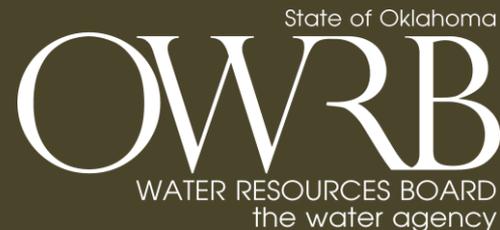




Minimizing Drought Impacts through the Oklahoma Comprehensive Water Plan

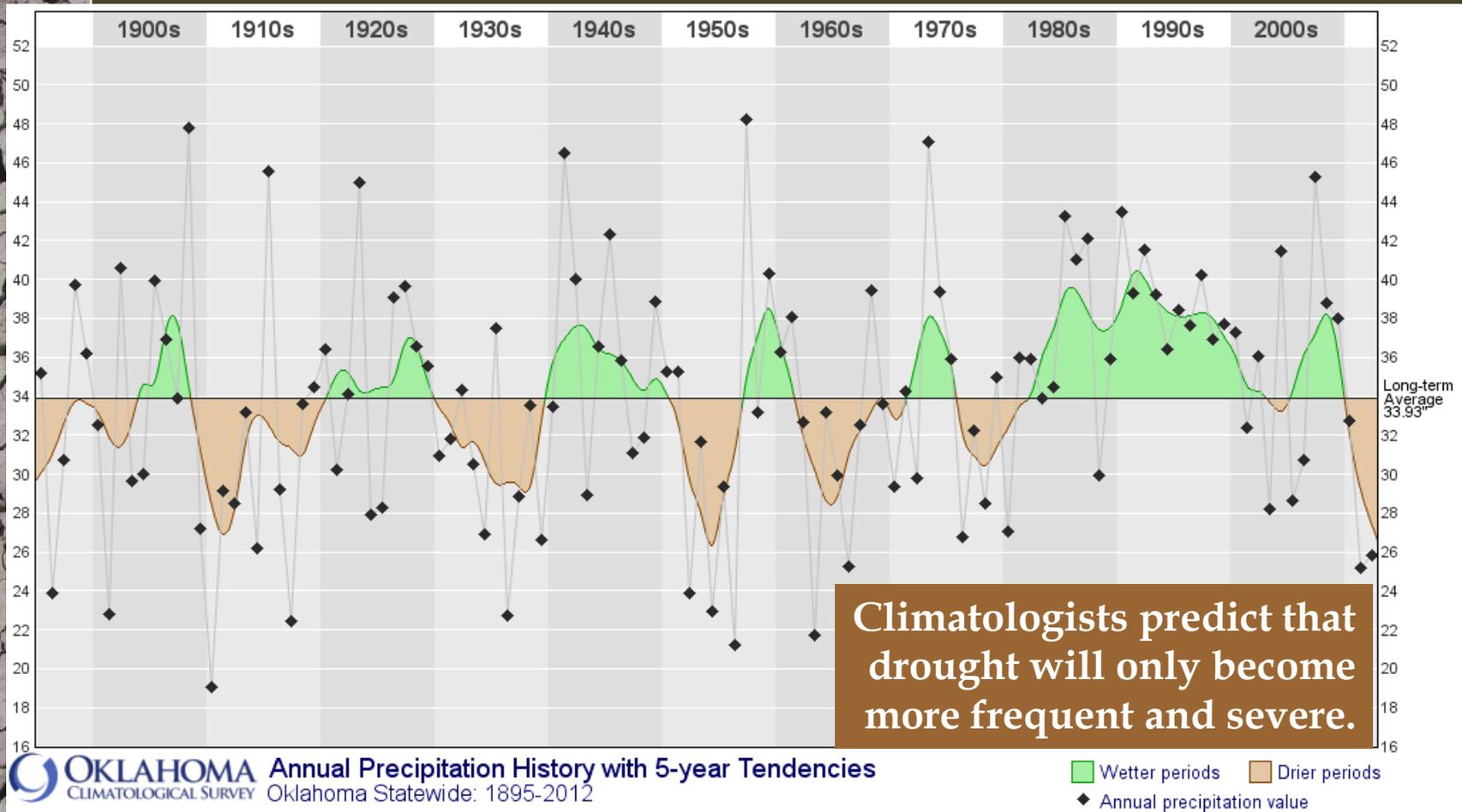
Governor's Water Conference &
Research Symposium
October 22-23, 2013



