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Managing Water in the West

Activities & Opportunities

Oklahoma Governor's Water Conference, October 12, 2016

Reclamation's Lugert-Altus Reservoir, Oklahoma, 2012

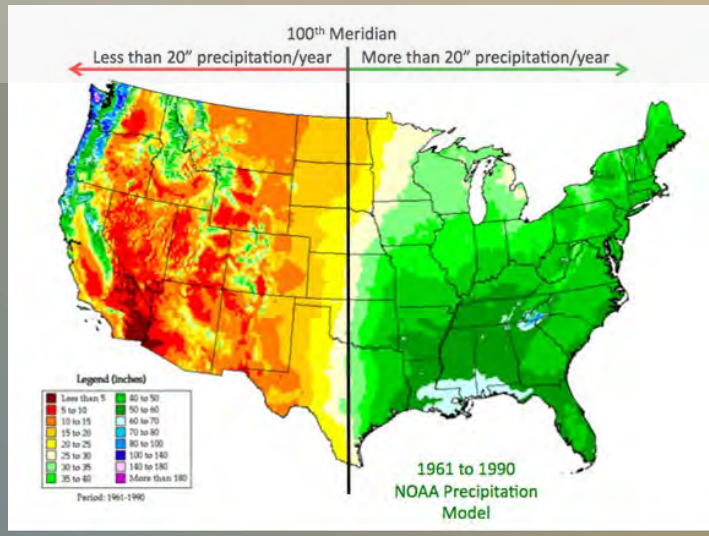
U.S. Department of the Interior
Bureau of Reclamation

Presentation Outline

- Drought planning at the basin level
  - Upper Red and Upper Washita River Basin Studies, SW Oklahoma
- Drought planning at the local level
  - Foss Reservoir Drought Contingency Plan
  - Arbuckle-Simpson Aquifer Drought Contingency Plan
- Drought Resiliency planning and technical assistance
  - Water reuse tech assist. with Arbuckle Master Conservancy District
  - Piloting treatment of hexavalent chromium, City of Norman
- Programs and opportunities

Area and Mission

- Constructed more than 600 dams & reservoirs
- Provide water for 60% of nation's vegetables and 25% of fruits/nuts
- Provide drinking water to 31 million people annually
- 90 million visitor days per year
- The 2nd largest hydro producer, with 58 hydropower facilities producing 41 billion kwh



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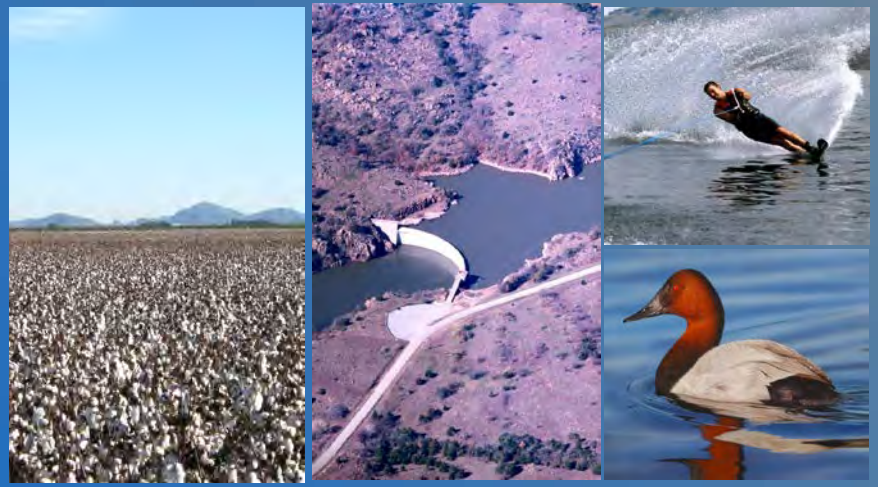
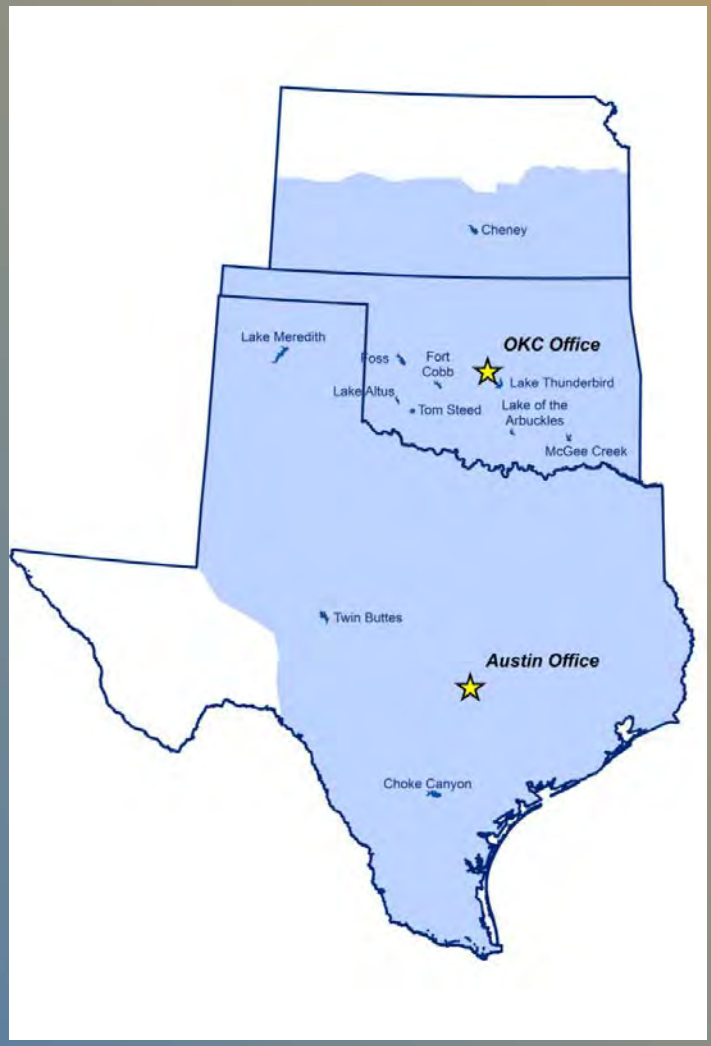
Oklahoma-Texas Area Office

- 11 reservoirs with a total capacity of 4.2 million acre-feet.
- M&I - 539,000 acre-ft/yr to about 2.7 million customers.
- Irrigation – 111,000 acre-ft/yr for about 63,000 acres.
- 5 million visitor-days each year.





