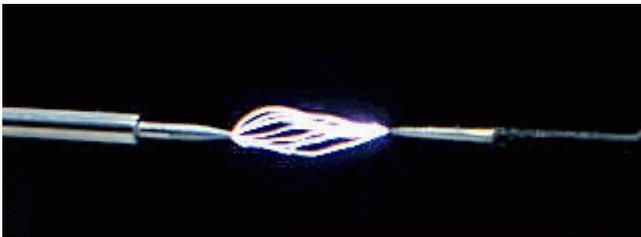
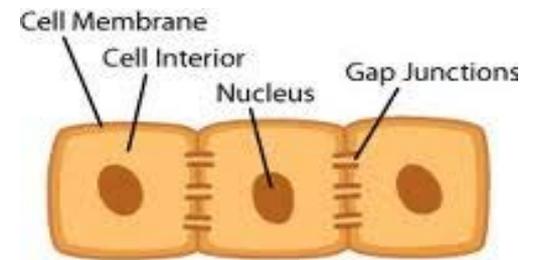


# Arkansas Water Plan Gap Analysis

February 25, 2014

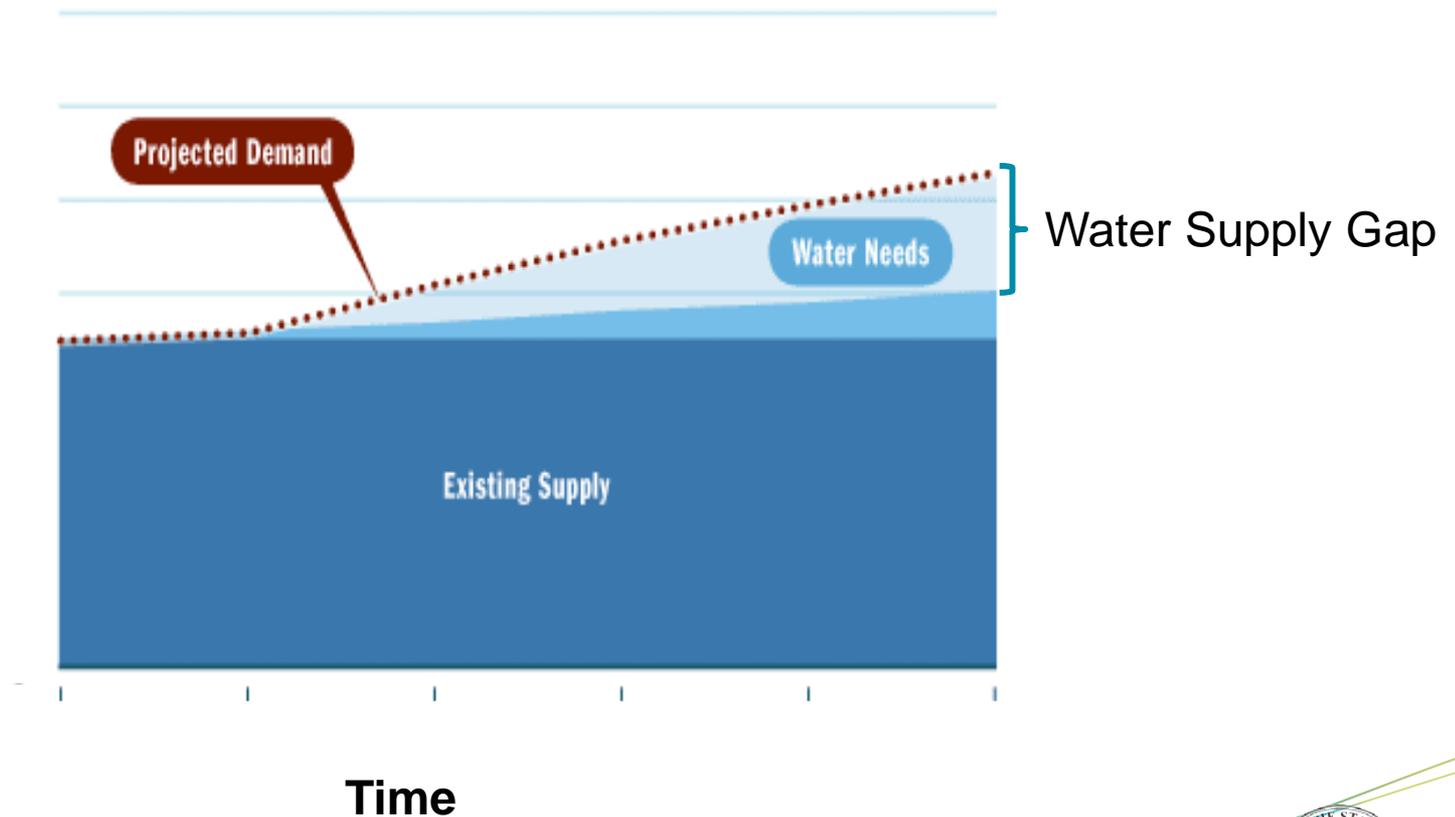
# Low Gap Arkansas



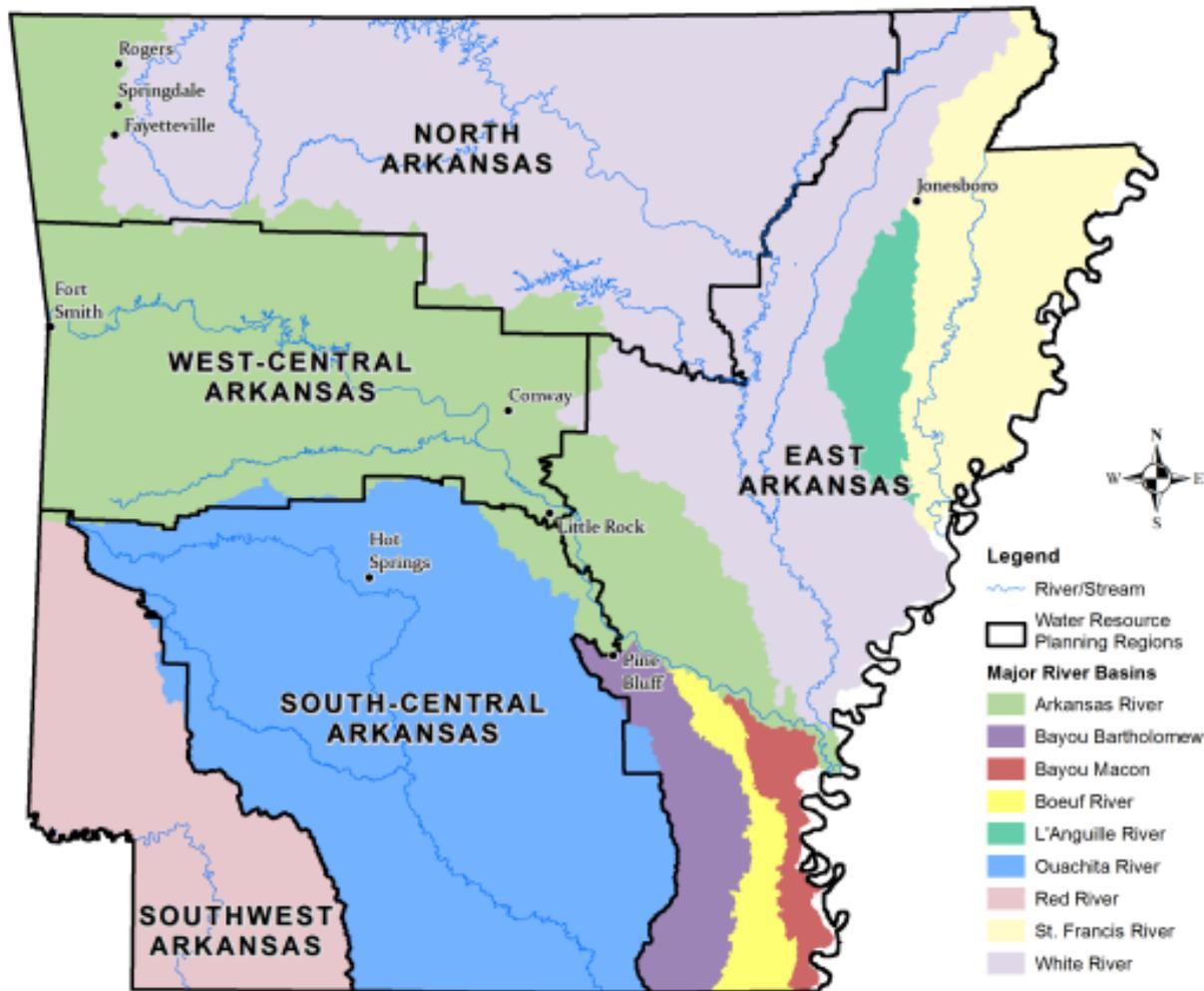
## What is a Gap?