J. D. Strong
Executive Director

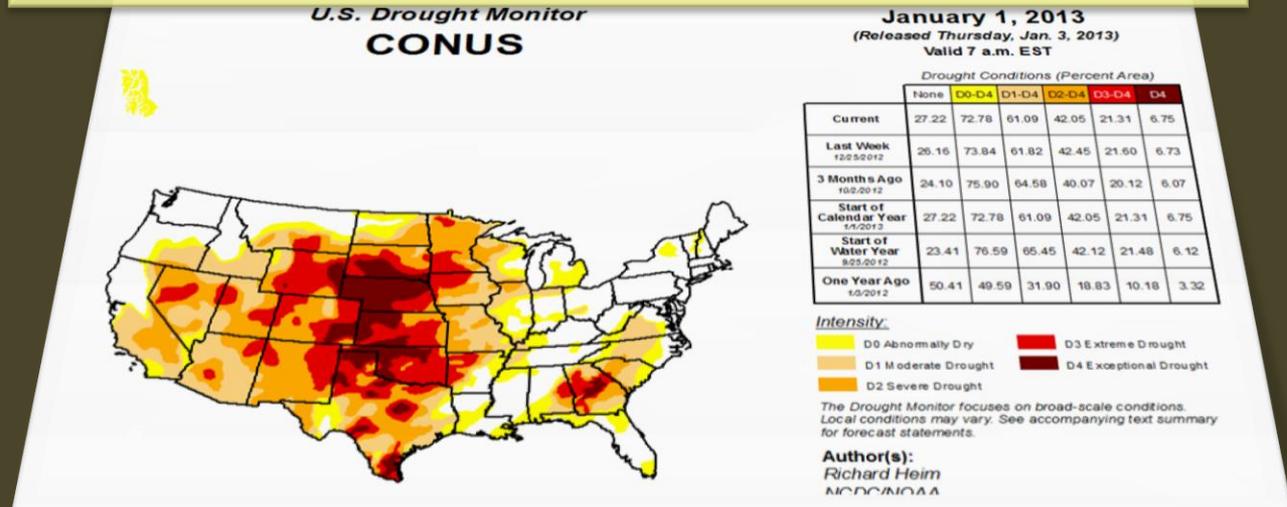
Oklahoma: Cyclical flood and drought

1895-2012



U.S. Billion Dollar Disasters (1980-2012)*

1. Hurricane Katrina (2005) = \$148.8
2. Drought (1988) = \$ 78.8
3. Drought (2012) = \$???
4. Sandy (2012) = \$ 65.7
5. Drought (1980) = \$ 56.4



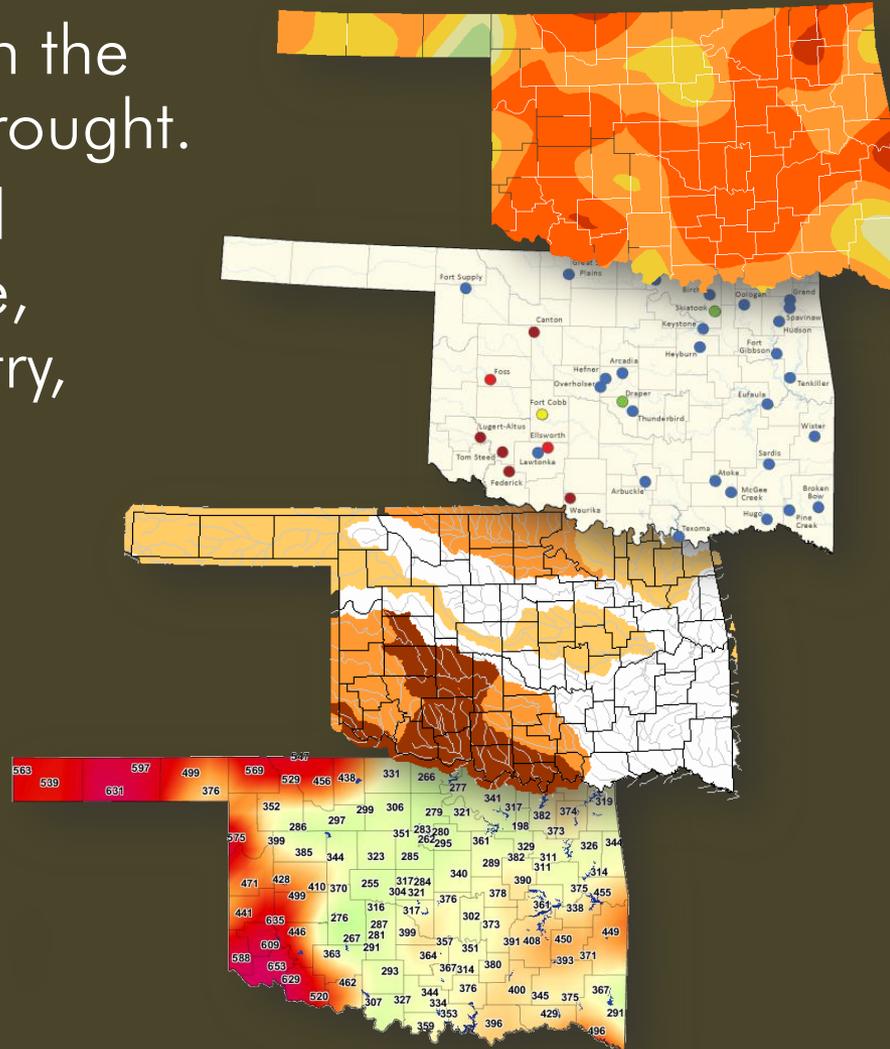
*<http://www.ncdc.noaa.gov/billions>; cost adjusted to 2013 CPI

Drought Conditions & Impacts in Oklahoma

Oklahoma is currently in the
midst of a 3+ year drought.