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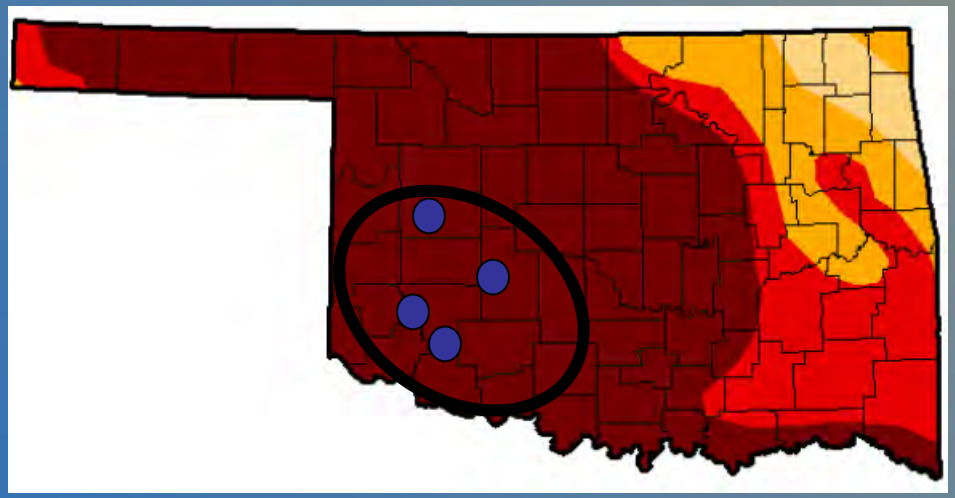
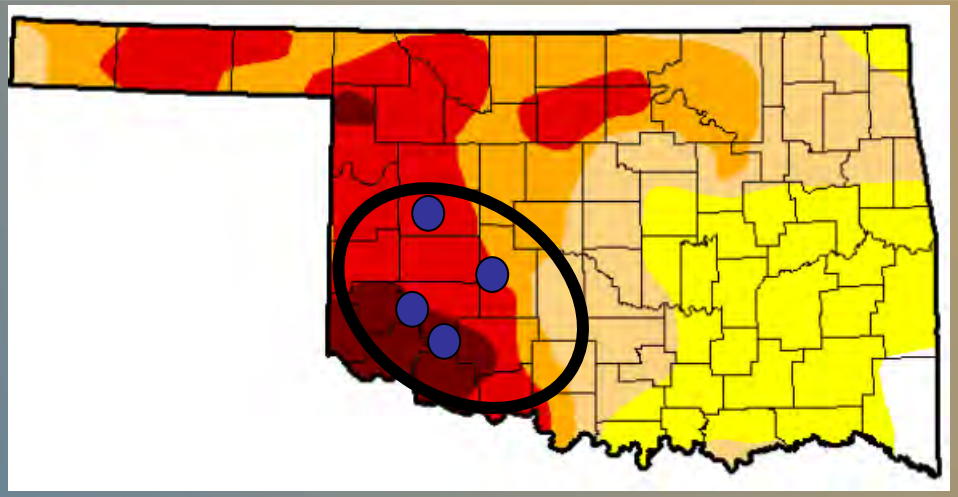
Basin-Wide Planning: Problems & Needs

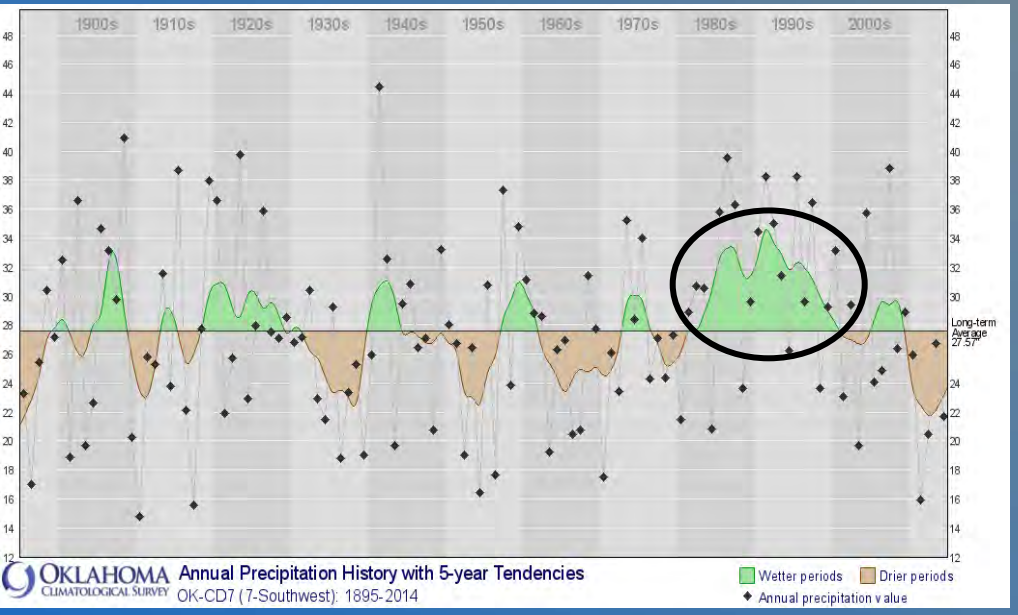
Severe and prolonged drought affecting four Reclamation reservoirs