# Example Water Supply Gap



# Large Watersheds by Region



# Gap Analysis Objectives

- Quantify gaps in water supply associated with the 2050 planning horizon across the state
- Identify areas for which the Regional Water Resource Planning groups should consider options for addressing gaps
- **Uses Data from AWP Reports**
  - Water Demand Forecast Report
  - Water Availability Report
    - Groundwater Modeling
    - Excess Surface Water Calculations

# Surface Water Availability

- Surface water currently provides about 30% of Arkansas water supply
- Available surface water quantified as “excess surface water”
- Excess Surface Water (A.C.A. § 15-22-304):  
“Twenty-five percent of that amount of water available on an average annual basis above the amount required to satisfy existing and projected needs.”

## Instream Flow Requirements Include:

- Fish & Wildlife Flows (Arkansas Method)
- Water Quality (7Q10)
- Navigation
- Interstate Compacts

**USGS Historical Gaged Streamflow**

**Instream Flow Requirements**

75%  
Unallocated

25% Available Excess Surface Water

**Future Water Demands**

## Historical Streamflow Includes:

- Existing Uses
  - Riparian and Non-riparian Uses
  - Federal Water Project Needs
  - Firm Yield of All Affected Reservoirs
- Aquifer Recharge Requirements

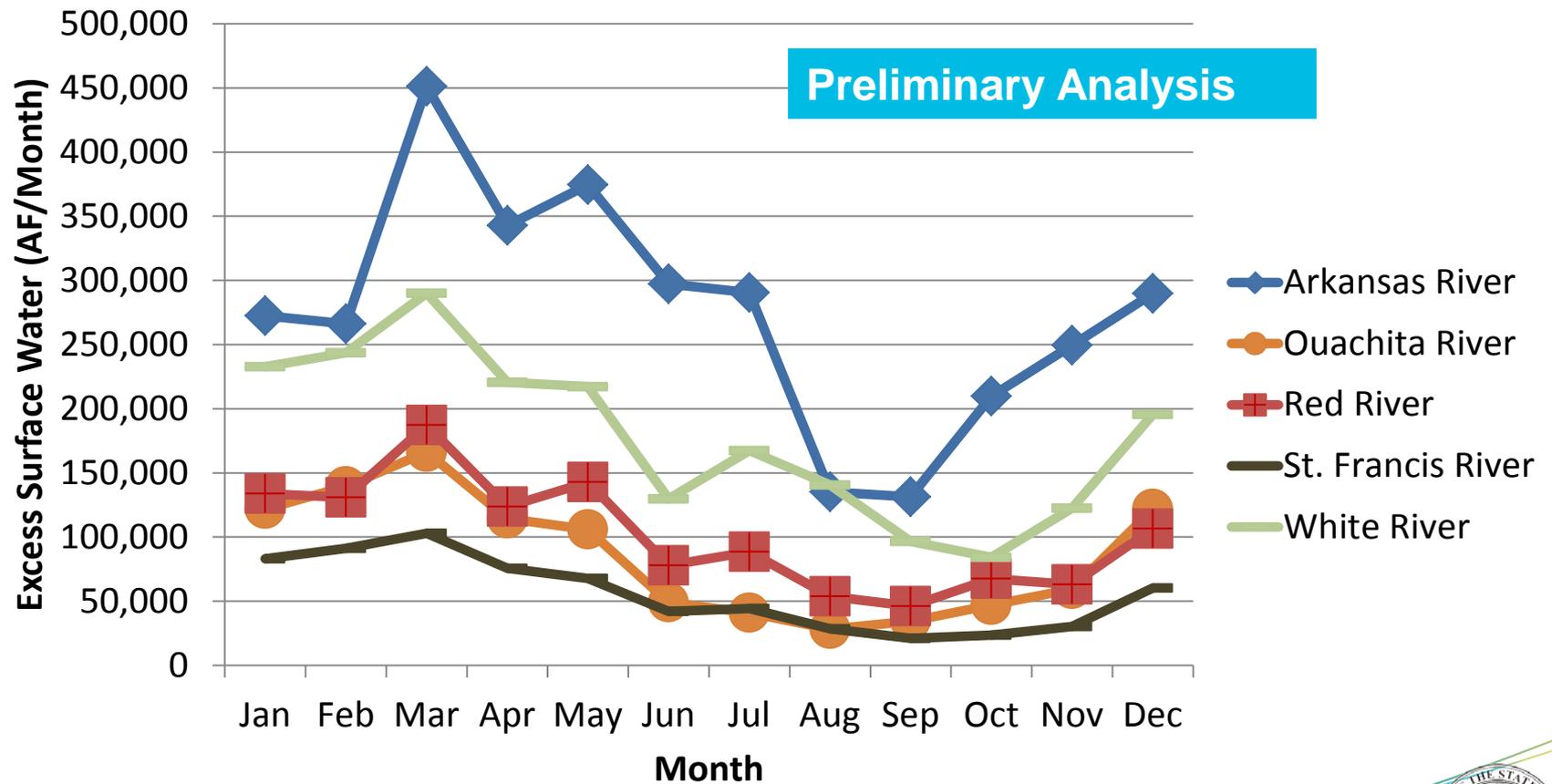
# Excess Water, by River Basin

River Basin	Excess Water (Million ac-ft/yr)
Arkansas River	3.3
Delta	1.6
Ouachita River	1.0
Red River	1.1
White River (Cache)	1.7

