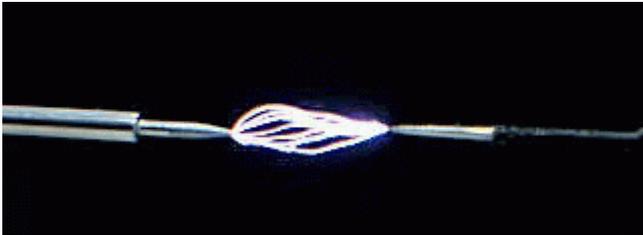
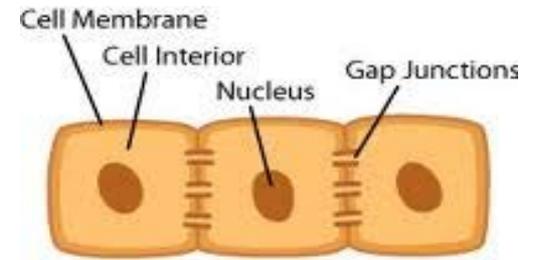


Arkansas Water Plan Gap Analysis

February 24, 2014

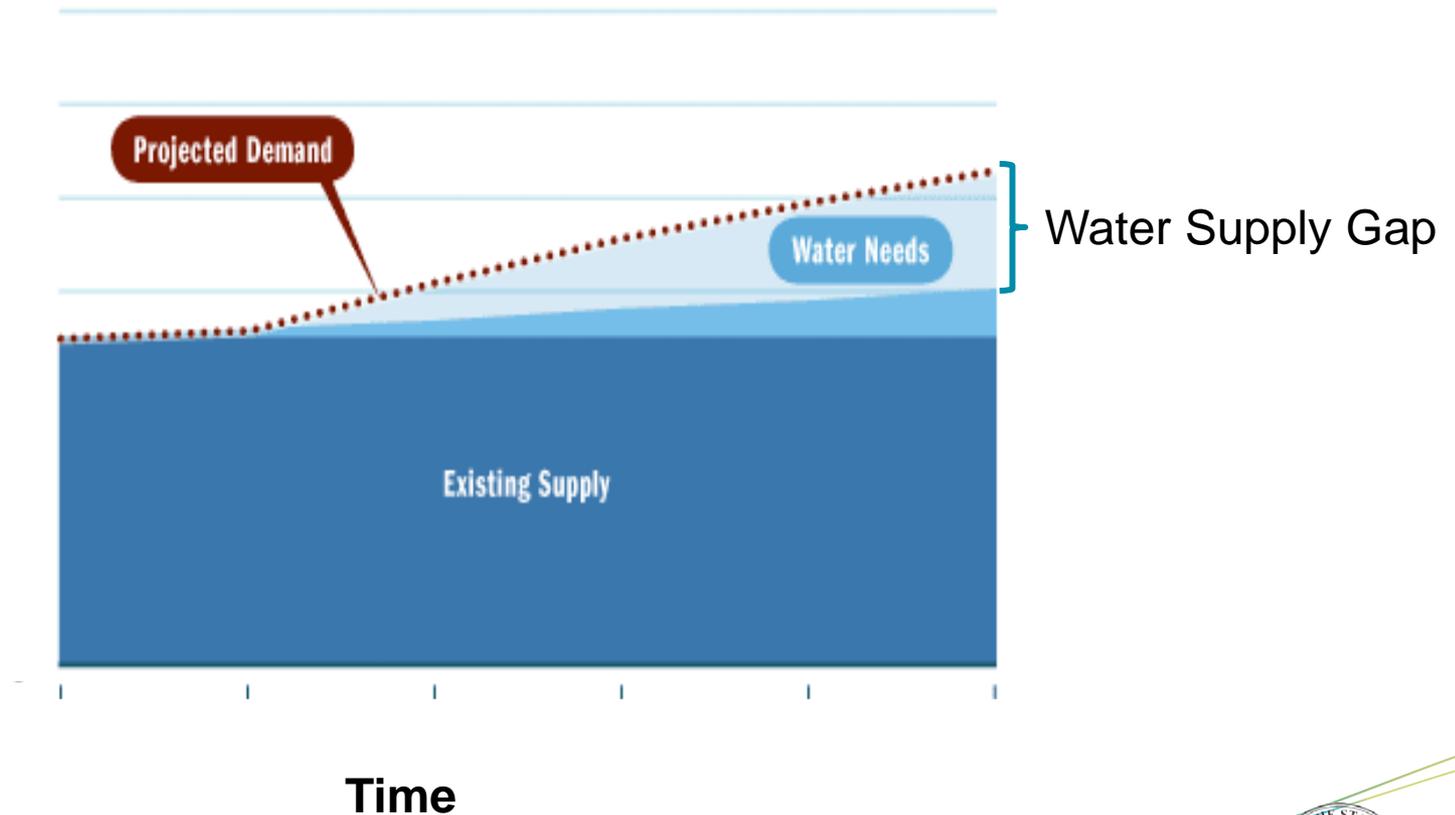
Low Gap Arkansas



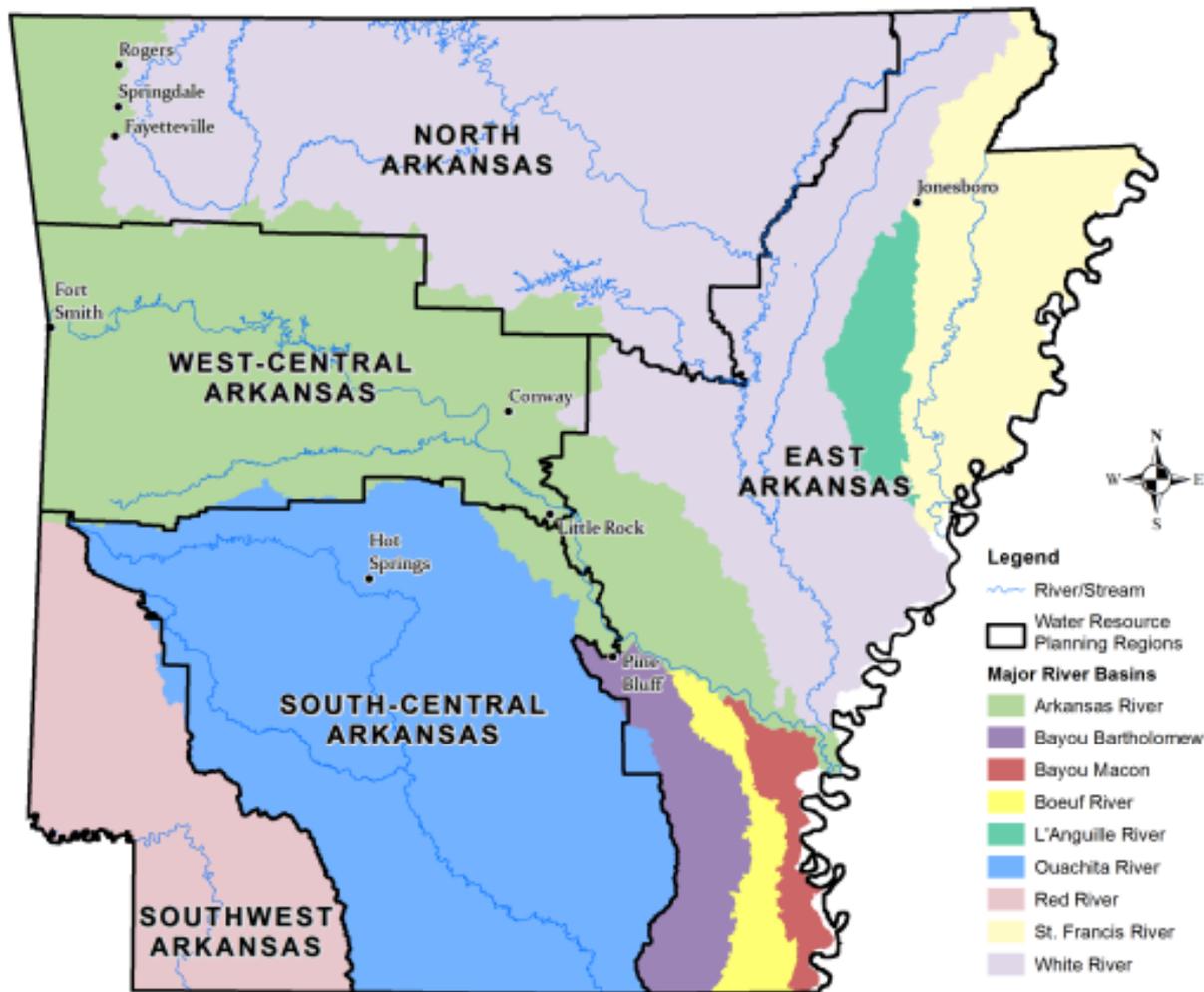
What is a Gap?