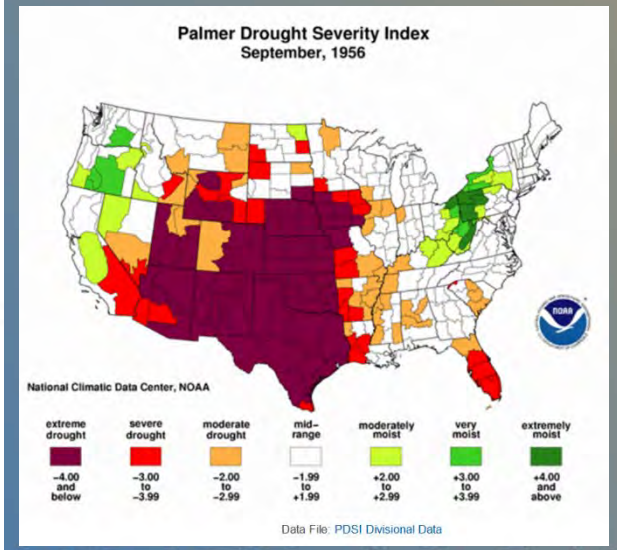


Drought Monitor, August 2011



Drought Monitor, March 2015





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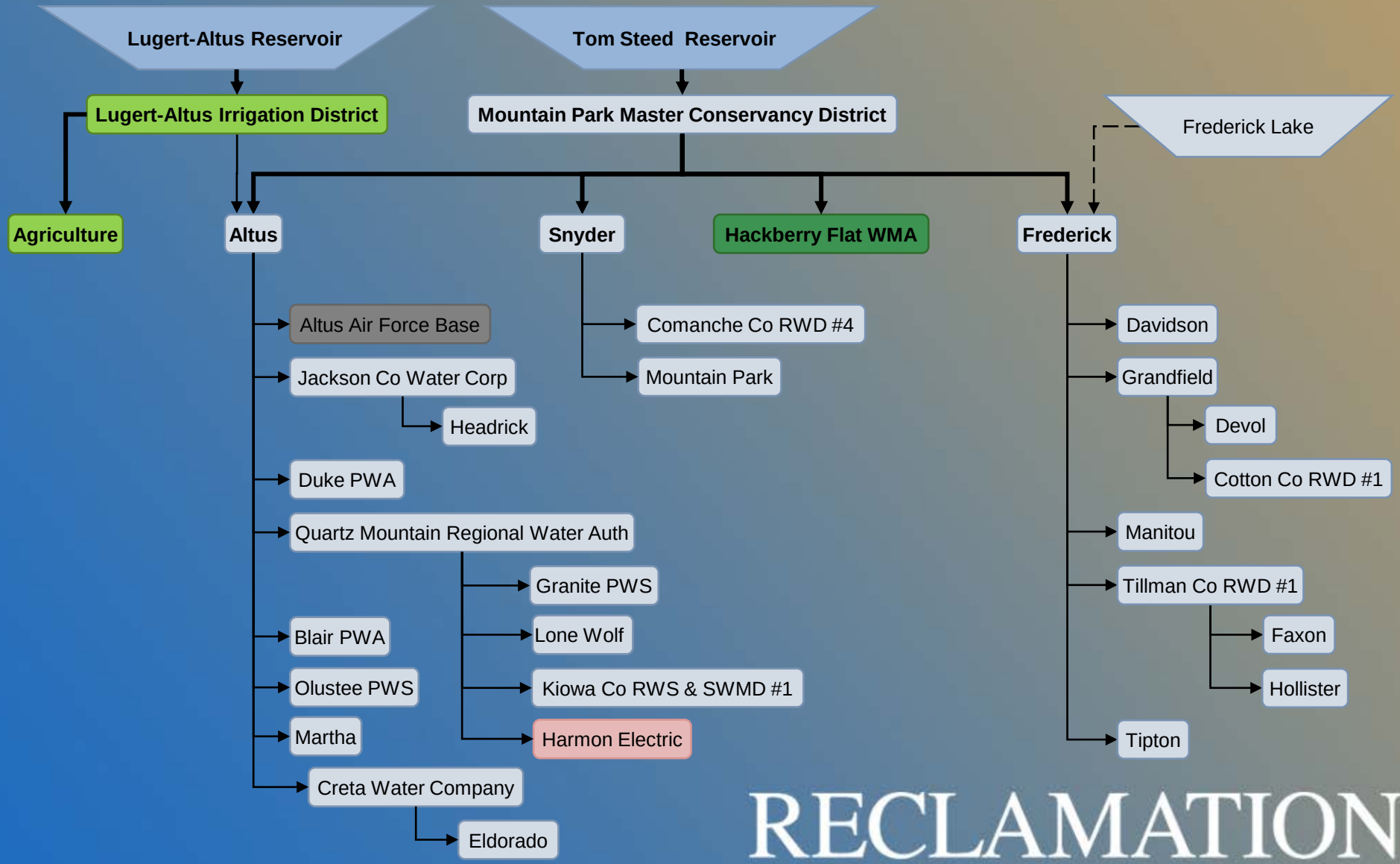
Impacts on M&I, Agriculture

Foss Reservoir

Tom Steed Reservoir

Customers and Water Users



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Impacts on Recreation, Fish & Wildlife

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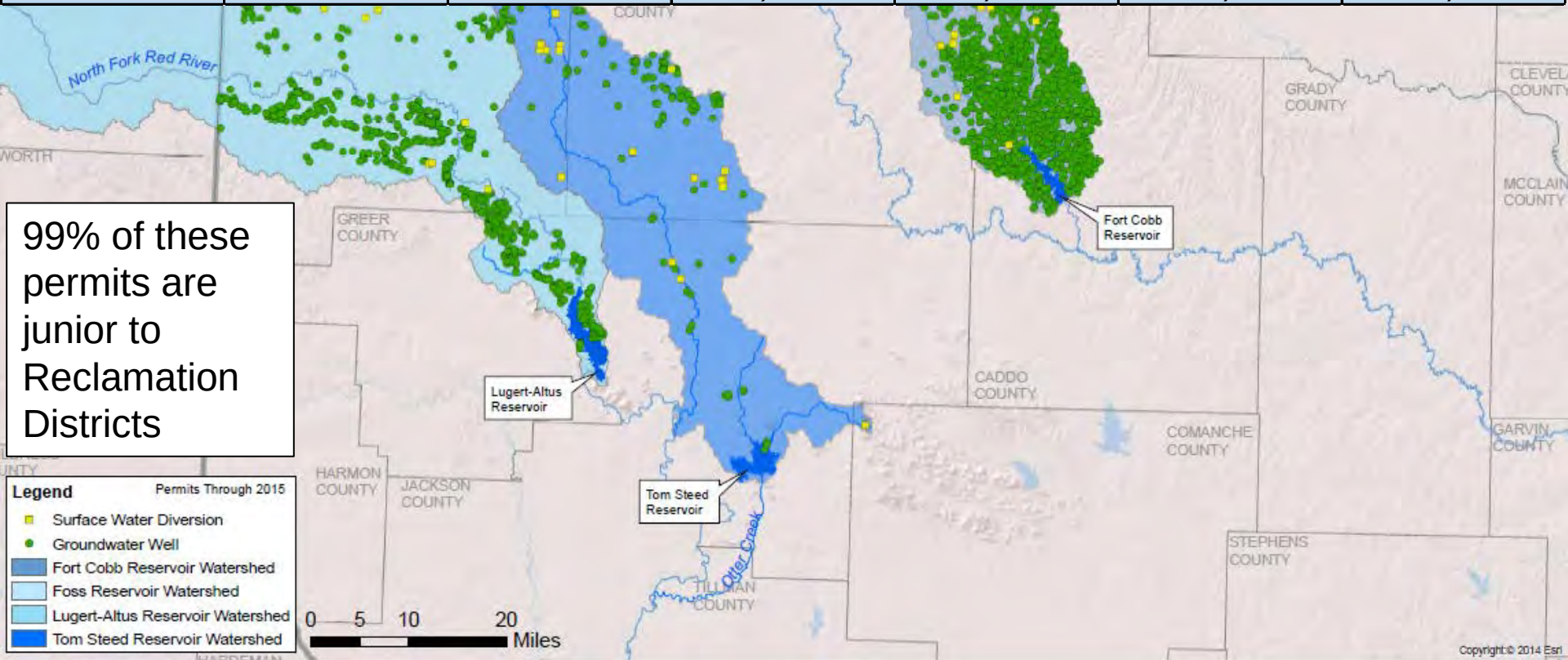
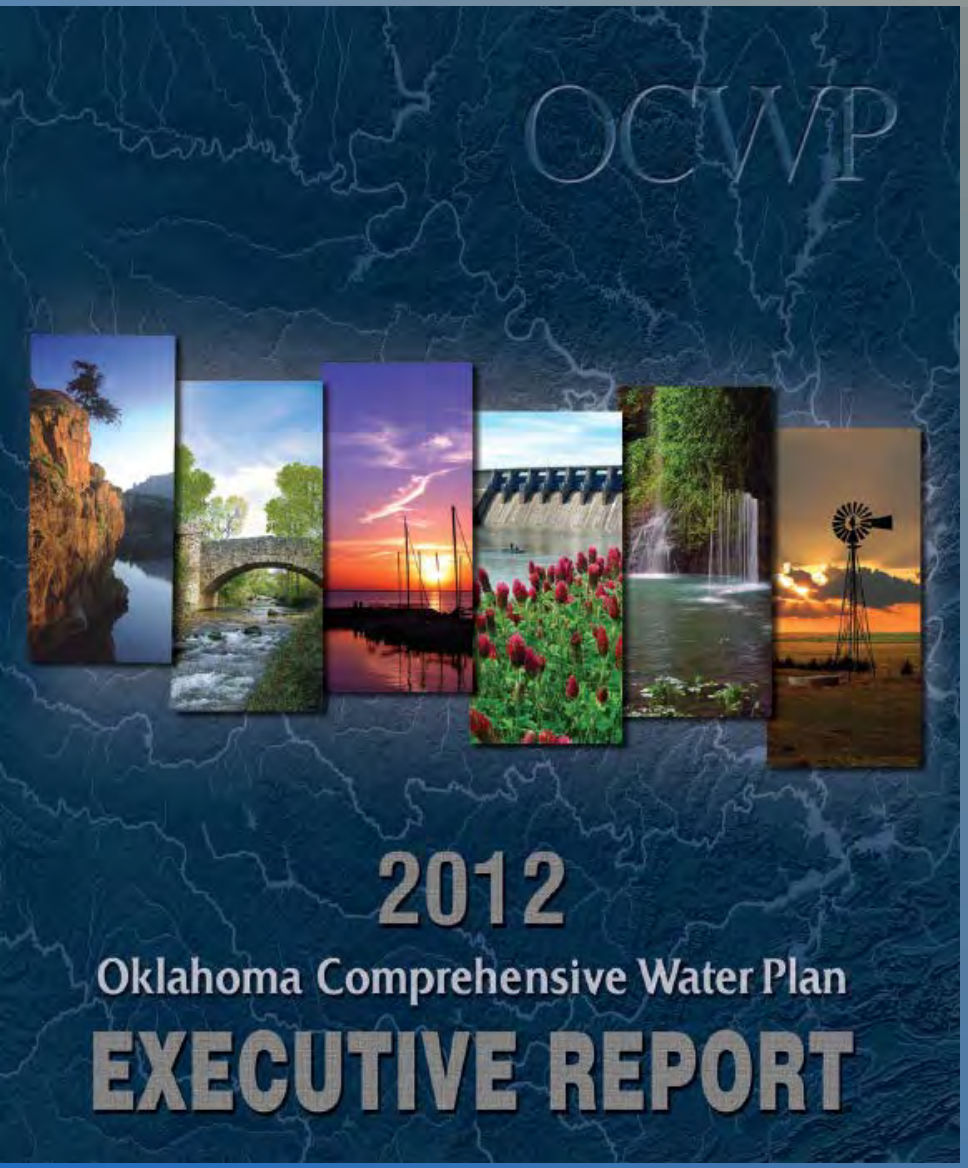
Evaluation of Permits Above Reclamation Reservoirs