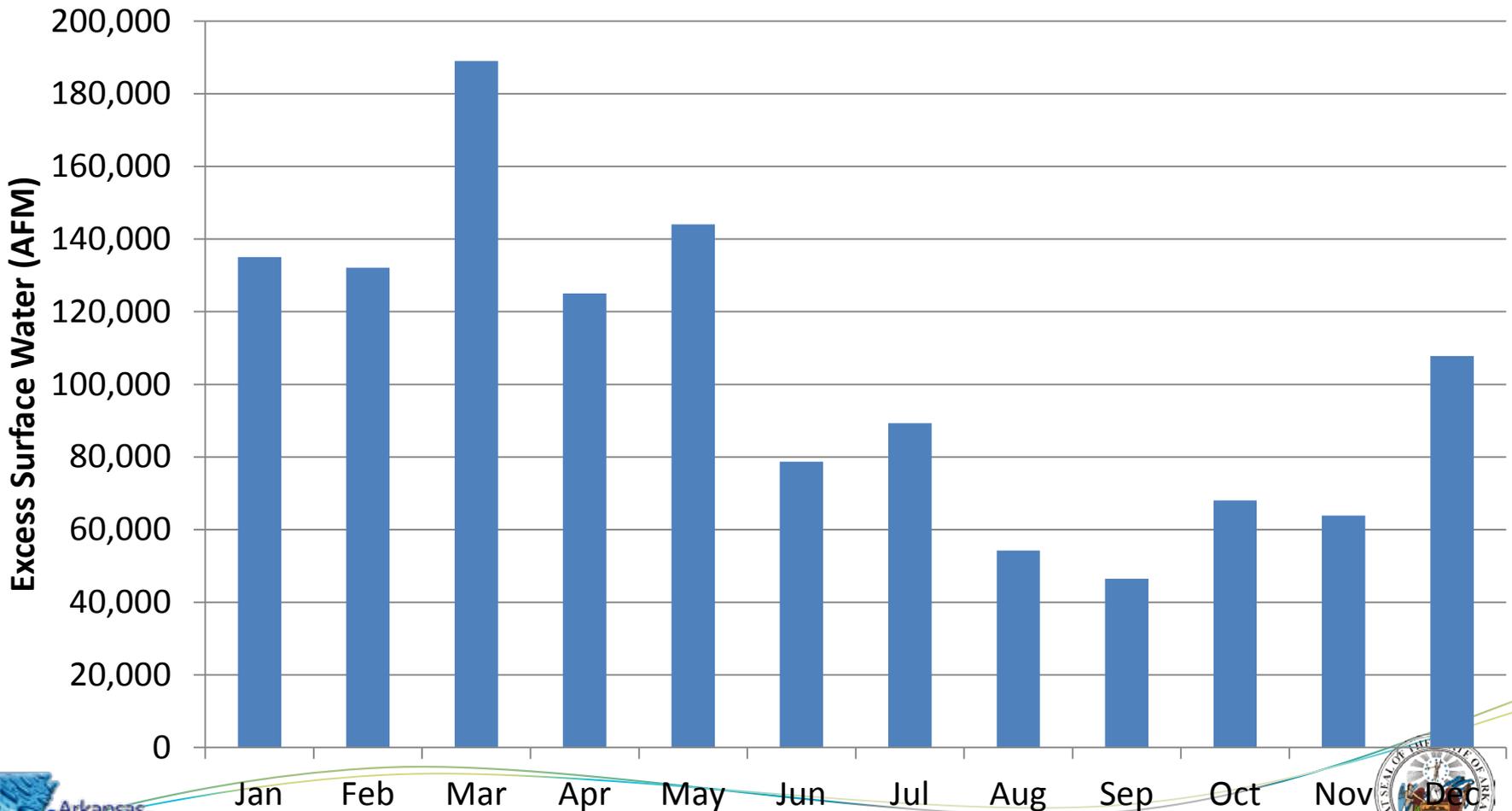
# Surface Water Gap Analysis

- Excess surface water is available in every river basin – on an average annual basis
- Excess Surface Water was recalculated at a monthly timestep to evaluate the seasonal availability of surface water in each major basin
- The summer months have lower flows, so there is less water that meets the definition of “excess”

# Monthly Excess Surface Water – Large Rivers



# Southwest Planning Region Monthly Excess Surface Water



# Southwest Region Planning Area Surface Water Gap

- On an average annual basis, there is excess surface water available