Numerous water-related
impacts to Agriculture,
Water Systems, Industry,
Navigation, Tourism,
Recreation, etc.:

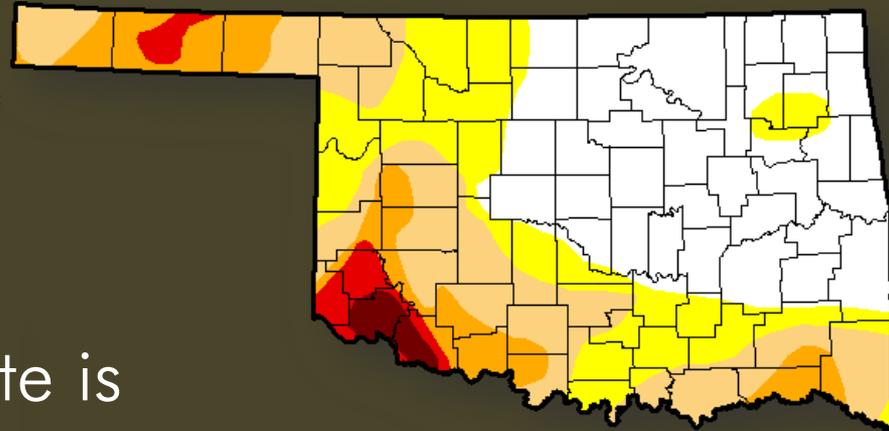
- Precipitation
- Streamflows
- Reservoir Levels
- Soil Moisture
- Fire Danger





Drought Conditions & Impacts in Oklahoma

- More than 37% of Oklahoma, including prime agricultural areas, continues to experience at least *Moderate* drought;
- Over 4% of the state is still in *Extreme* drought
 - Drought cost Oklahoma agriculture \$2+ billion in 2011/2012

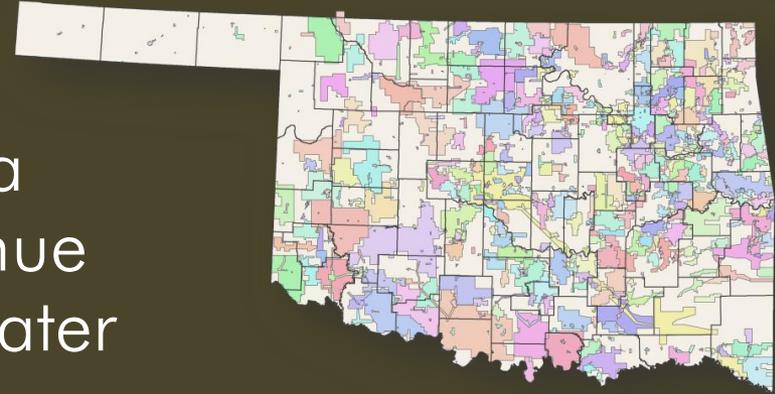


U.S. Drought Monitor

October 15, 2013

Drought Conditions & Impacts in Oklahoma

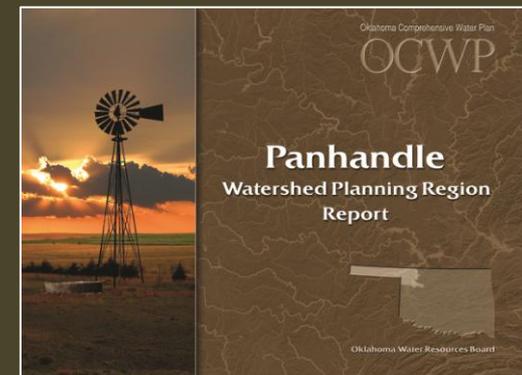
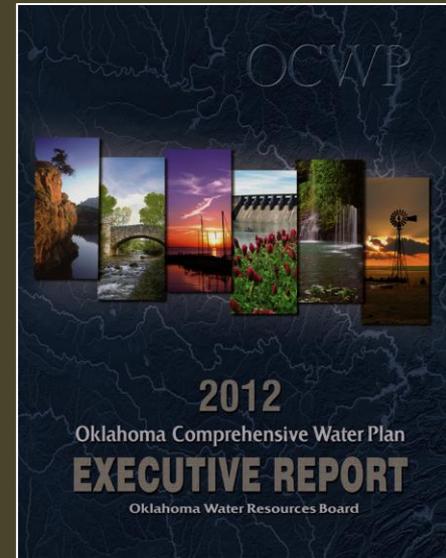
- Water Supply
 - 20-to-30 Oklahoma water systems continue rationing or other water restrictions
 - Rationing becoming a year-round water management strategy
 - Smaller water systems and rural domestic users particularly vulnerable to drought



Oklahoma has almost 700 community water systems that serve less than 1,000 customers.