	District Permit	No. of SW Permits	SW Permitted Amount (AFY)	No. of GW Permits	GW Permitted Amounts (AFY)	Total Permitted Amounts (AFY)
Foss	17,634	47	5,057	271	105,495	**110,552**
Fort Cobb	18,000	7	893	773	148,029	**148,922**
Mountain Park	16,100	5	2,700	40	9,019	**11,719**
Lugert-Altus	85,630	9	931	379	102,058	**102,989**
Total		***68***	***9,581***	***1,463***	***364,601***	***374,181***



Solutions!!

Oklahoma Comprehensive Water Plan (2012)



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Solutions!!

Beginnings of Collaborative Basin Studies in SW Oklahoma

High Priority Recommendations, OK Water Plan 2012

To address projected increases in water demands and related decreases in availability, as well as to ensure the fair, reliable, and sustainable allocation of Oklahoma's water supplies, the State Legislature should provide stable funding to the OWRB to implement the following recommendations:

Basin Study Objective

- Address by 2022 the growing backlog of statutorily-required maximum annual yield studies and overdue 20-year updates on groundwater basins within the state, including validation of any interactions between surface and groundwater sources, to accurately determine water available for use.

Basin Study Objective

- Develop stream water allocation models on all stream systems within the state to assess water availability at specific locations, manage junior/senior surface water rights under various drought scenarios, anticipate potential interference between users, and evaluate impacts of potential water transfers.

Basin Study Objective

- Utilize water use stakeholders (including input from the recommended Regional Planning Groups), researchers, and other professionals to develop recommendations, where appropriate, regarding:
  a. consideration of a seasonal (rather than annual) stream water allocation program to address seasonal surface water shortages and water rights interference;

Basin Study Objective

  b. consideration of a conjunctive management water allocation system to address the potential decline in surface water flows and reservoir yields resulting from forecasts of increased groundwater use in areas where these sources are hydrologically connected;
  c. conditioning junior water use permit holders to discontinue their diversion of water during predetermined periods of shortage (i.e., "trigger" points) to enhance the availability of dependable yields in appropriate reservoirs and minimize interference between riparian users and users of reservoir storage; and

Basin Study Objective

  d. consideration of a more conservation-oriented approach in the calculation of groundwater basin yields and allocation of groundwater use permits, including the consideration of more sustainable use and development of groundwater supplies, allocation banking coupled with an accurate method of accounting, irrigation practice improvements, and adoption of new irrigation technology.

Solutions!!

Three Decades of Examples Across the Western U.S.

Dividing the Waters

THE NATIONAL JUDICIAL COLLEGE

Mitigating the Exercise of Water Rights and Water Use

Conjunctive Management of Surface and Ground Water Resources In the Western United States

