

# SRP Watersheds and Forest Restoration

Presentation to



**Bruce Hallin**  
**Director Water Rights and Contracts**



February 19, 2016

# SRP Total Electric Resource Mix

☐ Salt River Project  
Agricultural Improvement  
and Power District  
(1937)

- ✓ 2,900 mi<sup>2</sup> electric service area
- ✓ > 1,000,000 customers

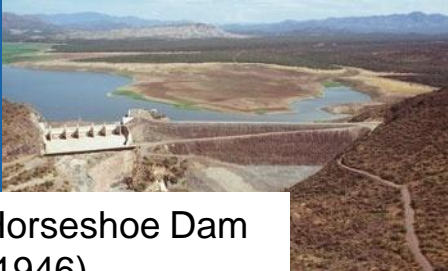


# SRP Surface Water Sources



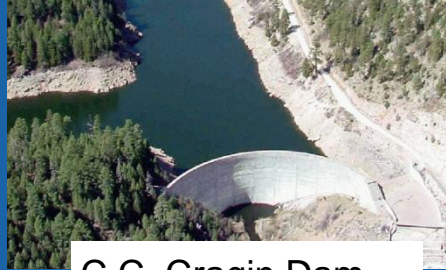
# SRP Reservoir System

## Verde River



Horseshoe Dam  
(1946)

## East Clear Creek

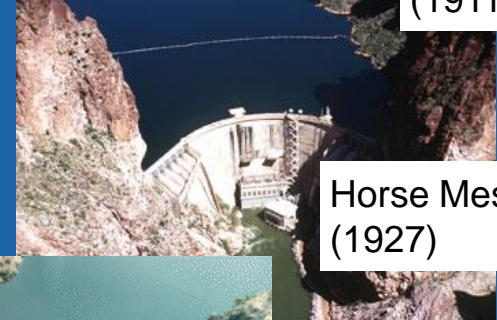


C.C. Cragin Dam  
(1965)

## Salt River



Roosevelt Dam  
(1911)



Horse Mesa Dam  
(1927)

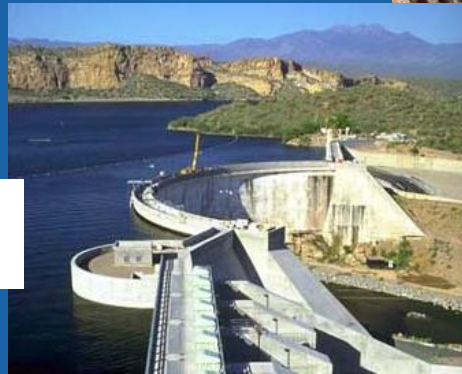


Bartlett Dam  
(1939)

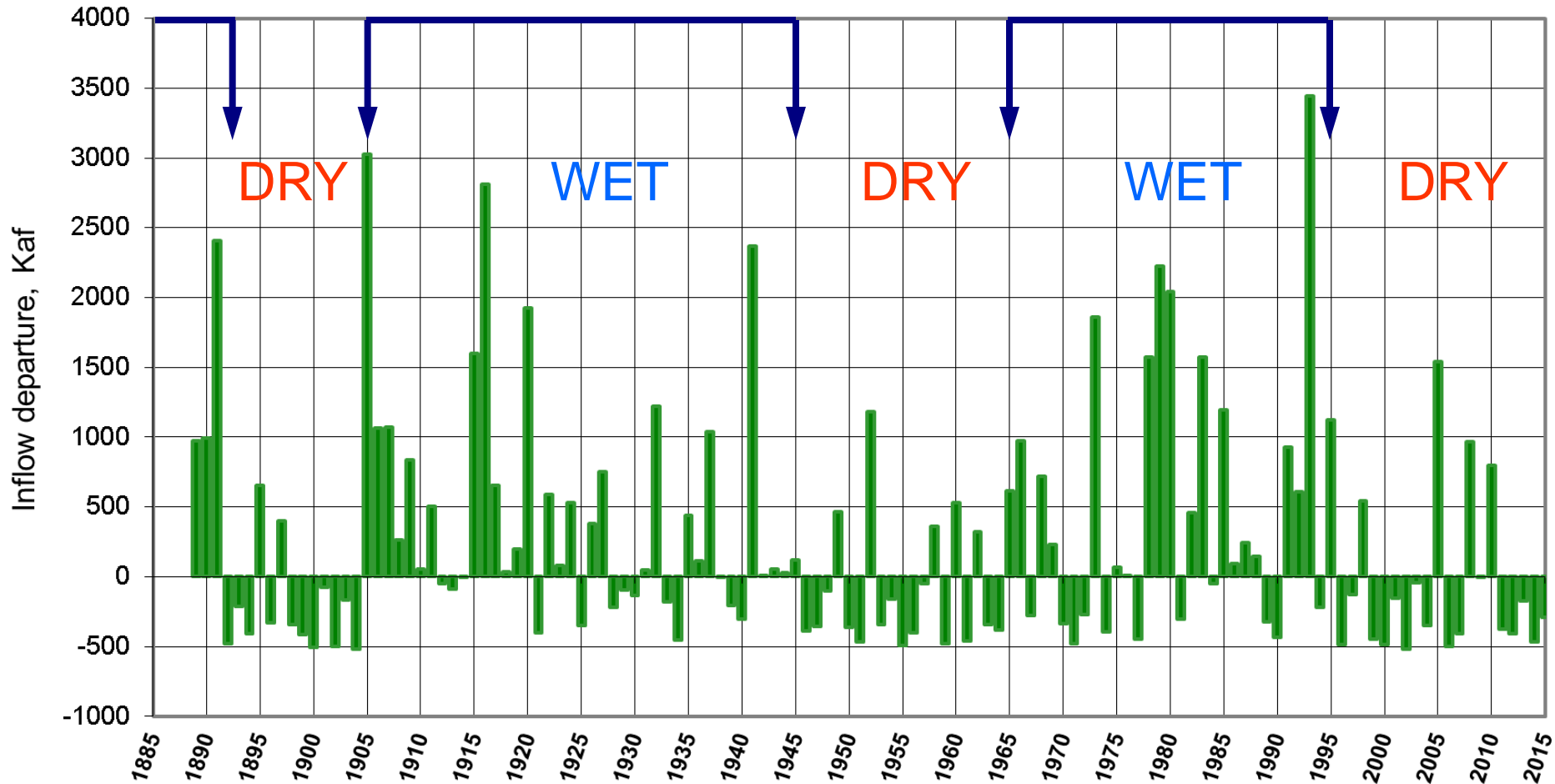


Mormon Flat Dam  
(1925)

Stewart Mtn Dam  
(1930)



