preparedness Plan focusing specifically on developing procedures to enable public water systems to provide adequate potable water for drinking and sanitation to ensure public health and safety.
- Emergency Drinking Water Task Force

Rewritten in 2012 as a result of drought of 2011

Emergency Drinking Water Task Force

- High priority 180 day list
- Emergency solutions **Encouraging regional cooperation among struggling entities**
- Outreach in coordination with funding agencies

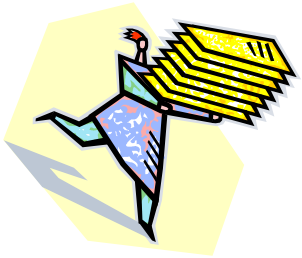
TCEQ High Priority Water System List (180 Day List)

- **36 entities on the 180 day list**
  - **serving 187,080 connections**
  - **population of 543,125**
- **23 have identified groundwater as their emergency solution**

High Priority Entities

- Lower Rio Grande **Mexico behind on releases to Amistad and Falcon - currently 32%**
- Wichita Falls **Monitored Water Supply Reservoirs are 31.0%**
- Gulf Coast Water Authority **Priority Call on the Brazos River**
- North Central Texas Municipal Water Authority **Millers Creek Reservoir 22.1%**
- White River Municipal Water District

White River Lake 1.5%



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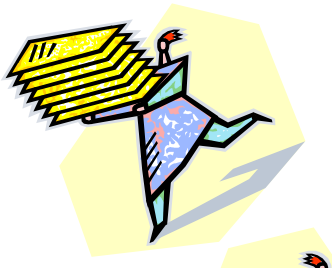
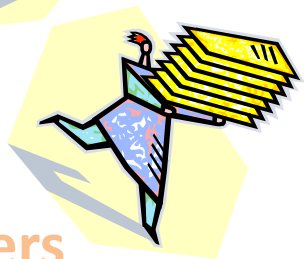
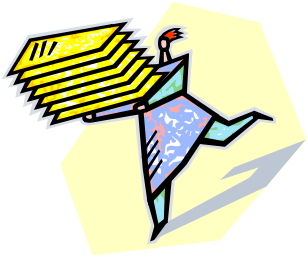
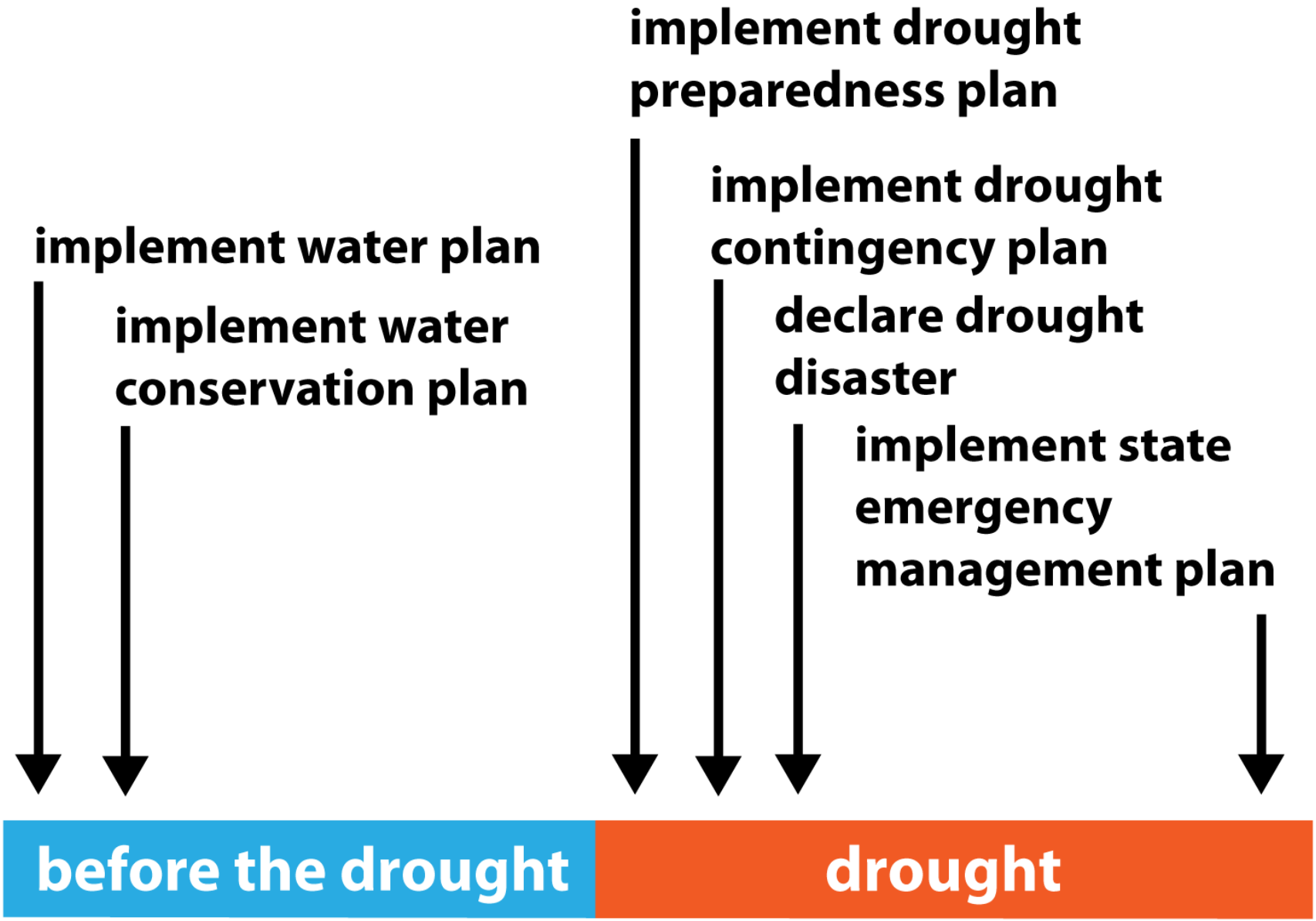
- **State emergency management plan**
  texas division of emergency management