Josh Hazard

IDAHO Department of Water Resources

Idaho Conjunctive Management Rules & Ground Water District Formation

Hailey, Idaho

March 7, 2014

Tim Luke, IDWR

SOUTH PLATTE BASIN WATER ADMINISTRATION

Hundreds of wells curtailed 2005

HB-1278 Commissions alluvial aquifer study 2012

2008 High groundwater damaging property

1894 1911 1928 1945 1962 1979 1996

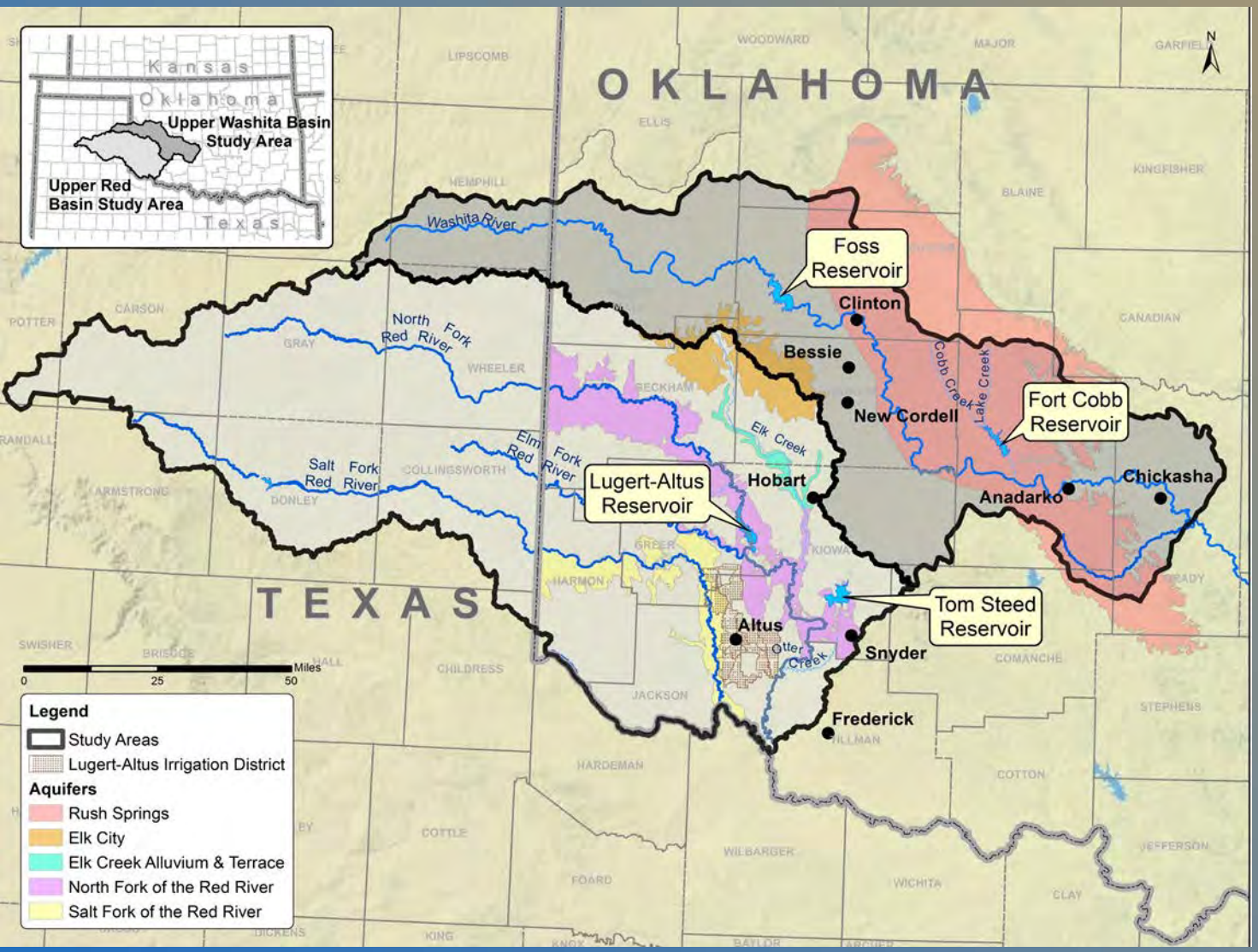
Drought 1950 - 1960

Wet Period 1980 - 2000

Drought of Record 2002 - 2007

Good Science
Good Tools

Upper Washita and Upper Red Basins



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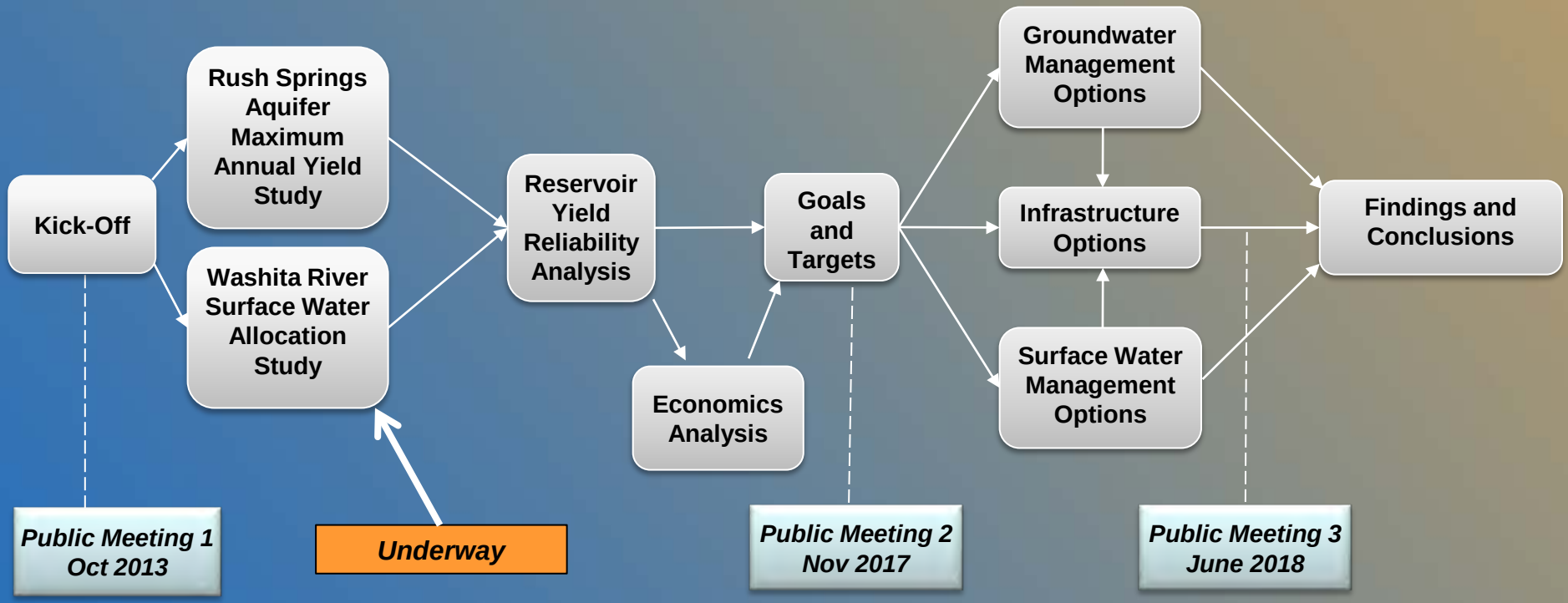
Upper Washita Basin Study, OK (FY 12 – FY 18)

- Reclamation, Oklahoma Water Resources Board, Foss Reservoir Master Conservancy District, Fort Cobb Reservoir Master Conservancy District
- $350,000 (Federal) + $450,000 (non-Federal) = $800,000

Upper Red River Basin Study, OK (FY 14 – FY 18)

- Reclamation, Oklahoma Water Resources Board, Lugert-Altus Irrigation District, Mountain Park Master Conservancy District
- $640,000 (Federal) + $860,000 (non-Federal) = $1,500,000