# Salt+Tonto+Verde WINTER (Dec-May) INFLOW: Departure from Median (650 Kaf)



1892-1904:  
2 wet,  
11 dry

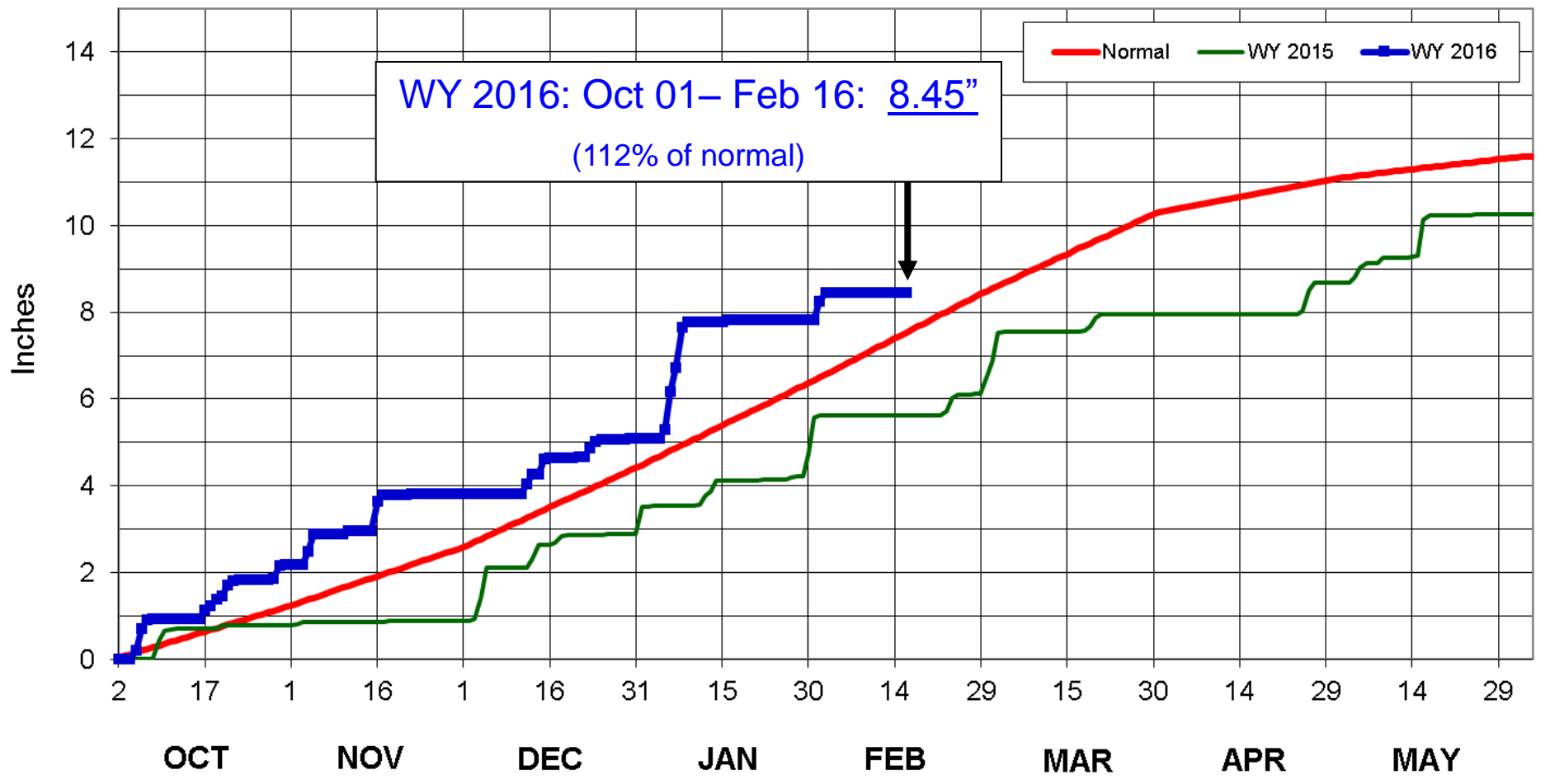
1905-45:  
28 wet,  
13 dry

1946-64:  
5 wet,  
14 dry

1965-95:  
19 wet,  
12 dry

1996-2015:  
4 wet,  
16 dry

# Cumulative Watershed Precipitation: FALL-WINTER-SPRING



OCT '15: 2.19"  
(normal=1.3")

16<sup>th</sup> wettest

NOV '15: 1.62"  
(normal=1.4")

34<sup>th</sup> wettest

DEC '15: 1.28"  
(normal=1.9")

56<sup>th</sup> driest

JAN '16: 3.17"  
(normal=2.0")

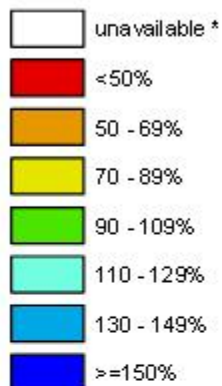
19<sup>th</sup> wettest

FEB 01-16: 0.19"  
(normal=1.9")

Feb 17, 2016

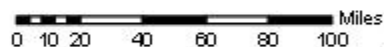
# Arizona SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



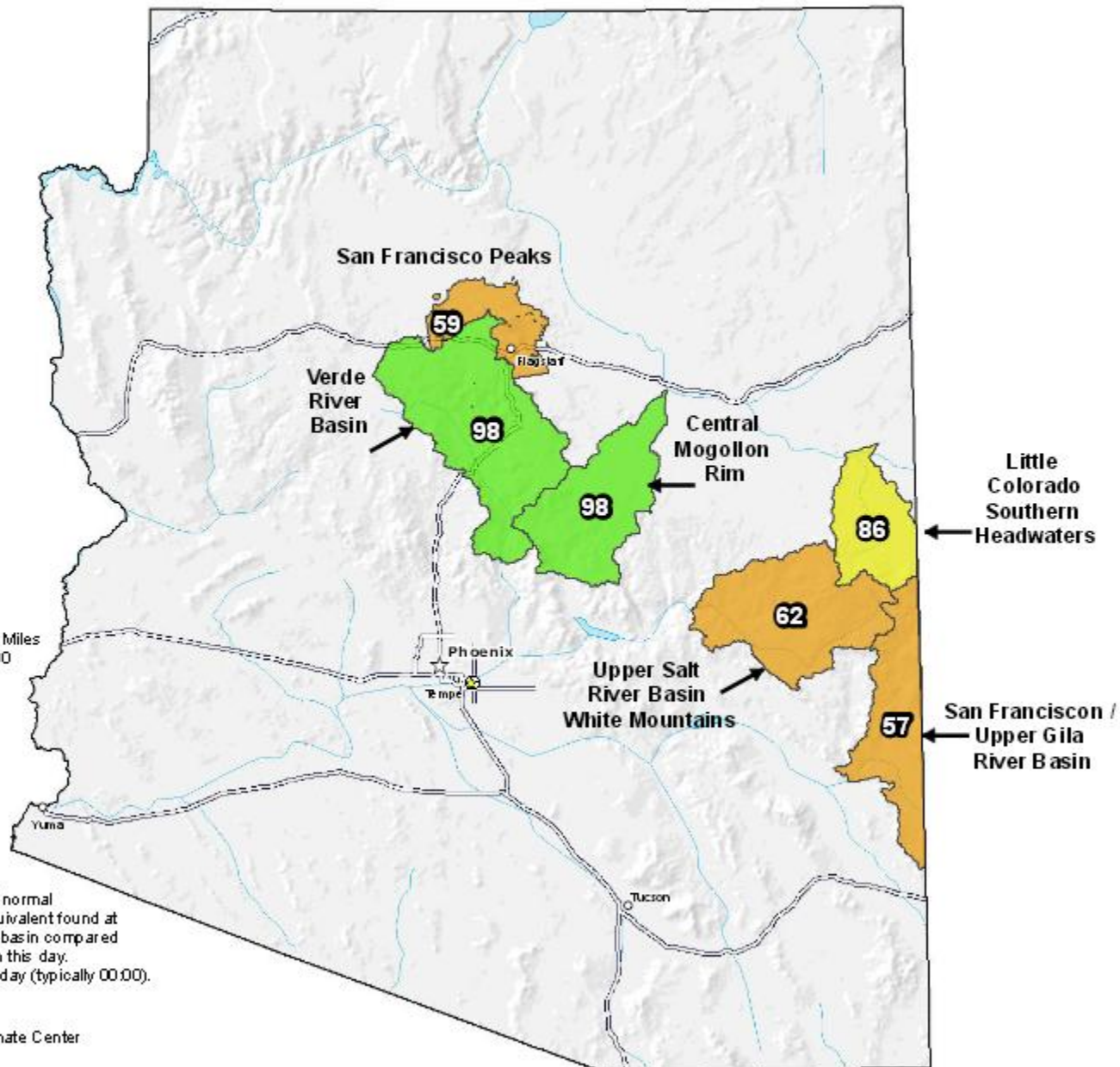
\* Data unavailable at time of posting or measurement is not representative at this time of year

**Provisional Data  
Subject to Revision**



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

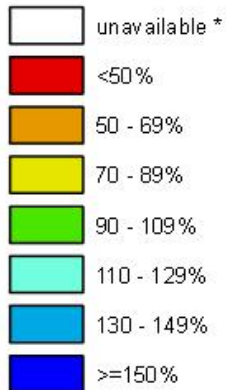
Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>