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

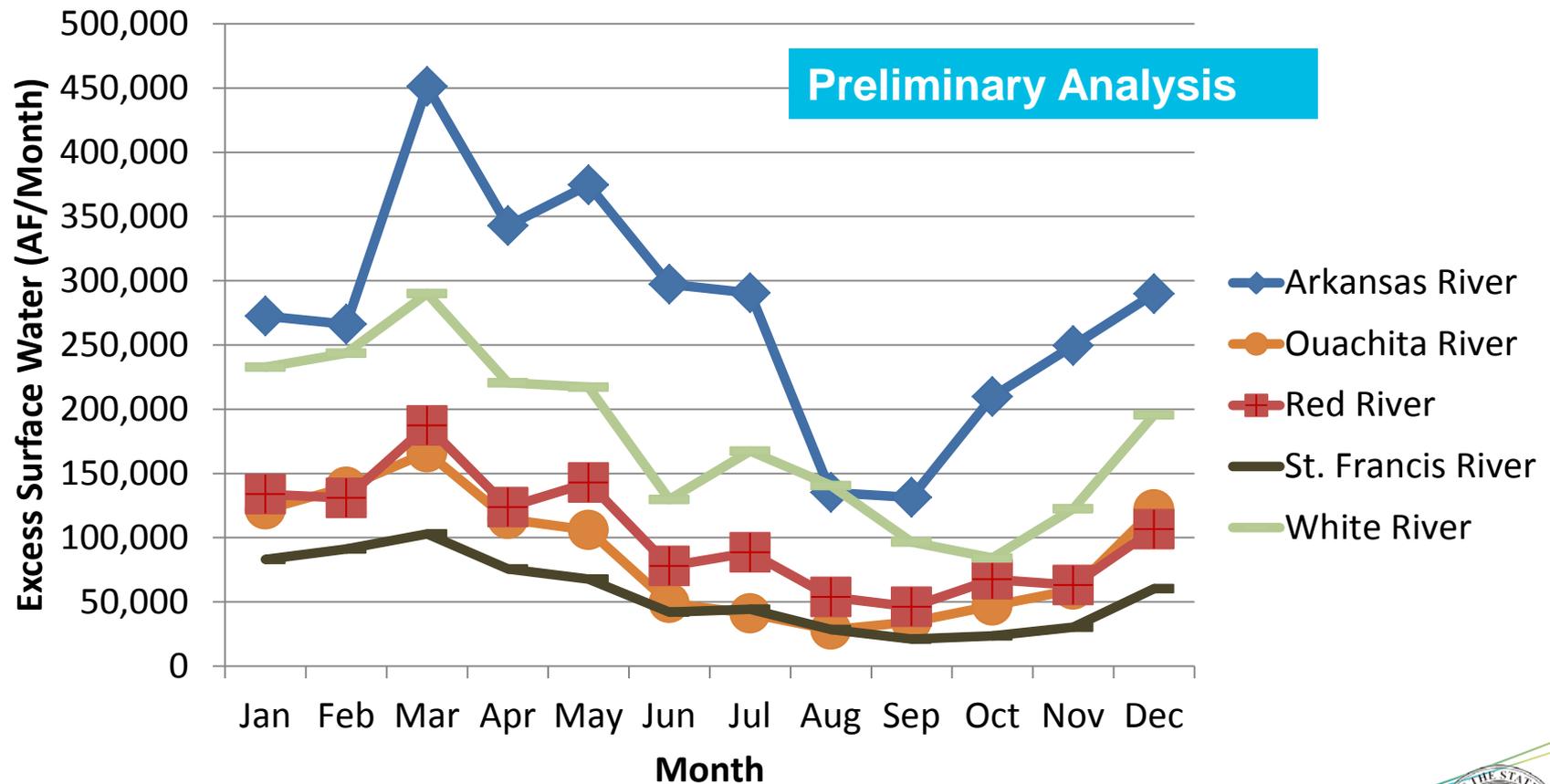
Excess Water, by River Basin

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

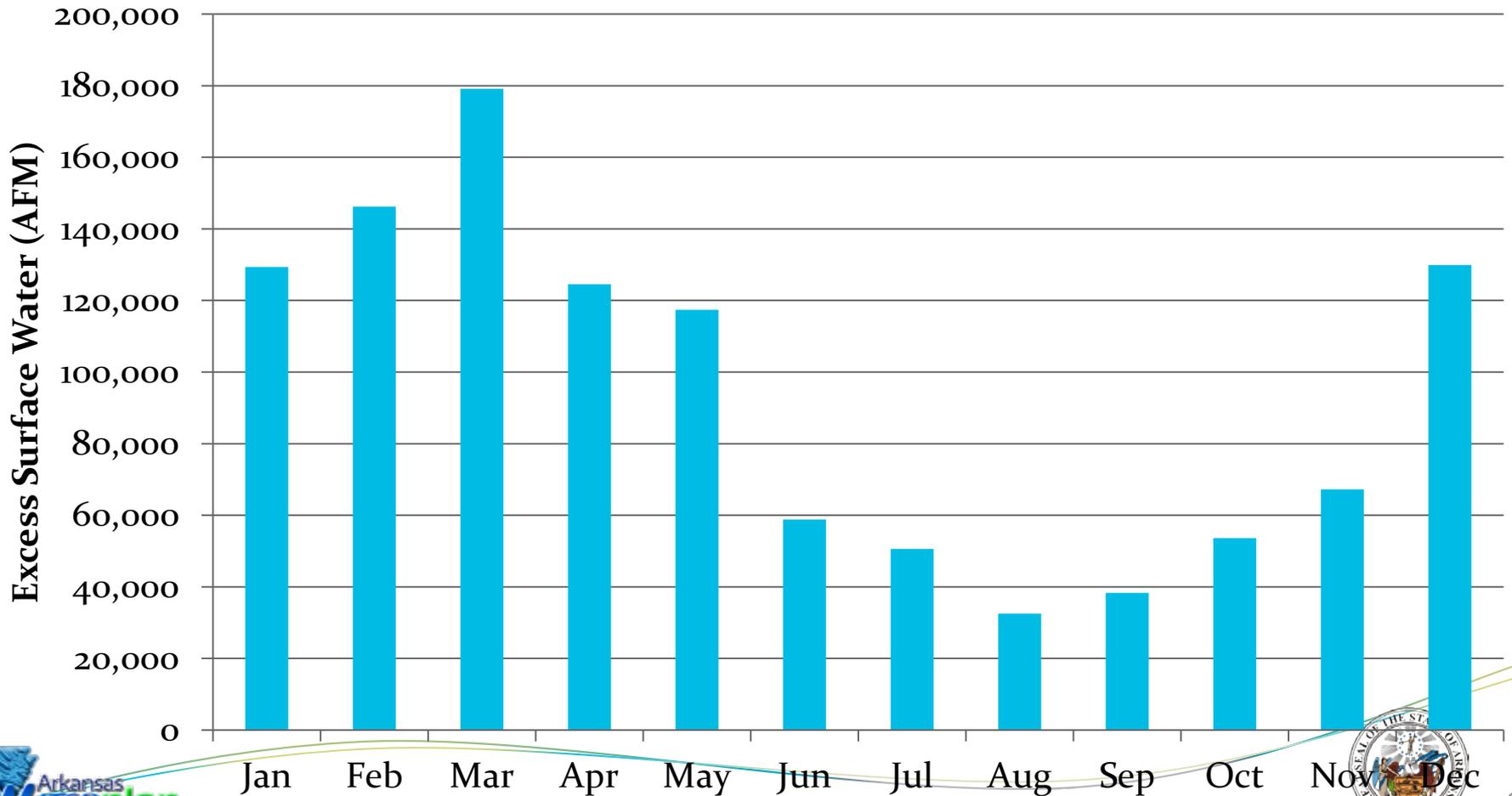
Surface Water Gap Analysis

- 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



South-Central Planning Region Monthly Excess Surface Water



South-central 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 South-Central Planning Area, there is no surface water gap is projected for 2050