Basin Study Conceptual Flow Chart



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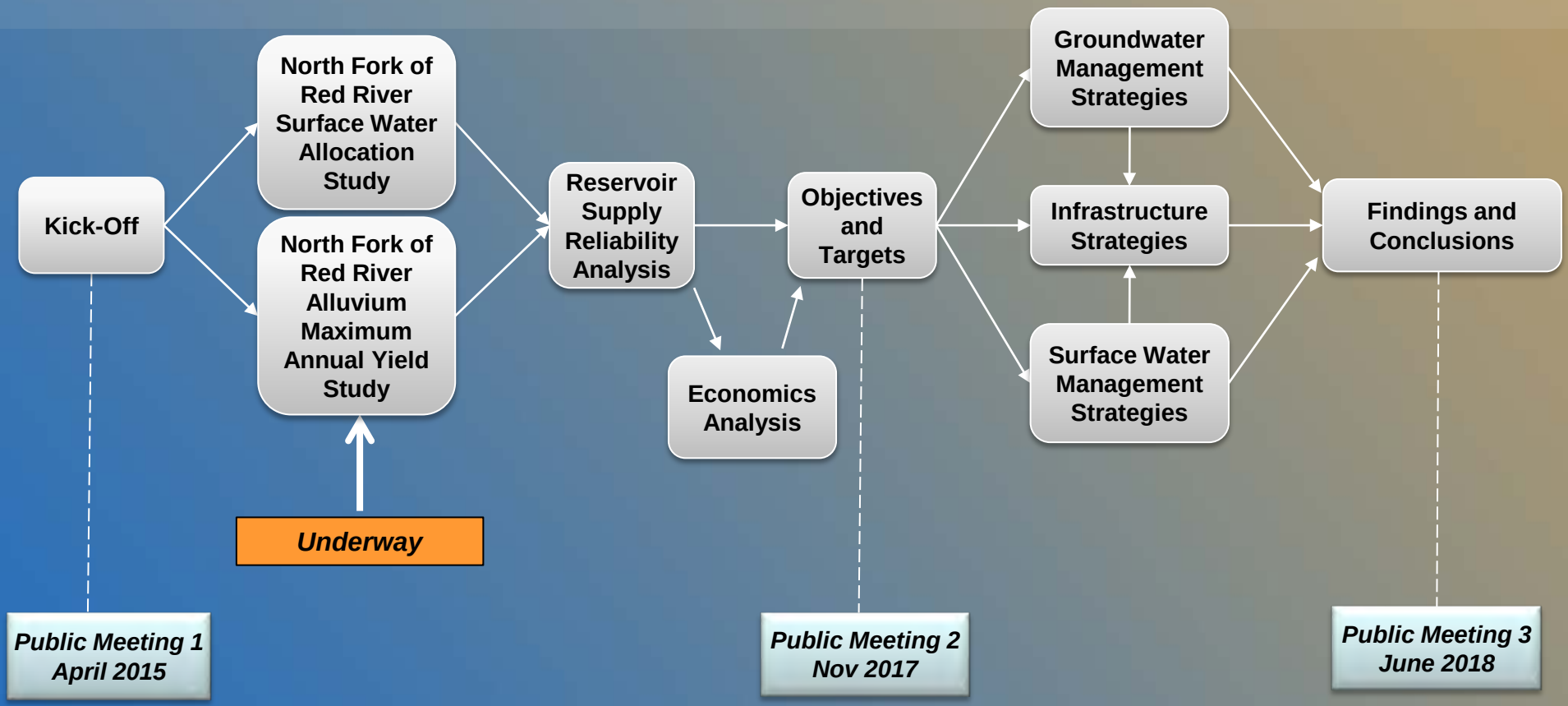
Basin Study Conceptual Flow Chart



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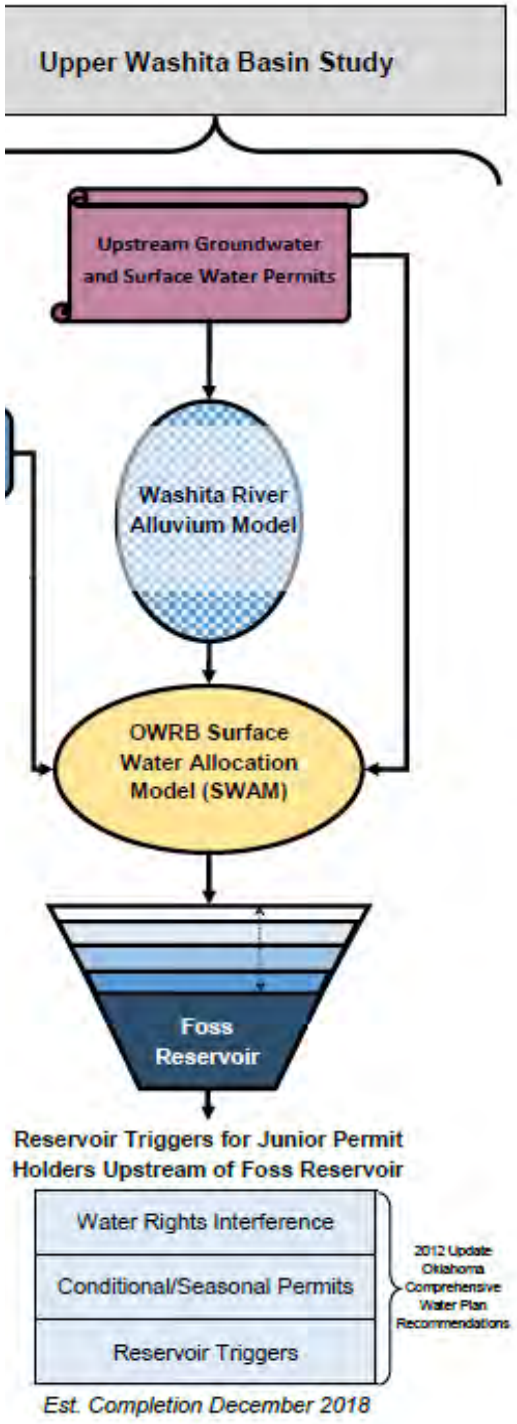
Local Planning

Foss Reservoir Drought Contingency Plan



Foss Drought Contingency Plan

Vulnerabilities

Infrastructure

Treatment

Distribution

Meeting Peak Demands

Upstream Uses

Water Quality

Overages

Est. Completion July 2017

Mitigation & Response

Demand Triggers

Conservation

Rate Restructuring

Facility Upgrades

Redundancy

Water Reuse

Interconnections

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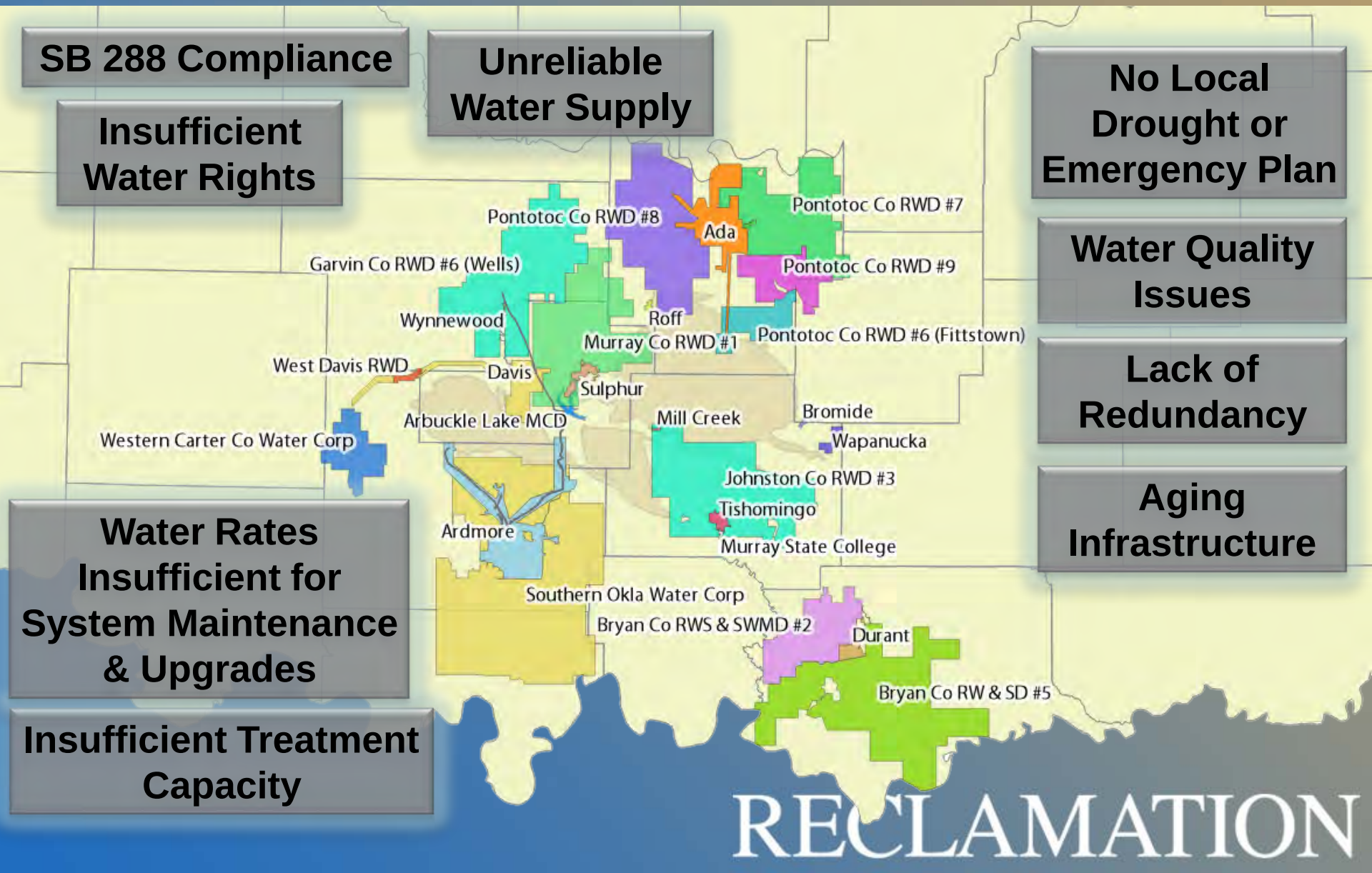
Arbuckle-Simpson Drought Contingency Plan