Jan 15, 2016

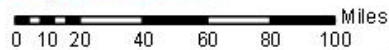
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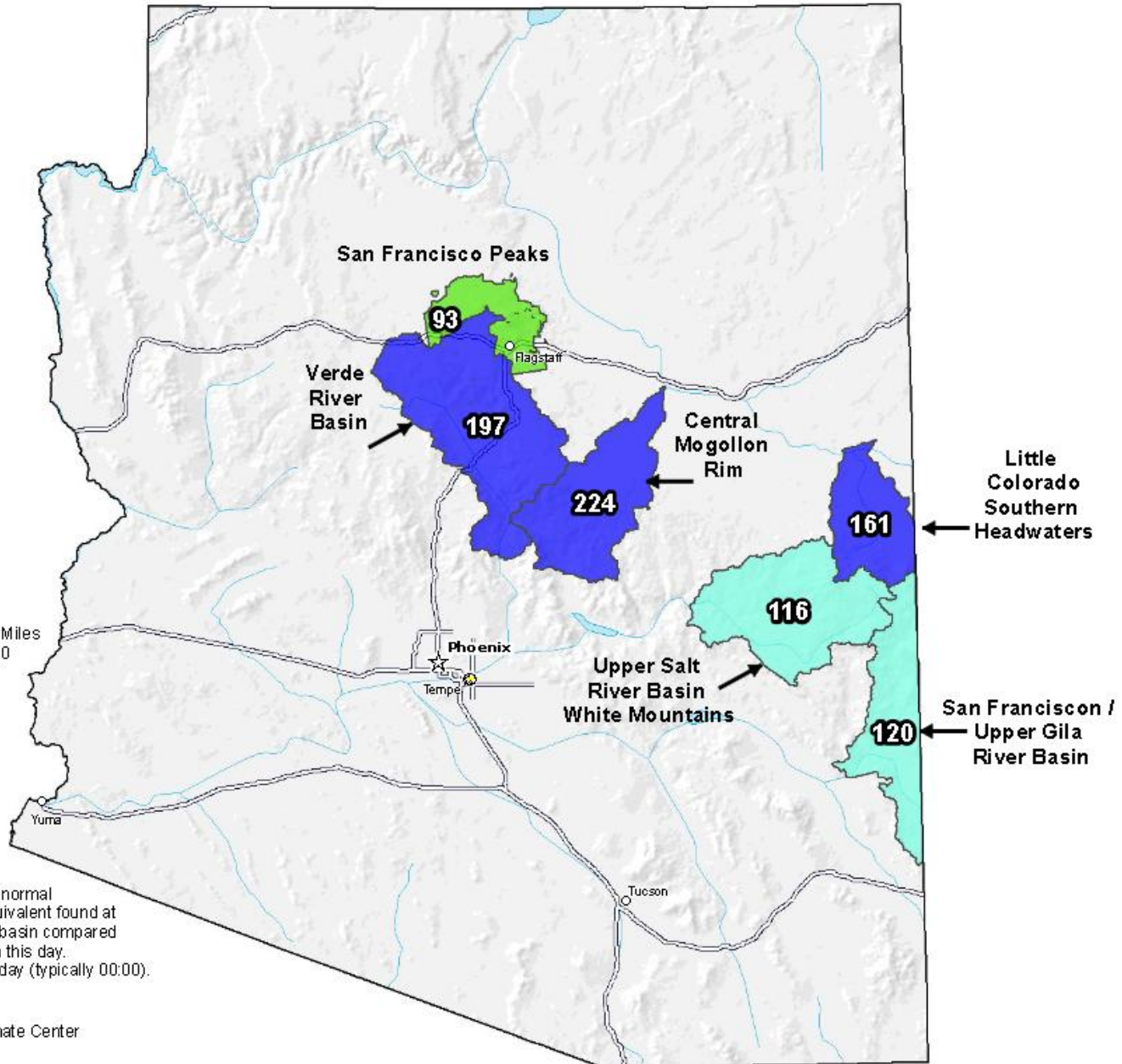
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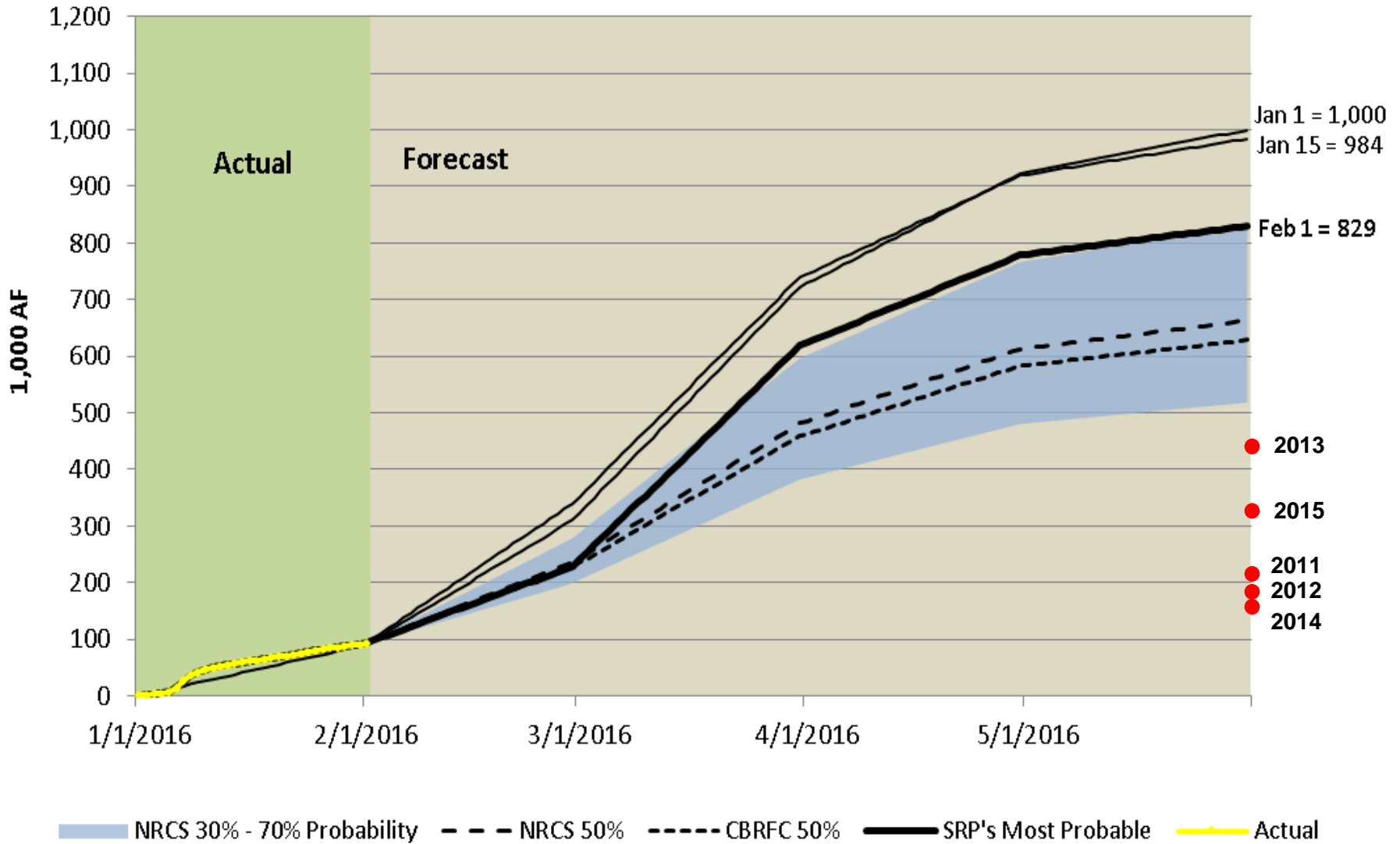


# SRP Reservoir Status

Date: February 15, 2016



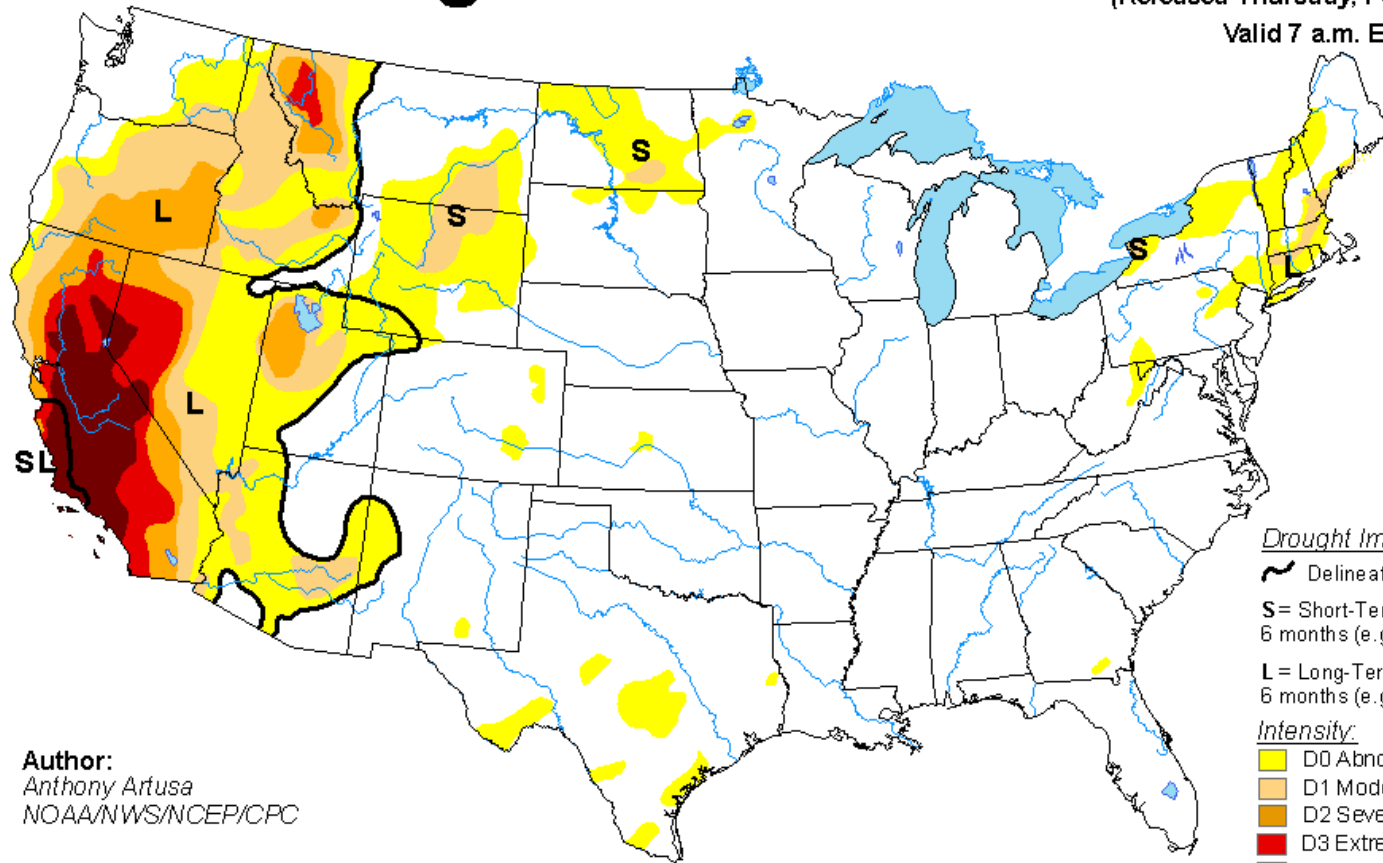
# February 1, 2016 - Salt, Tonto, Verde Runoff Forecast



# U.S. Drought Monitor

**February 9, 2016**  
 (Released Thursday, Feb. 11, 2016)

Valid 7 a.m. EST



Drought Impact Types:

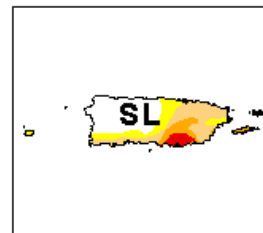
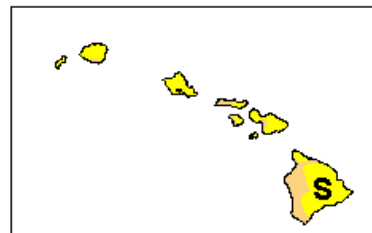
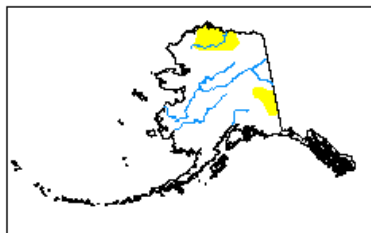
- ~ Delineates dominant impacts
- S** = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L** = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

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

**Author:**  
 Anthony Artusa  
 NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

# Water in the News



As the River Runs Dry:

The Southwest's water crisis

Risks of CAP shortages next year

Sacramento wants to grow;  
will drought say no?