Groundwater Gap Analysis

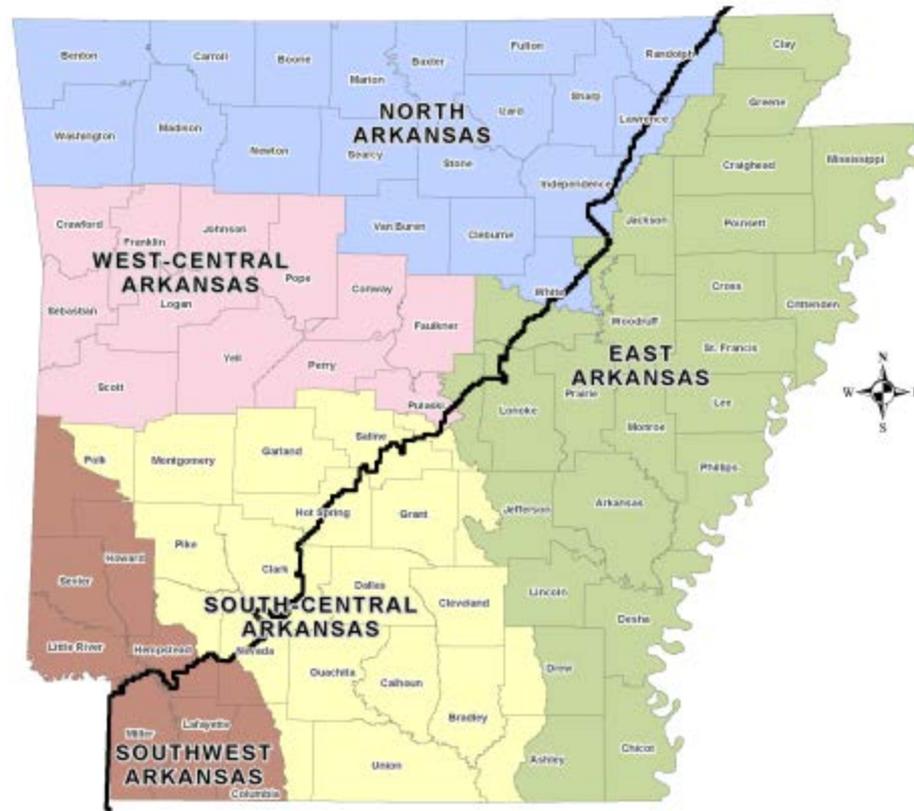
Groundwater Gap =

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

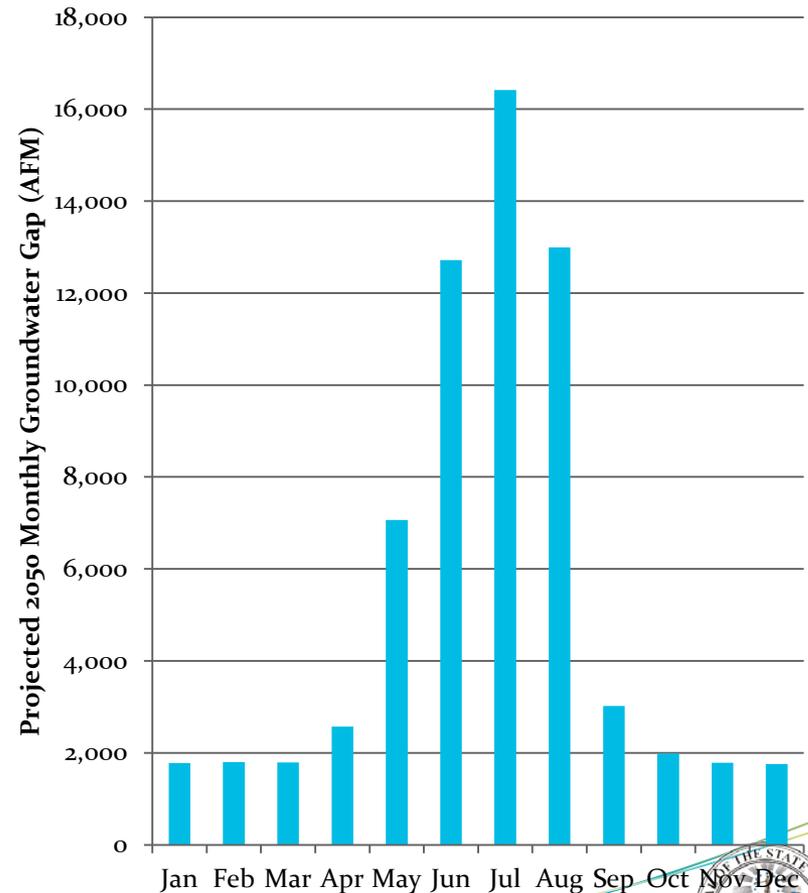


Groundwater in Areas Outside the MERAS Model

- 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 415,000 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 – South-central Regional Planning Area

- There is no projected Combined Source Gap projected for the South-central Regional Planning Area
- There is projected to be about 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