Vulnerabilities



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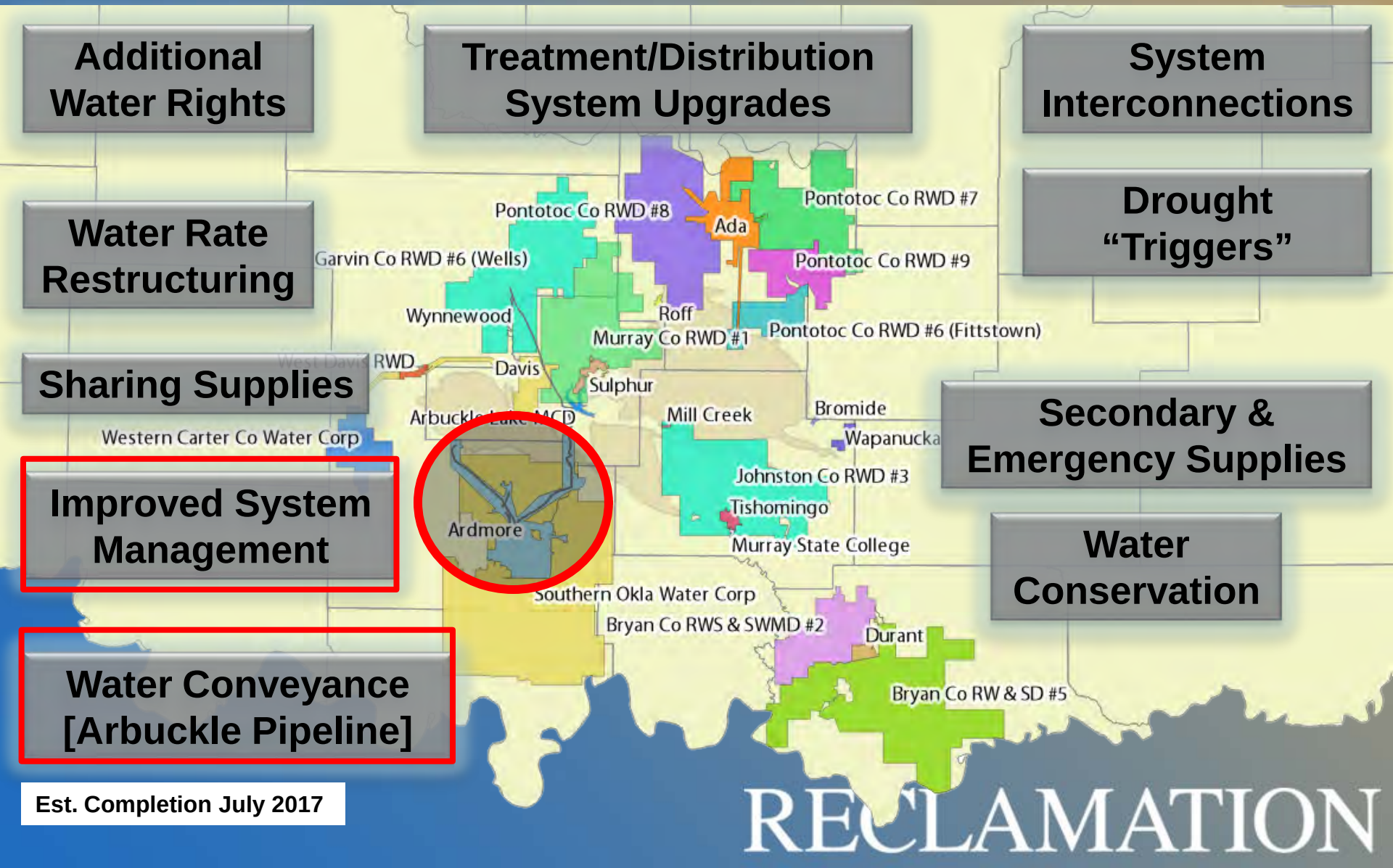
Arbuckle-Simpson Drought Contingency Plan