**Poll: 53% say Arizona is in water crisis,  
but experts disagree**

California governor orders first ever water  
restrictions



# Arizona Preparedness

## Supply Diversity through Infrastructure Investments



Roosevelt Dam



CAP Canal

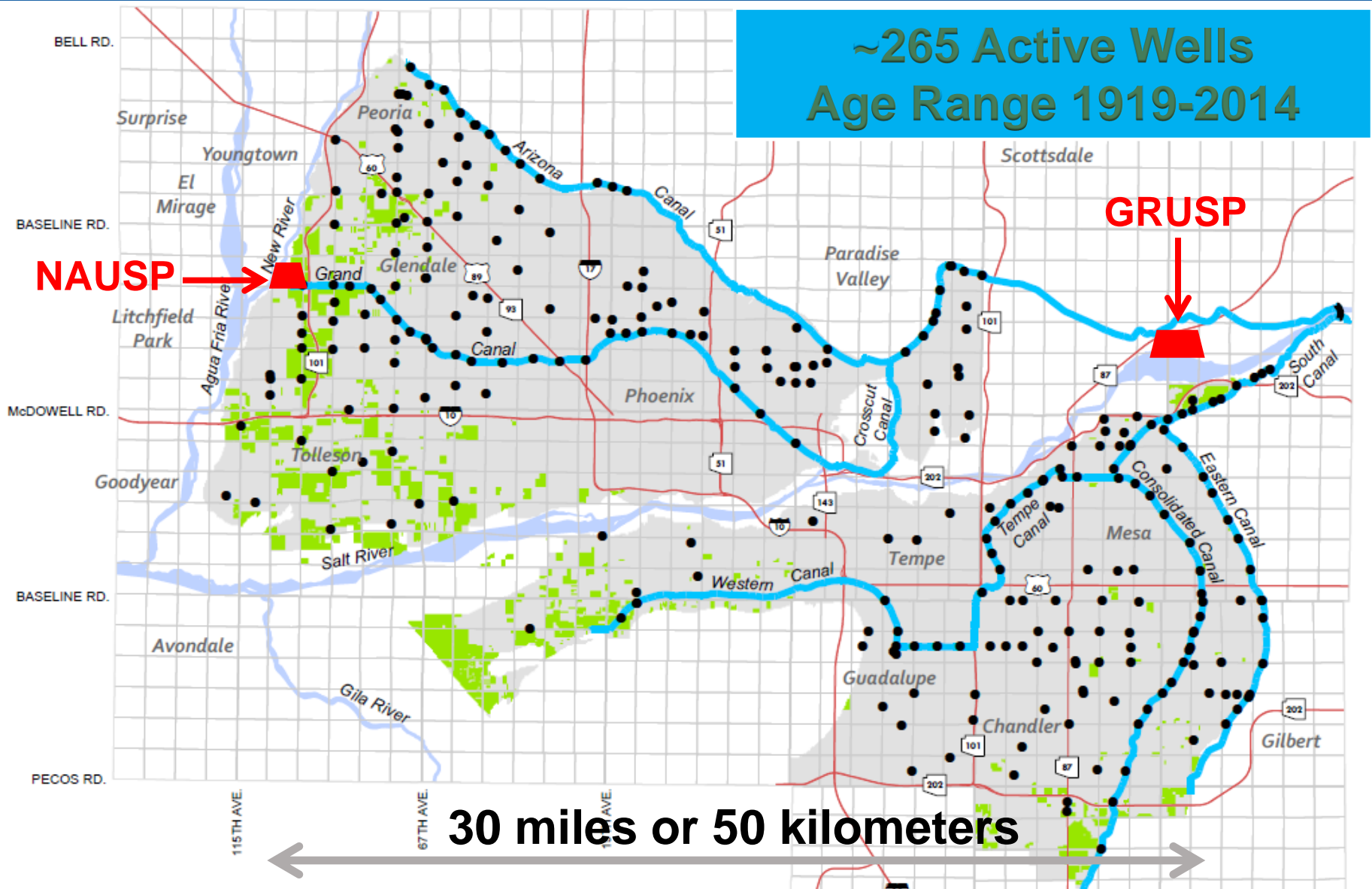


CAP/SRP Interconnect



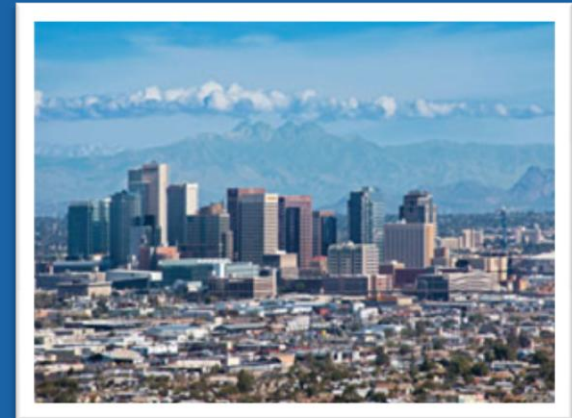
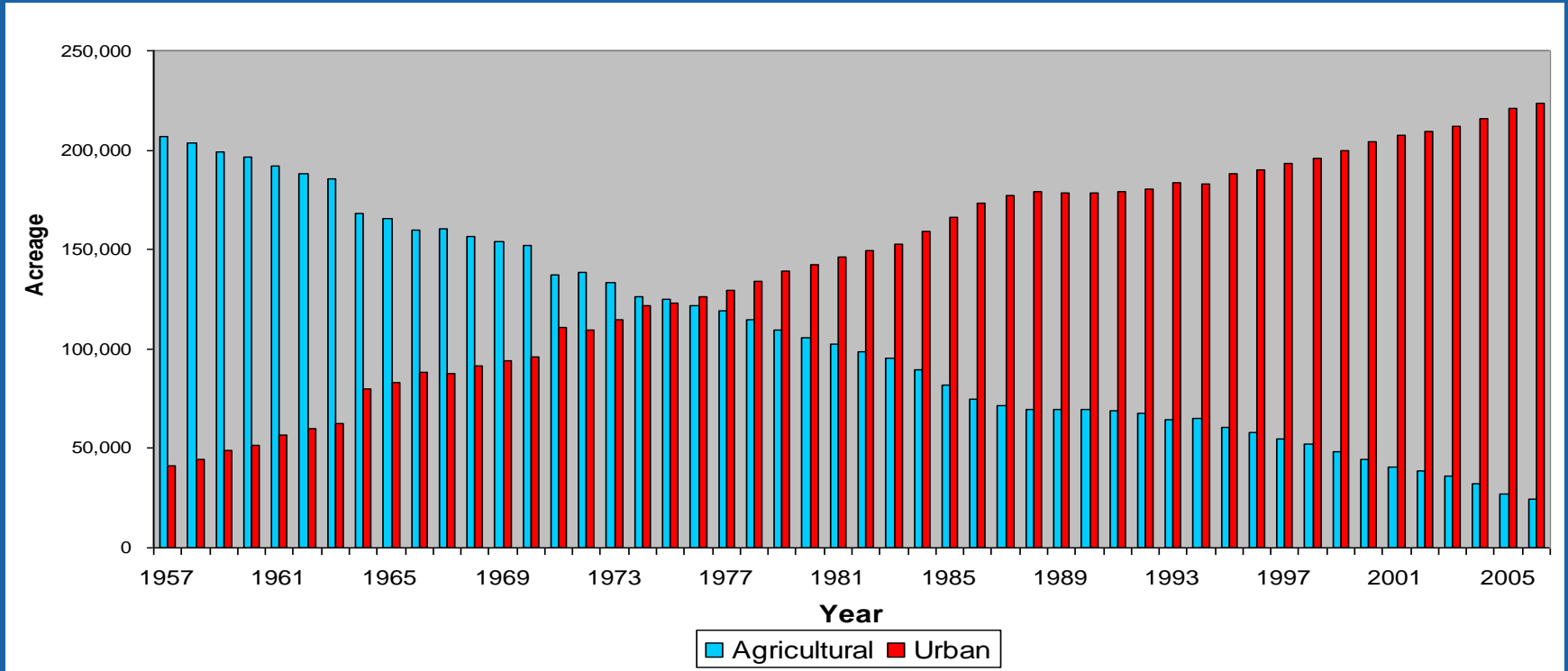
New River-Agua Fria River  
Underground Storage Project  
(NAUSP)