implement water plan
implement water conservation plan
implement drought preparedness plan
implement drought contingency plan
declare drought disaster
implement state emergency management plan
before the drought
drought

the greatest single cause of water shortages in the cities was the desire of citizens to preserve water loving plants imported from humid regions.

some of the largest of these cities have been humiliated by having to ration the use water for domestic purposes such as watering gardens and washing cars.

Water for Texas
Walter Prescott Webb

The farm population branch of the united states department of agriculture and the Texas agricultural Experiment Station…made estimates of the effects of drought on the farm ranch population changes between 1950 and 1957. Their findings indicate that in regions of severe and prolonged drought the agricultural population fell by about 35% in areas of intermediate seriousness the decline was 27% and in the least severe drought areas the decline was 15%.

Kimble was one of 143 counties in Texas that encountered population losses between 1950 and 1960.—4,619---3,943…the average decline among all Texas counties losing population was 13.3%.

Mr. Charles K. Foster, now Chief Engineer of Water Supply of the Texas State Department of Health, was a member of the Dallas County Health Board for the entire drought period and believes the **truth of the Dallas water crisis of the 1950's will never be known** as closed sessions of the City Council and clever **manipulation of data leaves largely obscured much of the direct evidence that might induce industries to place their investments elsewhere**

By the winter of 1952-53, Dallas municipal water levels had been reduced by drought to only a few months' supply at best

Plans were proposed to tap the Red River and the West Fork of the Trinity

by far the most dramatic event of the 1953 water supply season was the introduction of Red River water into the city mains. By August the six 800-horsepower pumps were in place ready to hurl almost 10,000 gallons of water per minute through a main with a four foot diameter on the first phase of the trip to Dallas

Trigg Twichell, hydraulic engineer for the United State Geologic Survey, delivered a public address in Dallas emphasizing that the ultimate cost of Red River water to the city would be incalculably great. Twichell stated that the “raw water” of the Red River contained “ten times more dissolved minerals than the raw water of Lake Dallas.”

November of 1956 became the biggest month in history for Dallas automobile radiator repairmen, as brackish water broke down cooling systems.

The city of Dallas and the Sabine River Authority signed an agreement in July, 1956. Dallas would pay the $20 million cost of the dam and receive 80 percent of the water, an estimated 160 MGD.—Iron Bridge Dam agreement

"the greatest outrage to City Hall was the Cotton Bowl, that emporium of gladiator pride, having to drill its own well within the stadium in order to water the turf because the Dallas water works could not furnish the means for such lavish irrigation…. Good strike made at a depth of only 35 feet just 27 yards south of the goal posts."

Hatfield, T.M., 1964, The Texas drought of 1950–1956, The University of Texas, 81 p.

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Texas Water Development Board