- There is also excess water on a monthly basis
- For the Southwest Planning Area, there is no surface water gap is projected for 2050



# Groundwater Gap Analysis

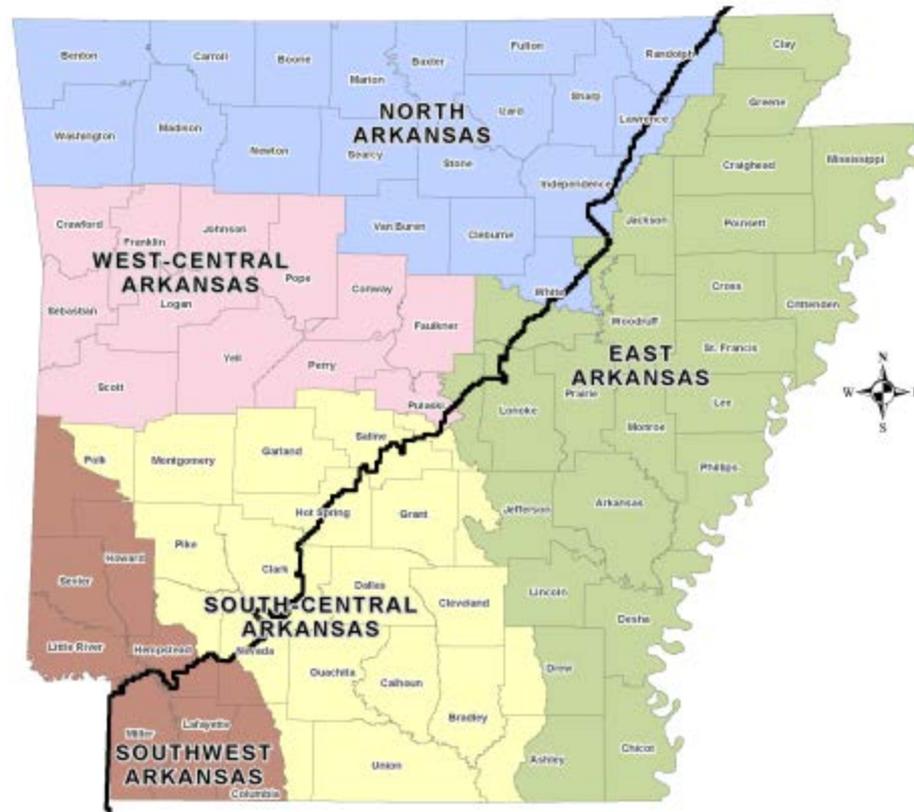
**Groundwater Gap =**

**Groundwater Demand – Groundwater Yield**

**Groundwater Demand** is calculated as the sum of 11 demand sectors from the Water Demand Forecast Report

**Groundwater Yield** is projected from the Mississippi Embayment Regional Aquifer Study (MERAS) model developed by the USGS and from current withdrawals outside the modeled area