# SRP Wells & Recharge Facilities



# SRP Lands Are More than 90% Urban

Major transition from agricultural to urban land use from 1957 - 2006







# Water Conservation Expo

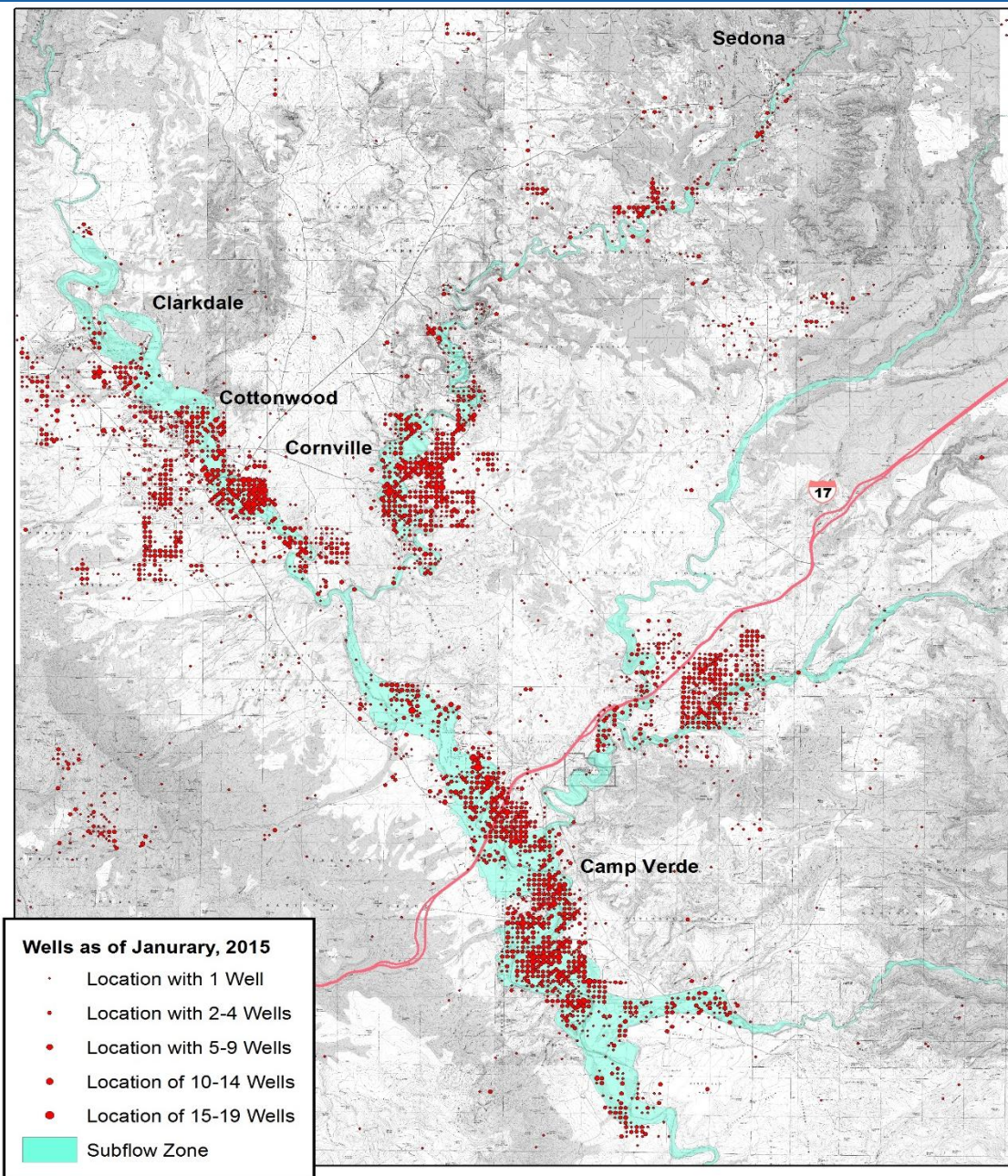
- Largest one-day distribution of smart controllers in the nation
- Nearly 4,000 controllers distributed in 8 years
- Approximate water savings of 330 million gallons
- Educated 6,300 customers





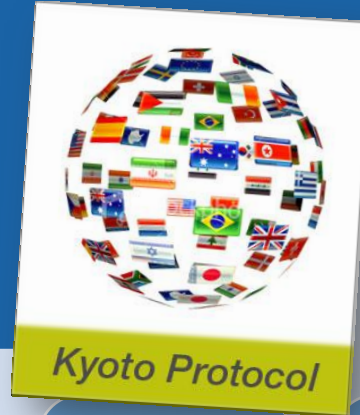
# Verde Valley (2015)

## 7,612 Wells



**Active Production Wells in the Verde Valley  
as of January, 2015**

# General Stream Adjudication 40 Years and Counting...



**1970s**

Courts are petitioned to adjudicate water rights on the Salt, Verde and San Pedro Rivers