2012 Update of the Oklahoma Comprehensive Water Plan

- Submitted to Governor and Legislature in February 2012
- Most technically sound and extensively vetted Water Plan ever developed in Oklahoma
- Overriding goal is to provide safe, dependable water supply to all Oklahomans
- Executive Report & 13 Watershed Planning Region Reports, including synthesis of technical studies/results and policy recommendations



2012 Update of the OCWP

Minimizing Drought Impacts

OCWP enables state water users to be more resilient to inevitable drought episodes

1. Priority and supporting recommendations
2. Technical studies and tools

How does the Water Plan combat drought?

1. Identify Vulnerabilities (Demand Studies)
2. Anticipate Climate Impacts
3. Quantify Infrastructure Requirements
4. Encourage Water System Planning
5. Conservation & Augmentation of Supplies
6. Enhance Data and Studies
7. Update State Drought Plan

2012 Update of the OCWP

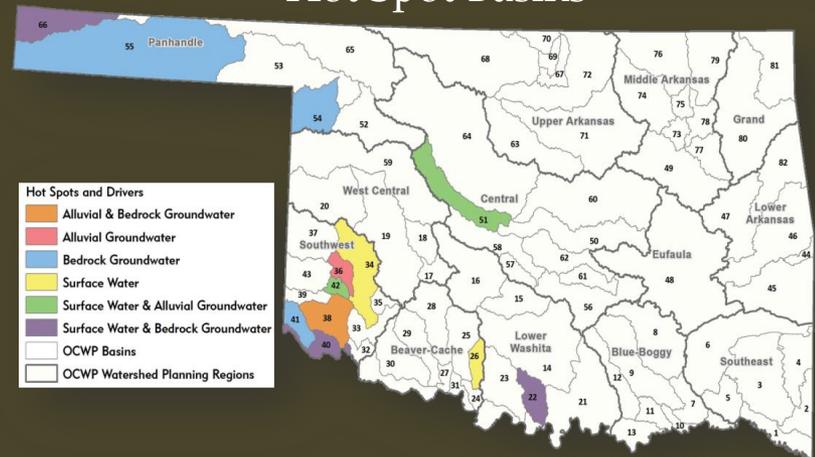
Minimizing Drought Impacts

Identifying Vulnerabilities

- 50-year water demand projections for major water use sectors
 - Surface water “gaps”
 - Groundwater “depletions”