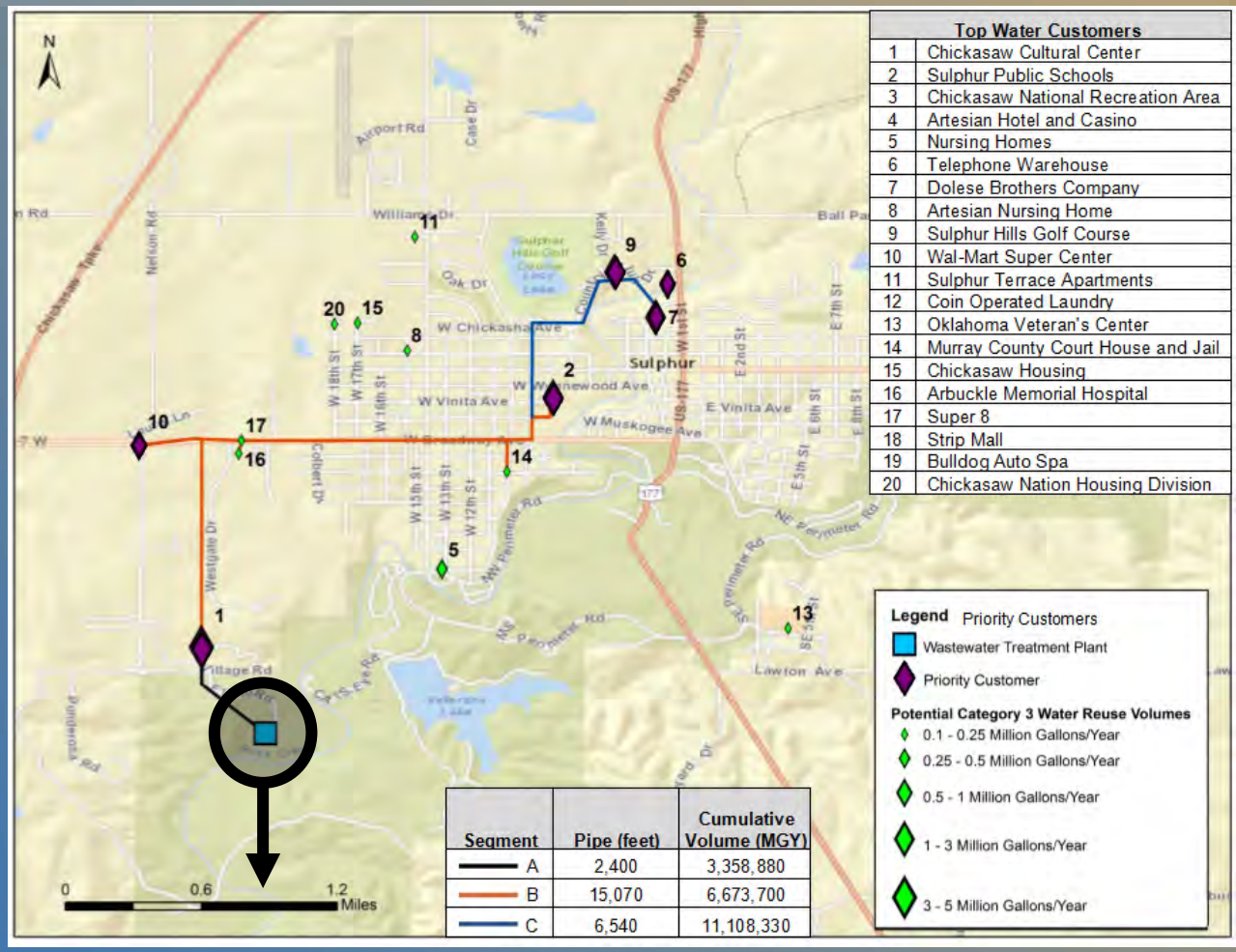
Potential Strategies



Arbuckle Master Conservancy District

Water Reuse : "Direct, Non-potable"

- Category 2 & 3 uses (OAC 252)
- Partners
  - Arbuckle MCD
  - Chickasaw Nation
  - Sulphur



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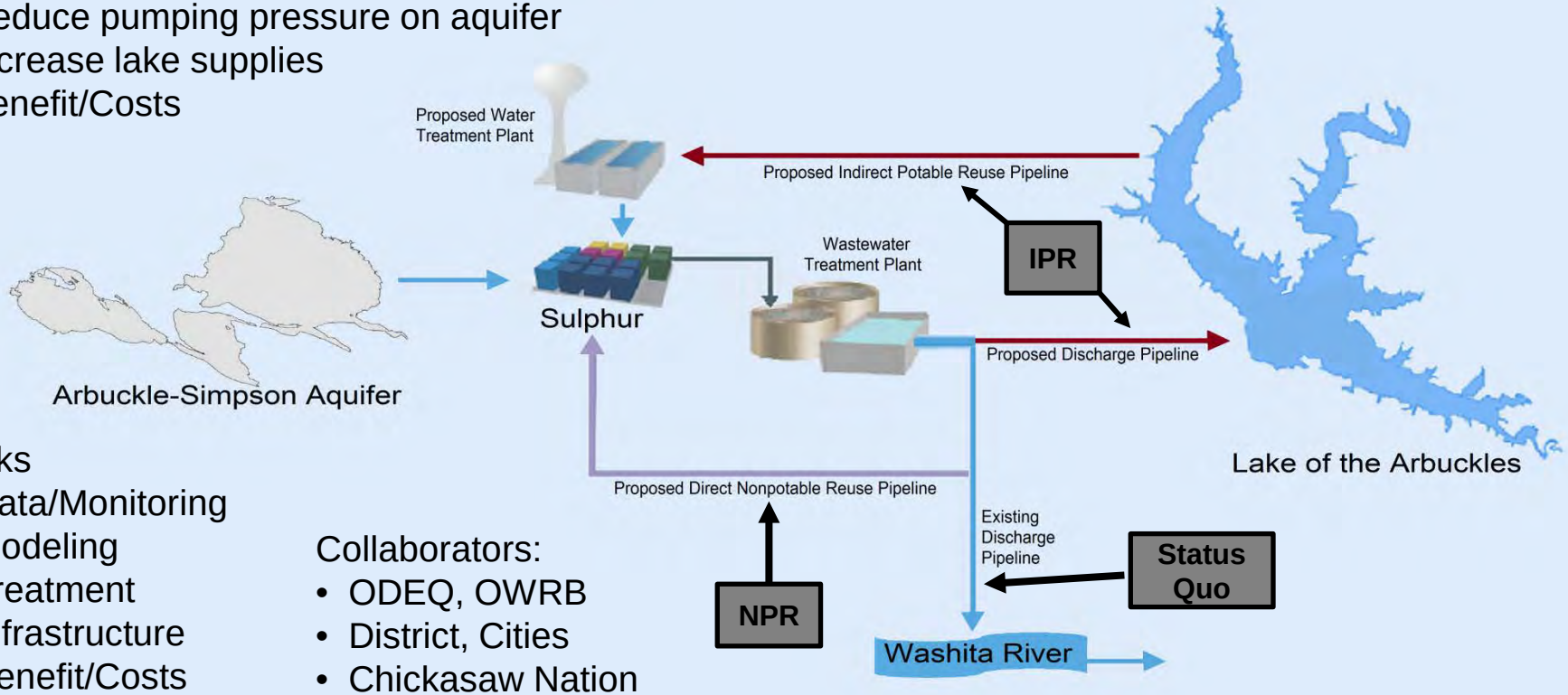
Arbuckle Master Conservancy District

Water Reuse: "Indirect, Potable"

Goals:

- Reduce pumping pressure on aquifer
- Increase lake supplies
- Benefit/Costs



Tasks

- Data/Monitoring
- Modeling
- Treatment
- Infrastructure
- Benefit/Costs
- Public Outreach

Collaborators:

- ODEQ, OWRB
- District, Cities
- Chickasaw Nation
- OSU, OU

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City of Norman, Oklahoma

Hexavalent Chromium Pilot Treatment

Bureau of Reclamation: Strong base anion exchange and reduction/coagulation/ filtration reduction to remove Cr6; also waste minimization

Carollo Engineers: Biological Treatment Unit, Norman WWTP to remove Cr6, nitrate, perchlorate, organics, uranium, arsenic

Results expected in 2017

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Hats off to good planning!

- ✓ Foss and Fort Cobb Reservoir MCDs
- ✓ Mountain Park MCD, Lugert-Altus ID
- ✓ Arbuckle-Simpson Stakeholders
- ✓ Arbuckle Master Conservancy District, Chickasaw Nation
- ✓ Central Oklahoma Master Conservancy District, City of Norman
- ✓ Oklahoma Water Resources Board

Thank You!

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Announcements for FY 2017 coming in Nov/Dec 2016!
Drop by our booth

Programs & Opportunities

WaterSMART Program

- Conservation & Efficiency Grants (up to $1 million)
- Title XVI Feasibility Study Grants (up to $450K)
- Basin Studies Program

Drought Response Program

- Drought Contingency Planning Grants (up to $200K)
- Drought Resiliency Project Grants (up to $300K)

Research and Development Program

- Desalination & Water Purification Research Program
- Title XVI – Desktop, treatment optimization, piloting
- Science & Technology Program