**1989**

Berlin Wall is torn down

**1997**

Dolly the sheep is cloned

**2001**

The Kyoto Protocol on global warming is signed by 178 nations

**2007**

Apple releases the iPhone

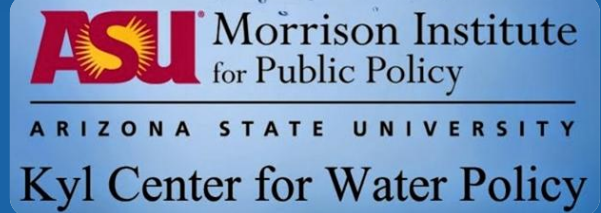
**2016**

Arizona's water rights remain unadjudicated



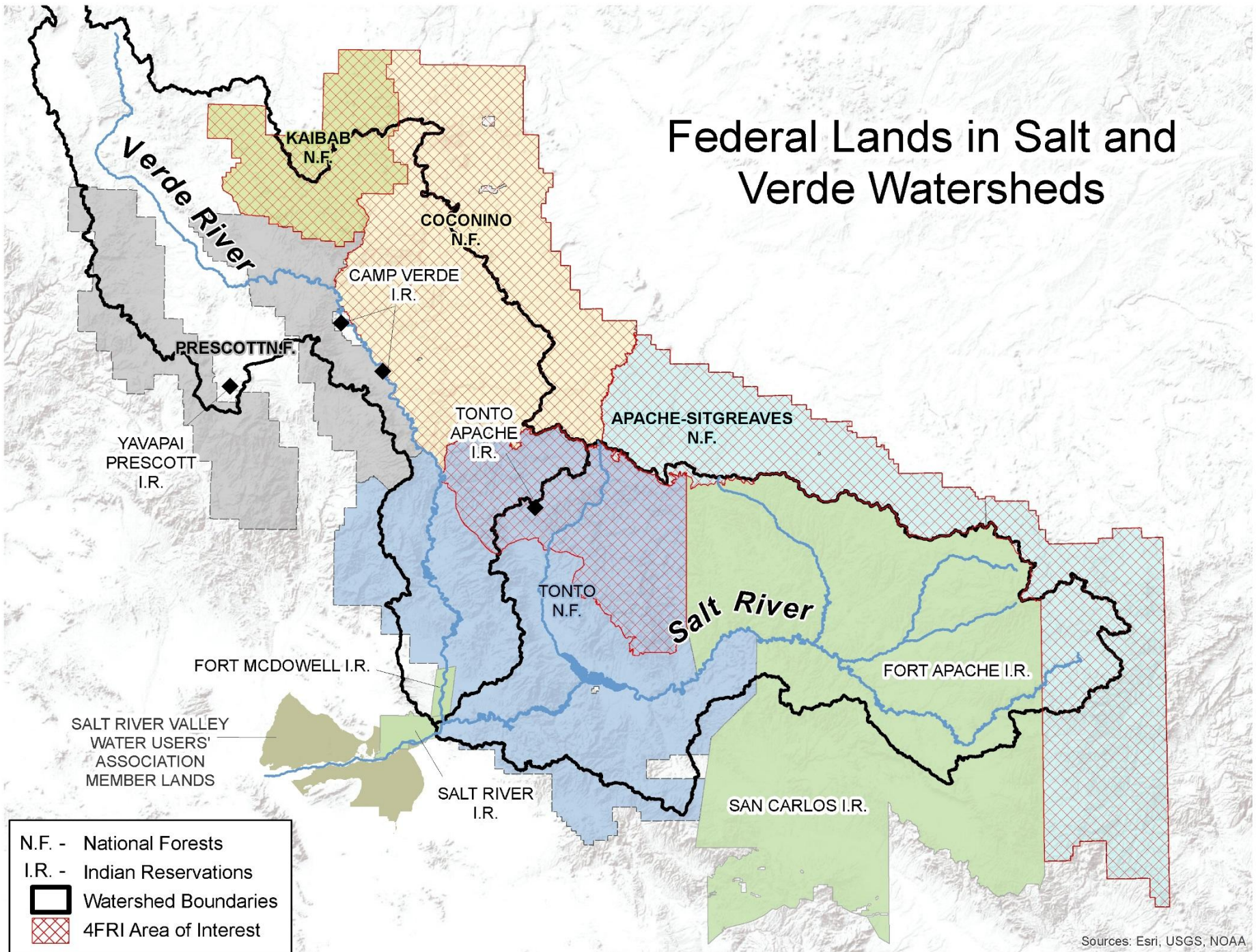
# Water Rights Resolution

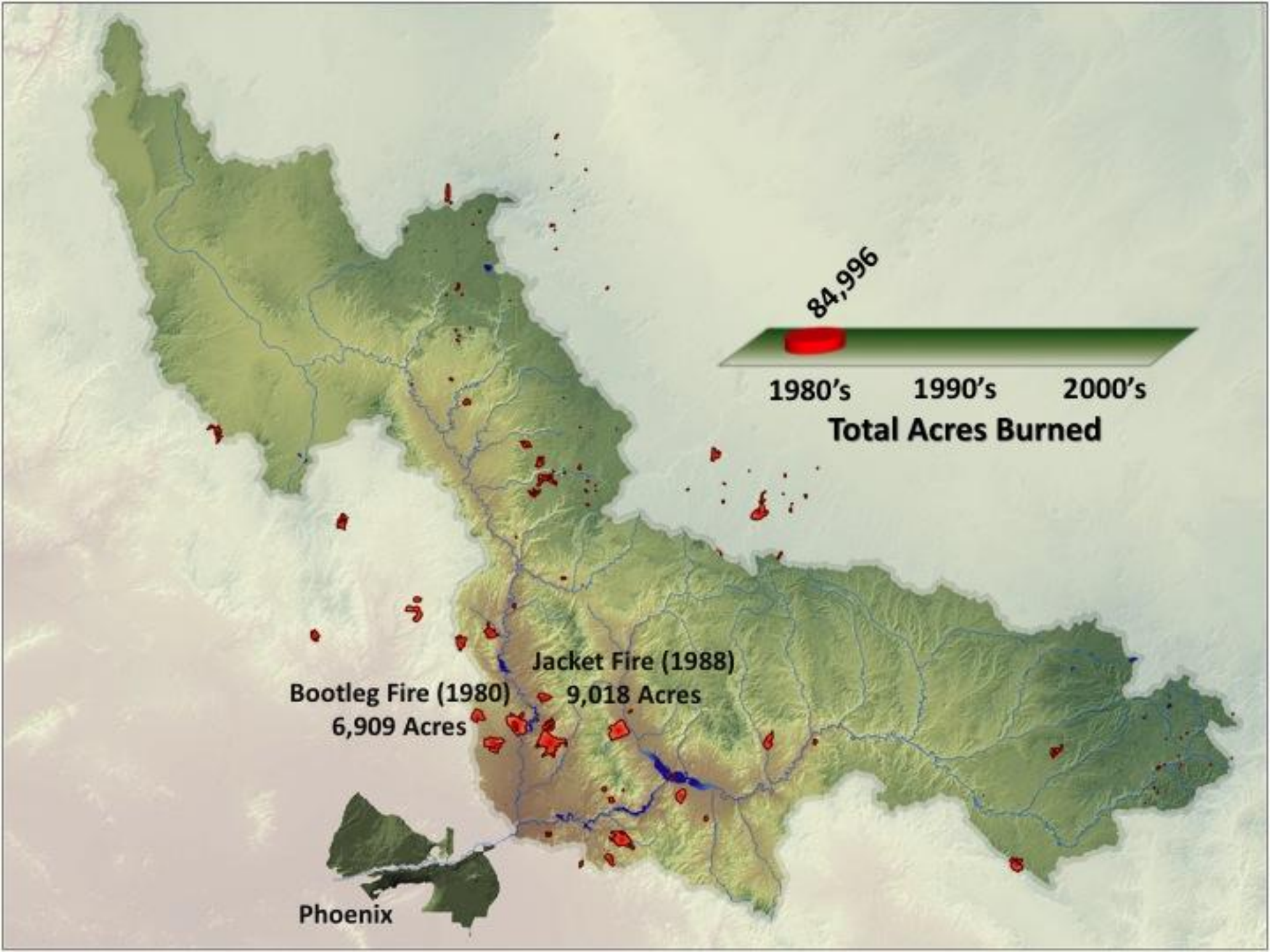
- Adjudication reform
- American Indian water right settlements
- Non-Indian water right settlements