# MERAS Model Boundary

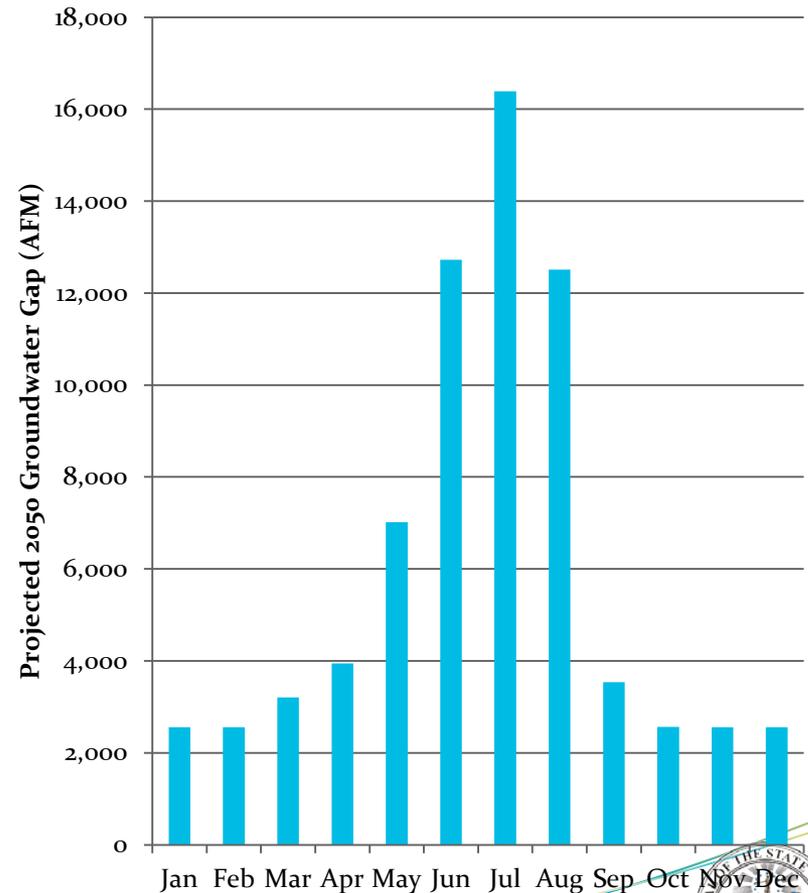


# Groundwater in Areas Outside the MERAS Model

- Comprehensive description of groundwater occurrence and supply in USGS report “Aquifers of Arkansas” (expected Spring 2014)
- General conclusions are that water supplies are limited by low yield and water quality concerns
- Groundwater availability should be assessed on a local scale for future development

# South-central Planning Region Groundwater Gap Summary

- The projected 2050 groundwater gap is about 72,000 AFY
- The gap is projected to occur in the summer months



# Combined Source Gap

- Combines all available supply sources to meet all identified demand
- Combined Source Gap assumes that excess surface water will be put to use to meet groundwater demand within the same basin
- **Combined Source Gap =**  
**Total Groundwater Gap - Excess Supply Available**

# Planning with the Combined Source Gap

- In Regional Planning Areas where there is no Combined Source Gap
  - There is sufficient combined water resources to meet demands
  - The infrastructure necessary to use surface water to meet demands may not be in place
- In Regional Planning Areas where there is a Combined Source Gap
  - The water resources are not sufficient to meet demands
  - Additional water management recommendations should be considered (e.g., storage, reuse, conservation, etc.)

# Combined Source Gap Summary – Southwest Regional Planning Area

- There is no projected Combined Source Gap projected for the Southwest Regional Planning Area
- There is projected to be about 1.1 Million AFY of excess surface water available to meet water demands
- The infrastructure necessary to use the excess surface water to meet groundwater demand may not be in place

# Comments

# Questions