**12 “Hot Spots”
identified as having
greatest water
supply challenges**

Hot Spot Basins



2012 Update of the OCWP

Minimizing Drought Impacts

Identifying Vulnerabilities

– Assessed factors limiting the use of the three major supply categories

- surface water
- alluvial groundwater
- bedrock groundwater

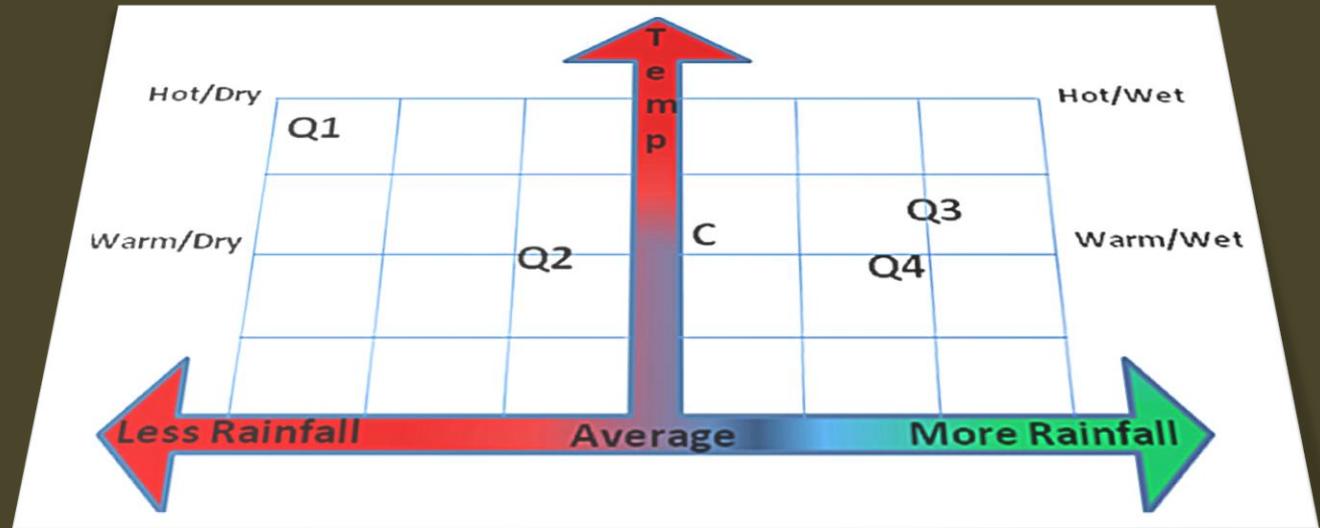


2012 Update of the OCWP

Minimizing Drought Impacts

Anticipating Climate Impacts

- Assessed potential future climate variability impacts on water supply and demand down to county/system level