Delivering more than power.™

# Federal Lands in Salt and Verde Watersheds





84,996

1980's

1990's

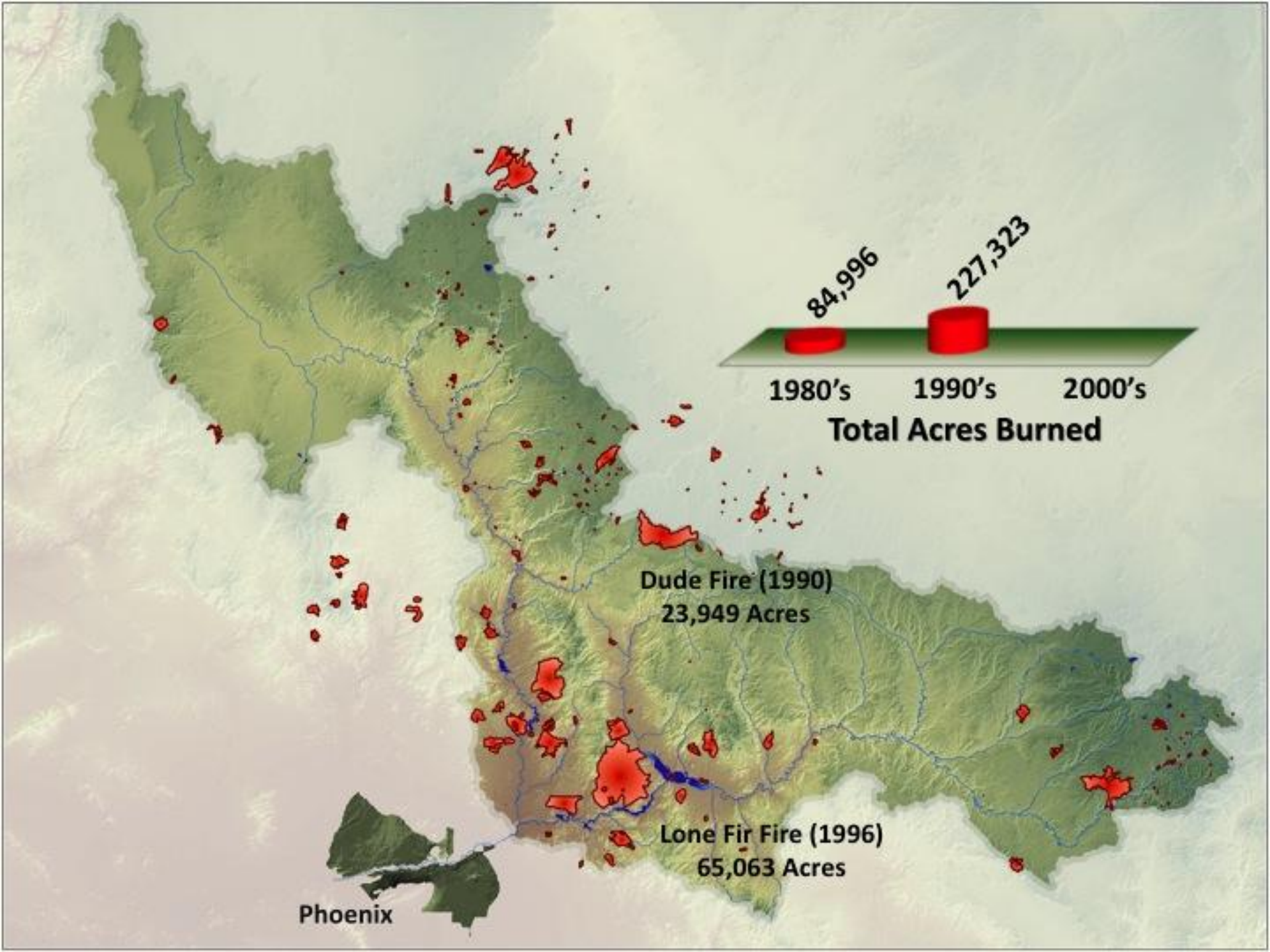
2000's

**Total Acres Burned**

**Jacket Fire (1988)**  
**9,018 Acres**

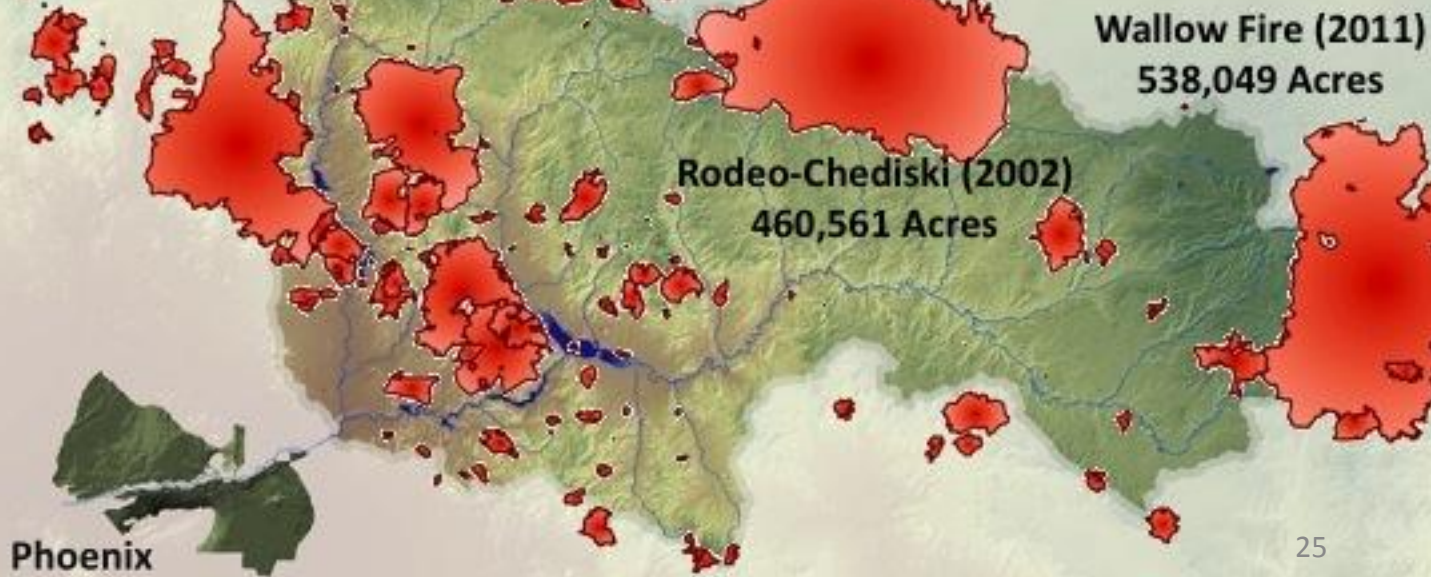
**Bootleg Fire (1980)**  
**6,909 Acres**

**Phoenix**



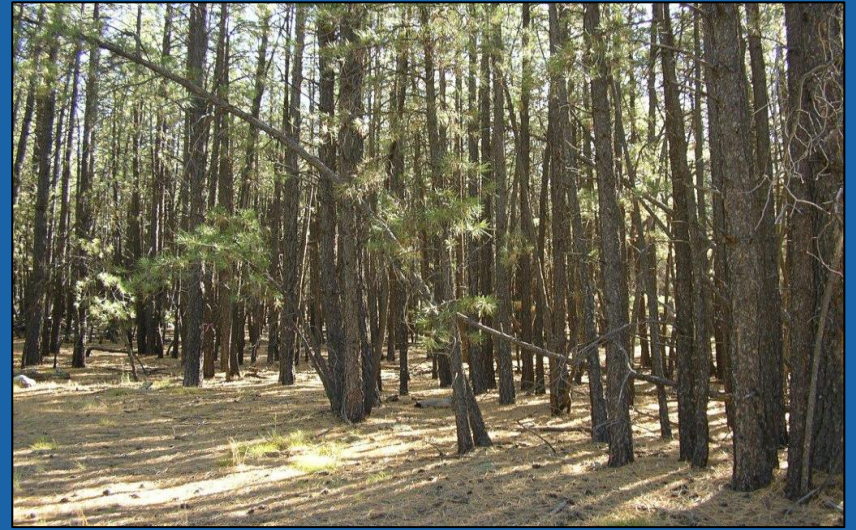


# Over Two Million Acres Destroyed Since 2002



# The Problem

## Unhealthy Forests



# Result

## Catastrophic Wildfires



# Water Resource Impacts




# Making the Business Case

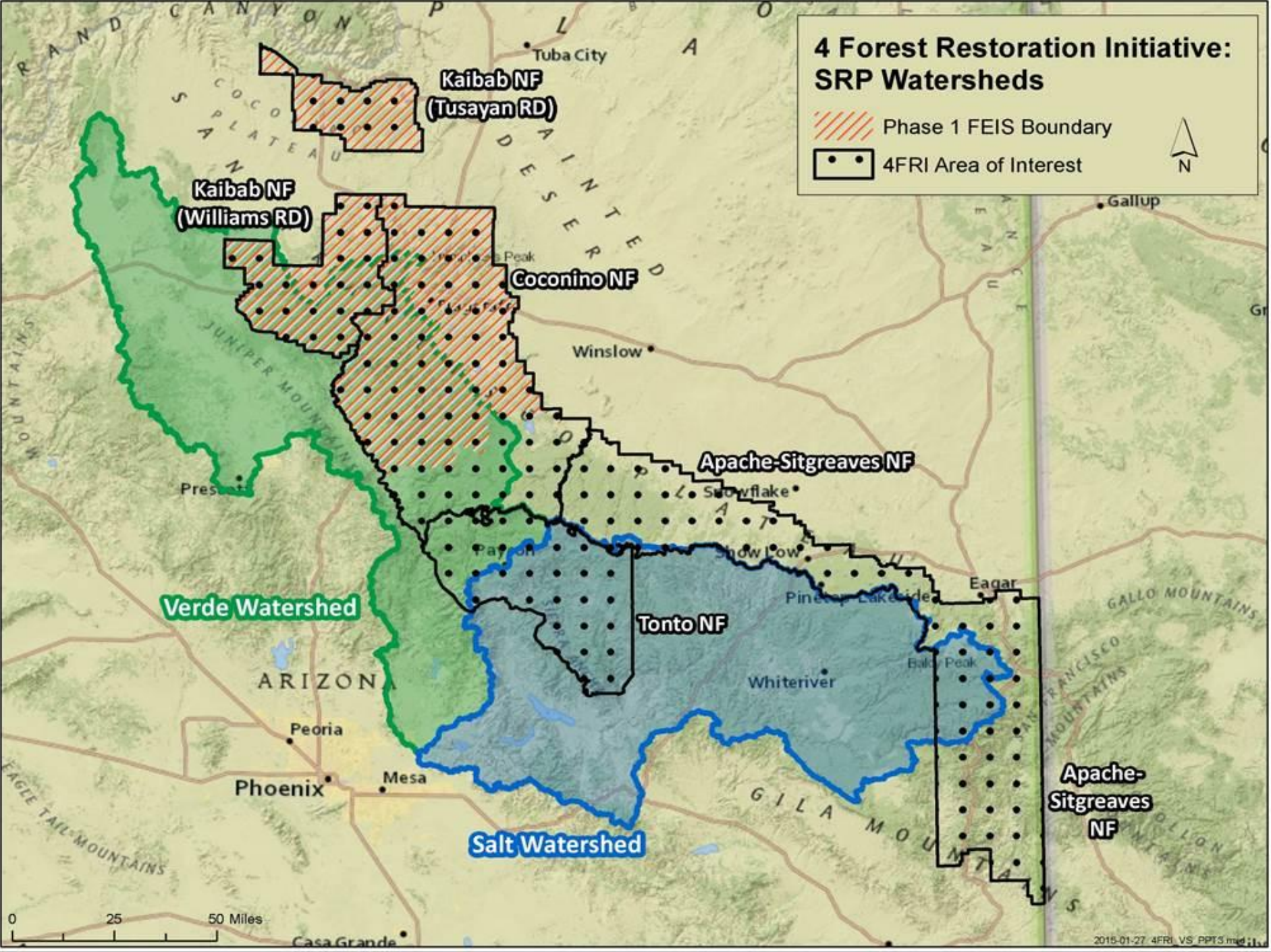

## Pay some now, or a lot later?

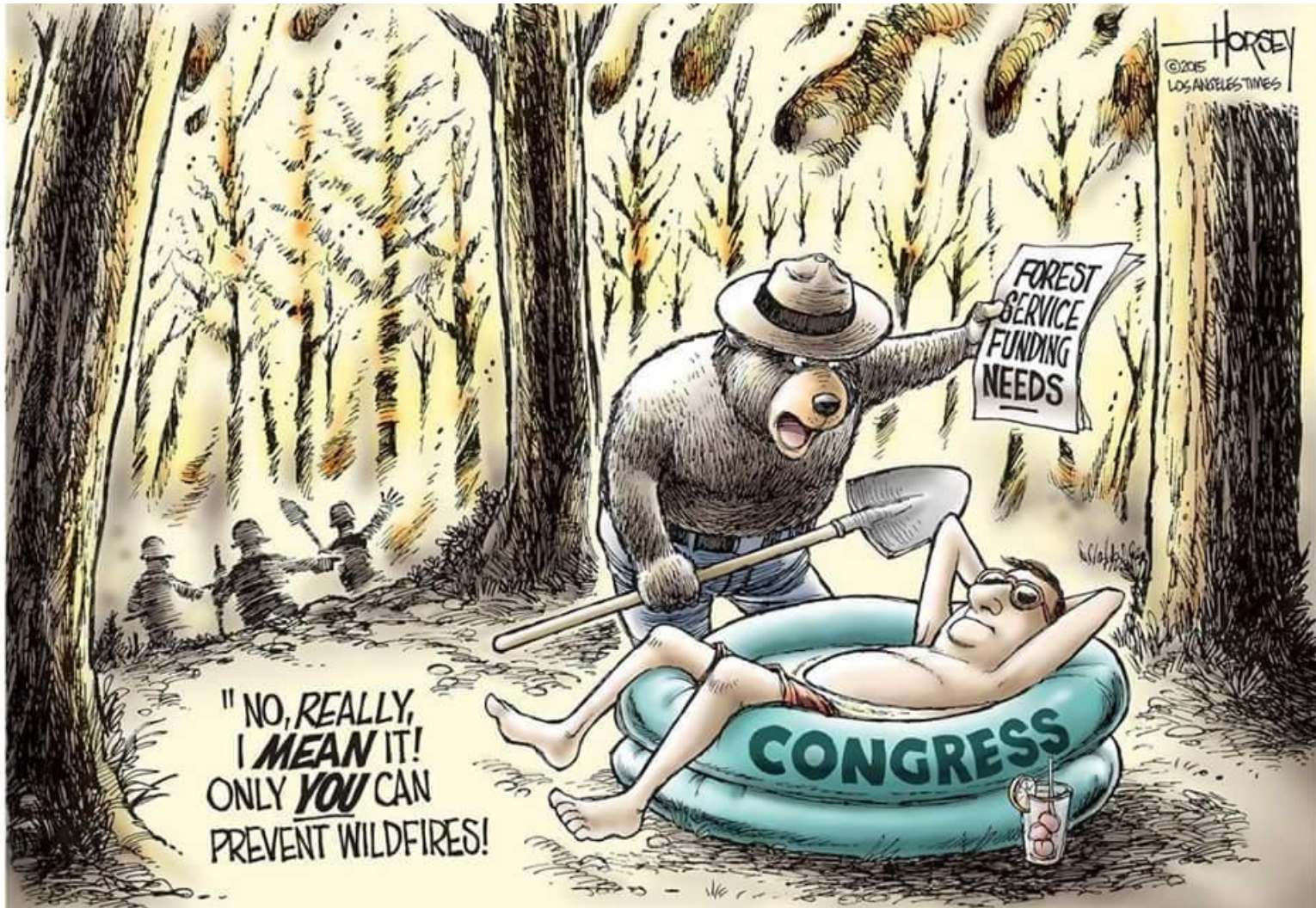
- ✓ Denver Water - \$60 million recovering from wildfire
- ✓ Rodeo-Chedeski - \$308 million total costs
- ✓ City of Phoenix - \$18 million+ upgrades to Val Vista Treatment Plant, safe drinking water standards
- ✓ Flagstaff voters - \$10 million bond
- ✓ Mokelumne Watershed - \$126 million avoided costs by investing in watershed health