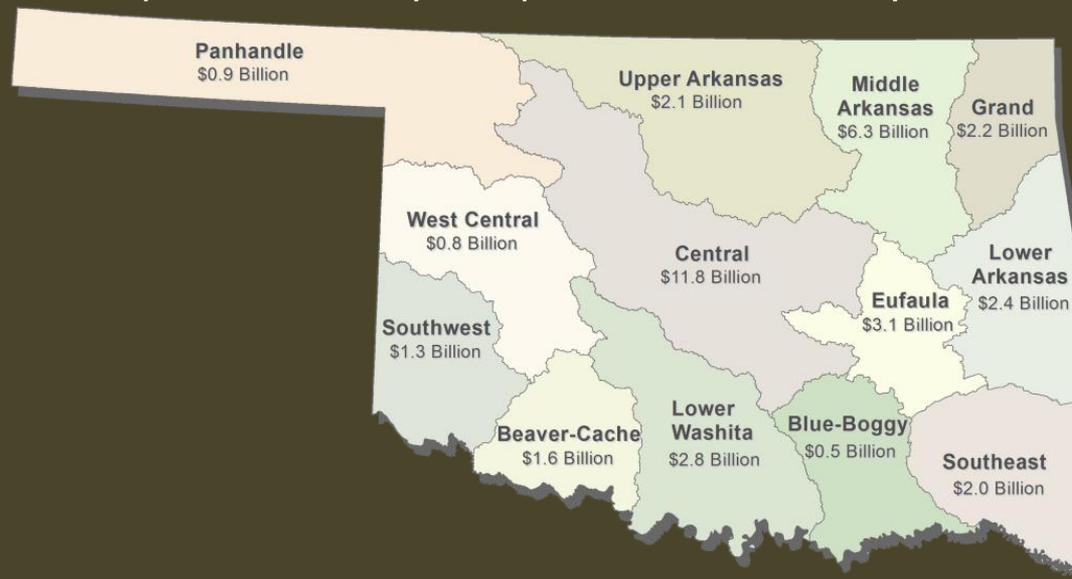
2012 Update of the OCWP

Minimizing Drought Impacts

Quantifying Infrastructure Requirements

– OCWP projected a \$82 billion infrastructure need by 2060

- will particularly impact smaller systems



2060 Water System Need

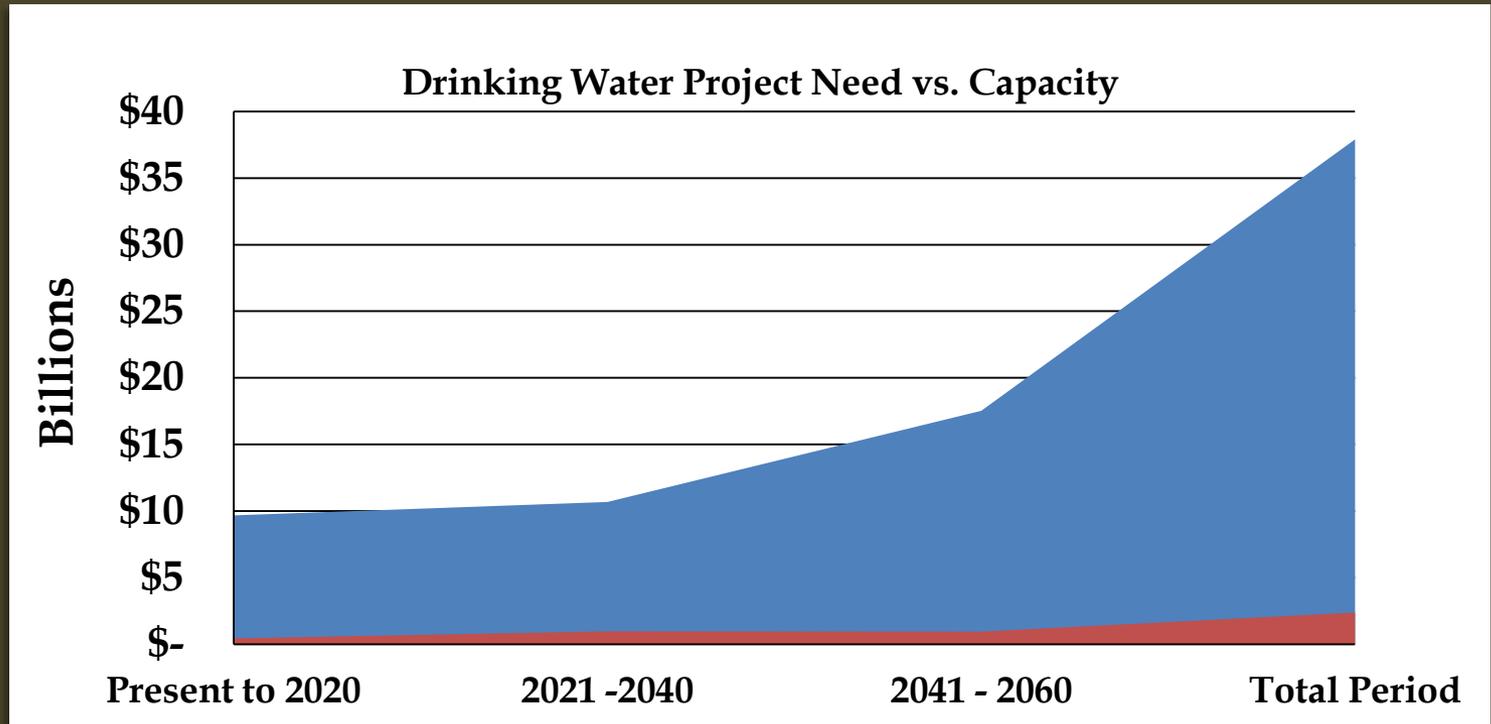
2012 Update of the OCWP

Minimizing Drought Impacts

Quantifying Infrastructure Requirements

- Water Infrastructure Credit Enhancement Reserve Fund created through SQ 764

OCWP
Priority

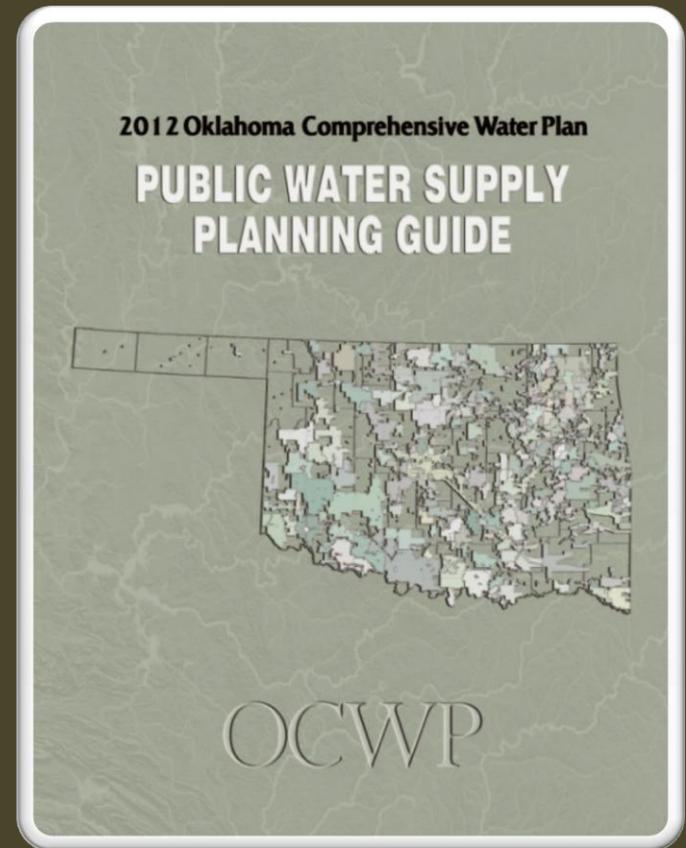


2012 Update of the OCWP

Minimizing Drought Impacts

Encouraging Water System Planning

- OCWP Public Water Supply Planning Guide
 - Prepared to assist especially small water suppliers in strengthening their long-term water management capabilities



2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

- Evaluated both “Moderate” and “Substantial” scenarios for the two major water use sectors

M&I and Agriculture Statewide Demand Projections & Water Savings for Conservation Scenarios (AFY)

	2010	2020	2030	2040	2050	2060
Baseline	1,377,318	1,455,309	1,523,273	1,587,406	1,642,069	1,711,392
Scenario I	N/A	1,301,816	1,332,781	1,388,603	1,435,807	1,496,643
Scenario II	N/A	1,155,397	1,170,248	1,209,372	1,244,123	1,295,569

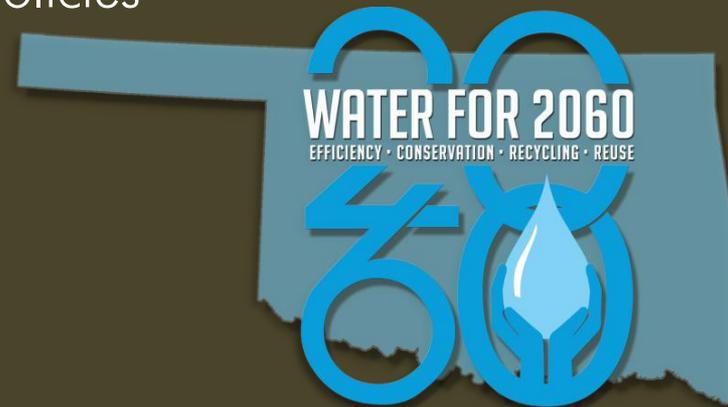
2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

OCWP
Priority

- “Water For 2060” law arising from OCWP statewide goal of consuming no more fresh water in 2060 than we consume today
- Advisory Council now studying innovative solutions to forecasted water shortages
 - voluntary programs/policies
 - financial incentives
 - education

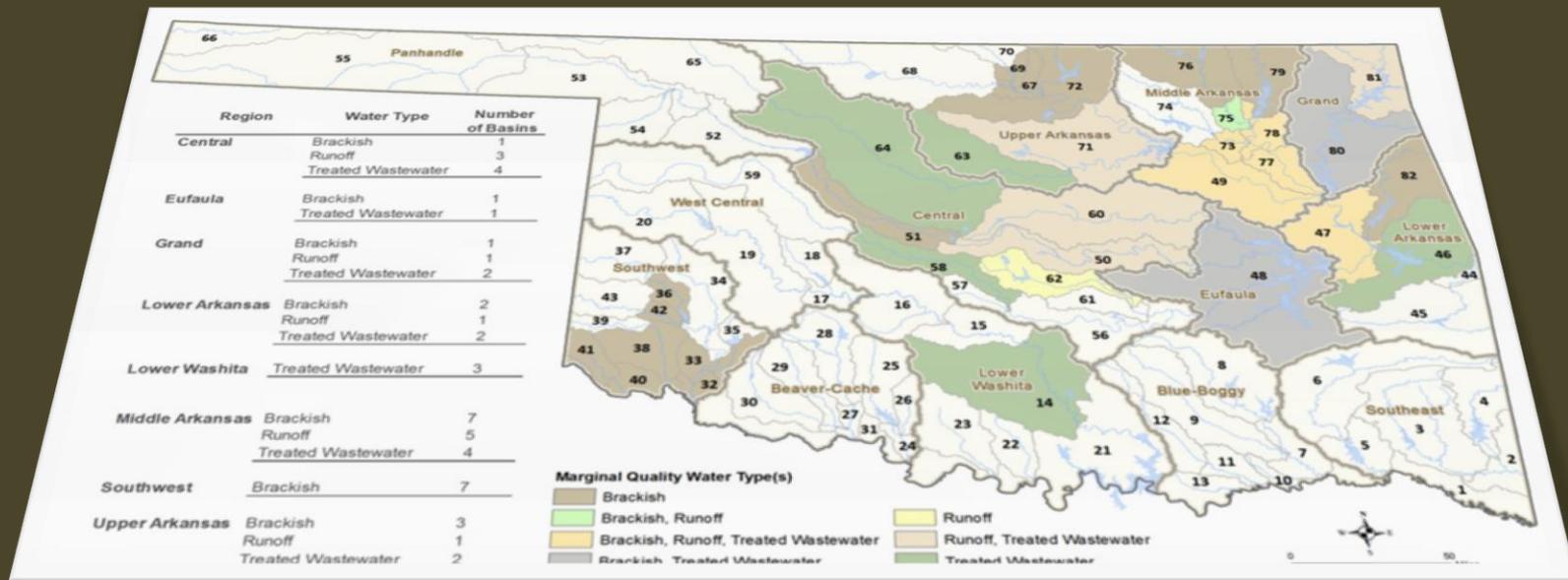


2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

- Investigation of marginal quality sources (brackish groundwater, treated wastewater, oil/gas production water, stormwater runoff, etc.)