# 4 Forest Restoration Initiative: SRP Watersheds

 Phase 1 FEIS Boundary

 4FRI Area of Interest





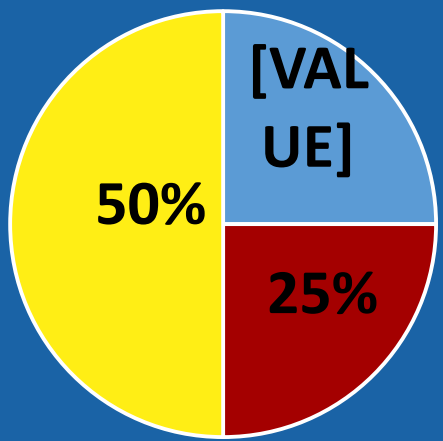
# Legal Barriers to Restoration

- Lengthy NEPA planning process
- Objection and Litigation process create uncertainty in planning
- Fire borrowing diminishing restoration budgets
- Endangered species laws delay fuels reduction treatments in heavily forested areas



# Challenge: Re-establish Forest Products Industry

Proportion Removed from the Forest



- Pellets, Pallets, Poles
- Lumber
- Biomass

**Material Removed from the Forest**  
25 Bone-Dry tons per acre  
16" tree diameter and smaller



Biomass



Lumber



Pellets



Pallets, Posts & Poles



# Watershed Restoration Benefits

- Mount Baldy



**Measurable Results**



**Resilient Landscapes**



**Dependable Water Supplies**



**Enhanced Rural Economies**



# NORTHERN ARIZONA FOREST FUND



**INVASIVE SPECIES MANAGEMENT**

**SEDIMENT & EROSION  
MANAGEMENT**

**STREAM & WETLAND RESTORATION**

**HABITAT IMPROVEMENT &  
REVEGETATION PROJECTS**

**FOREST THINNING & PRESCRIBED BURNING**

**SEDIMENT & EROSION MANAGEMENT**

**HABITAT IMPROVEMENT & REVEGETATION PROJECTS**

**FOREST THINNING & PRESCRIBED BURNING**

McCracken Woodland Health and Habitat Improvement

Red Flat Meadow Restoration

Oak Creek Erosion Control (Schnebly Hill Road)

Stoneman Lake Watershed Health and Habitat Protection

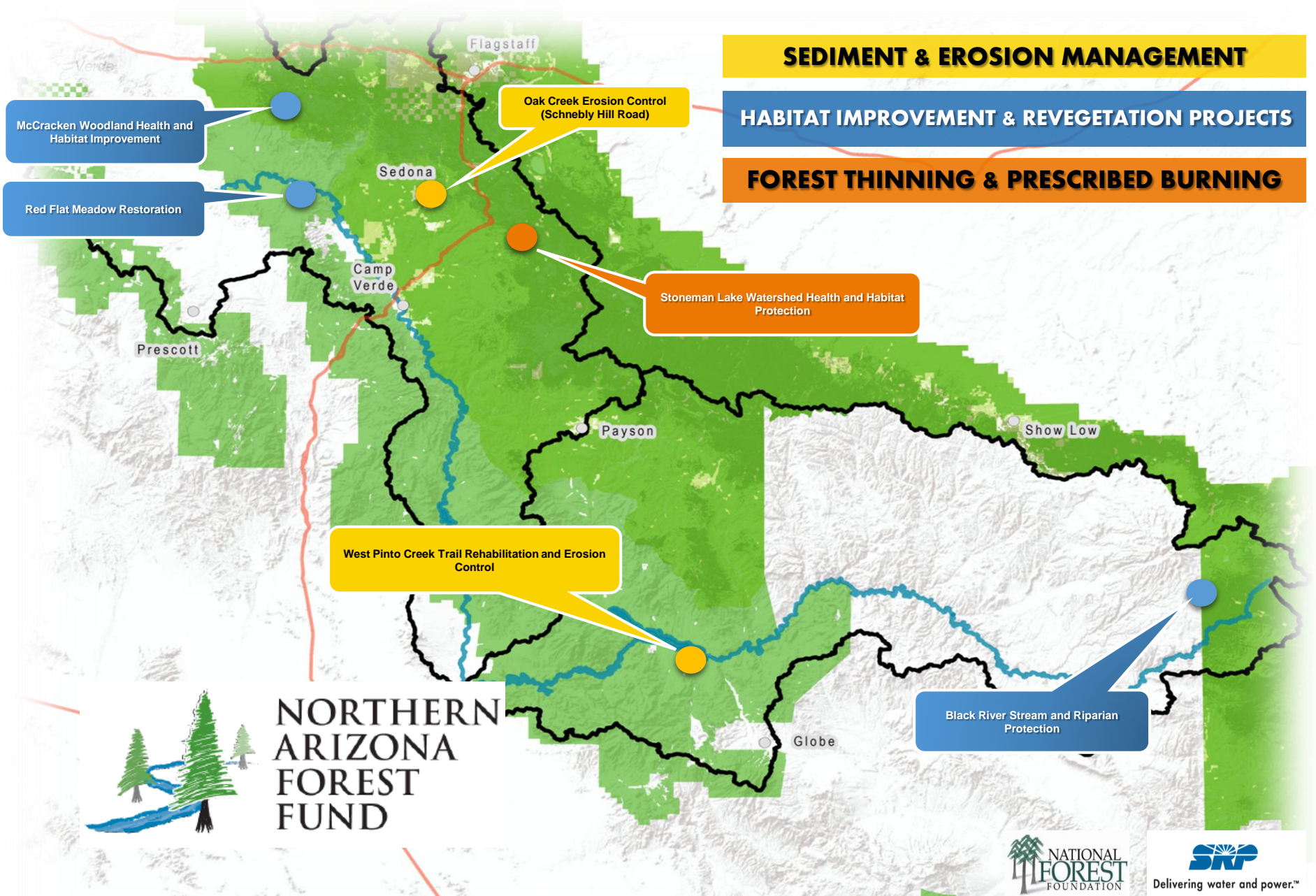
West Pinto Creek Trail Rehabilitation and Erosion Control

Black River Stream and Riparian Protection

**NORTHERN ARIZONA FOREST FUND**

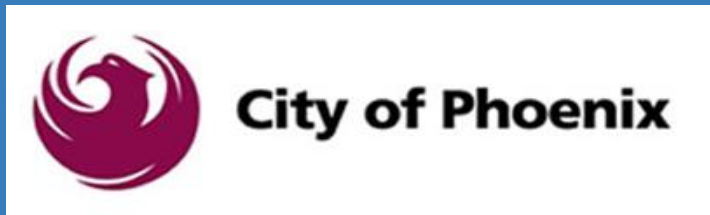
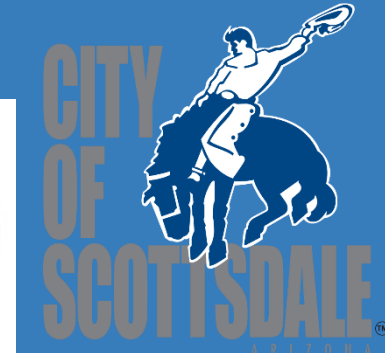


**Northern Arizona Forest Fund 2015-16 Projects**



# Current Accomplishments and Watershed Partners

Almost \$2 Million Invested!



Questions?