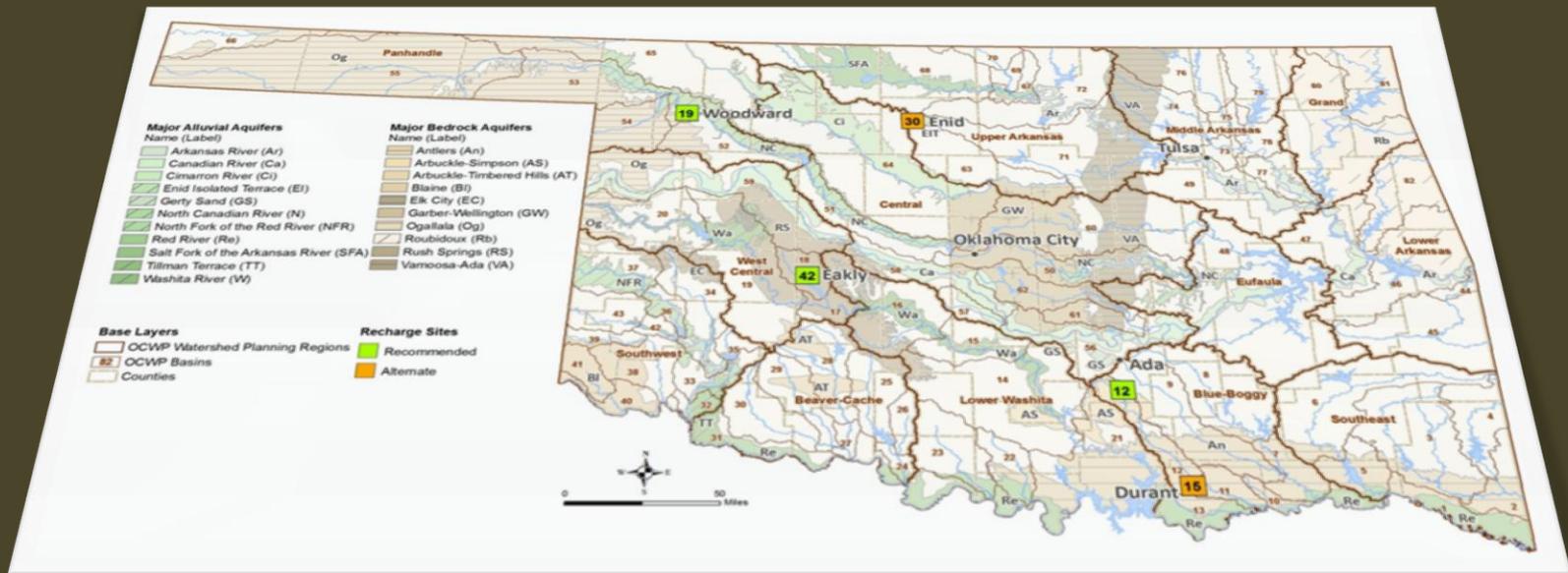


2012 Update of the OCWP

Minimizing Drought Impacts

Conservation & Augmentation

- Study of potential artificial aquifer recharge sites



2012 Update of the OCWP

Minimizing Drought Impacts

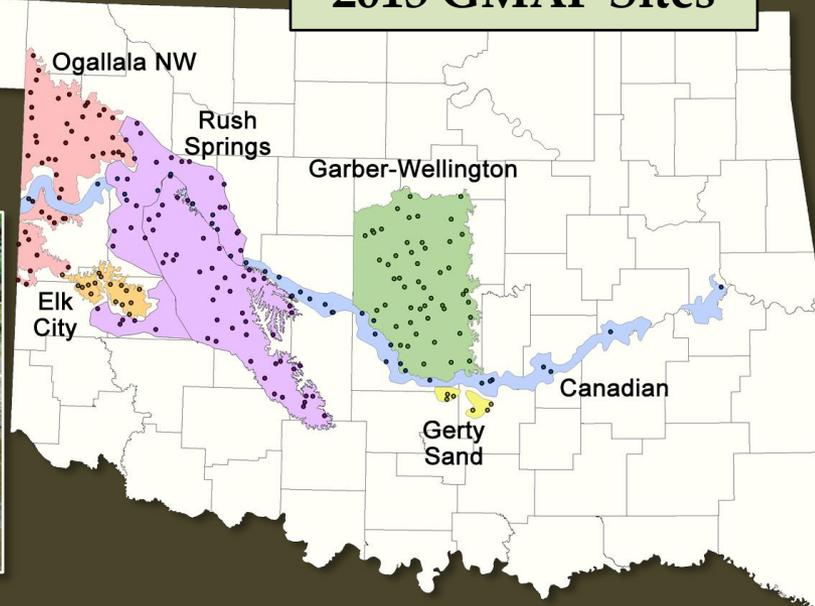
Enhancing Data and Studies

OCWP
Priority

- Increased funding for data collection and modeling of surface and groundwater sources



2013 GMAP Sites



2012 Update of the OCWP

Minimizing Drought Impacts

What's Next?

– Work more directly with Oklahoma water systems and establish resources to create “Drought-Proof Communities”

- Encourage regionalization of supplies, where feasible
- Provide financing for leak detection projects, conservation, construction of reservoir storage, etc.





State of Oklahoma

OWRIB

WATER RESOURCES BOARD
the water agency