



# S2S Workshop

## Why Improve a Forecast?

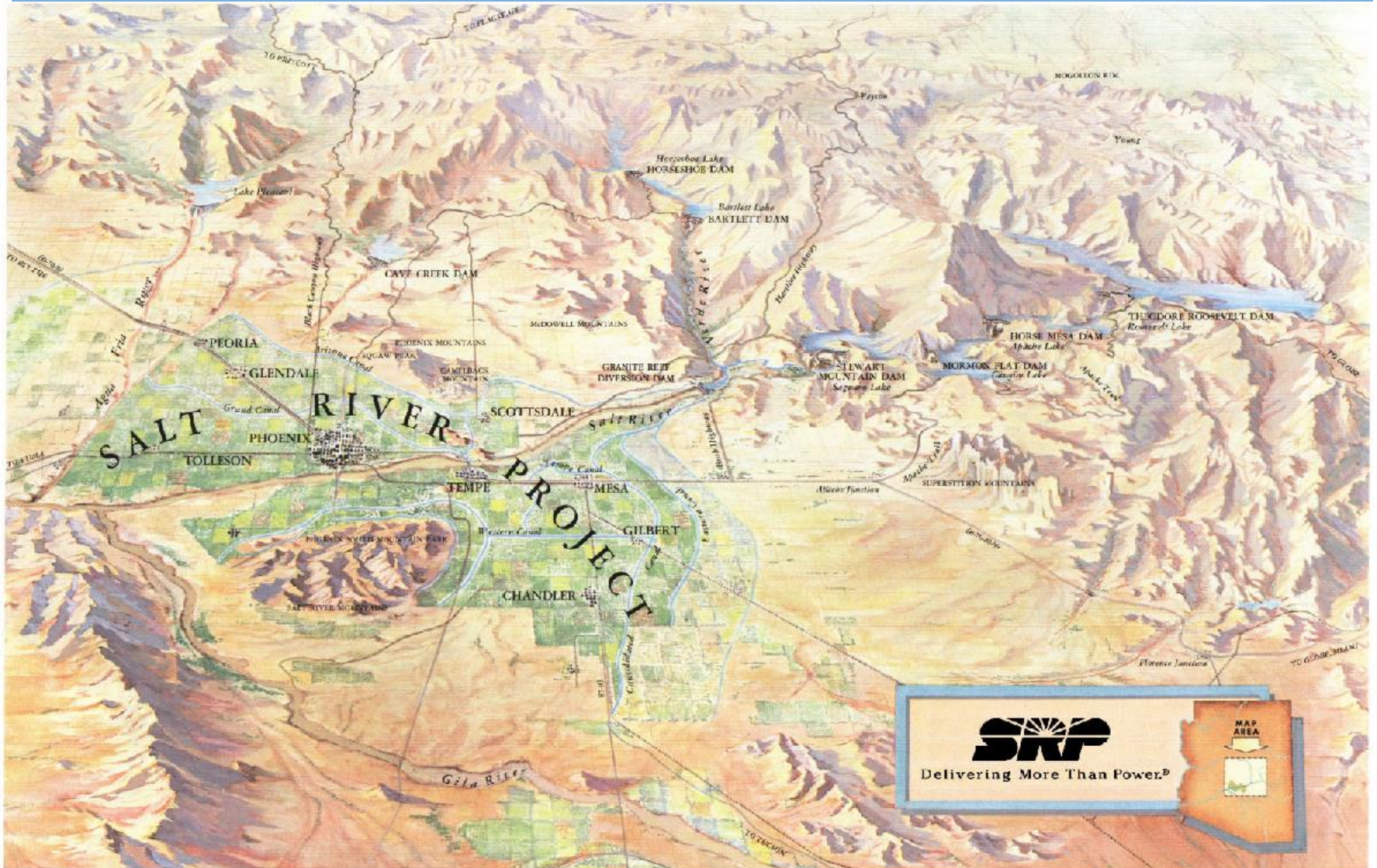
**Charlie Ester**

**Manager, Surface Water Resources  
Salt River Project**

**San Diego, CA  
May 17, 2017**



# Salt River Valley Water Users Association Lands



# SRP Beginning

## **1903**

- **US Government approved Salt River Reclamation Project**
  - **Government would finance and build a dam on the Salt River**
    - **Storage of water for irrigation of valley lands**
  - **Landowners would put their lands up as collateral**
    - **Loan to be repaid over a period of years**

# SRP Today

## ASSOCIATION

(Water)

- **Private Water Company**
- **Agent for Shareholders**
- **Government Trustee for Reclamation Project.**

## DISTRICT

(Power)

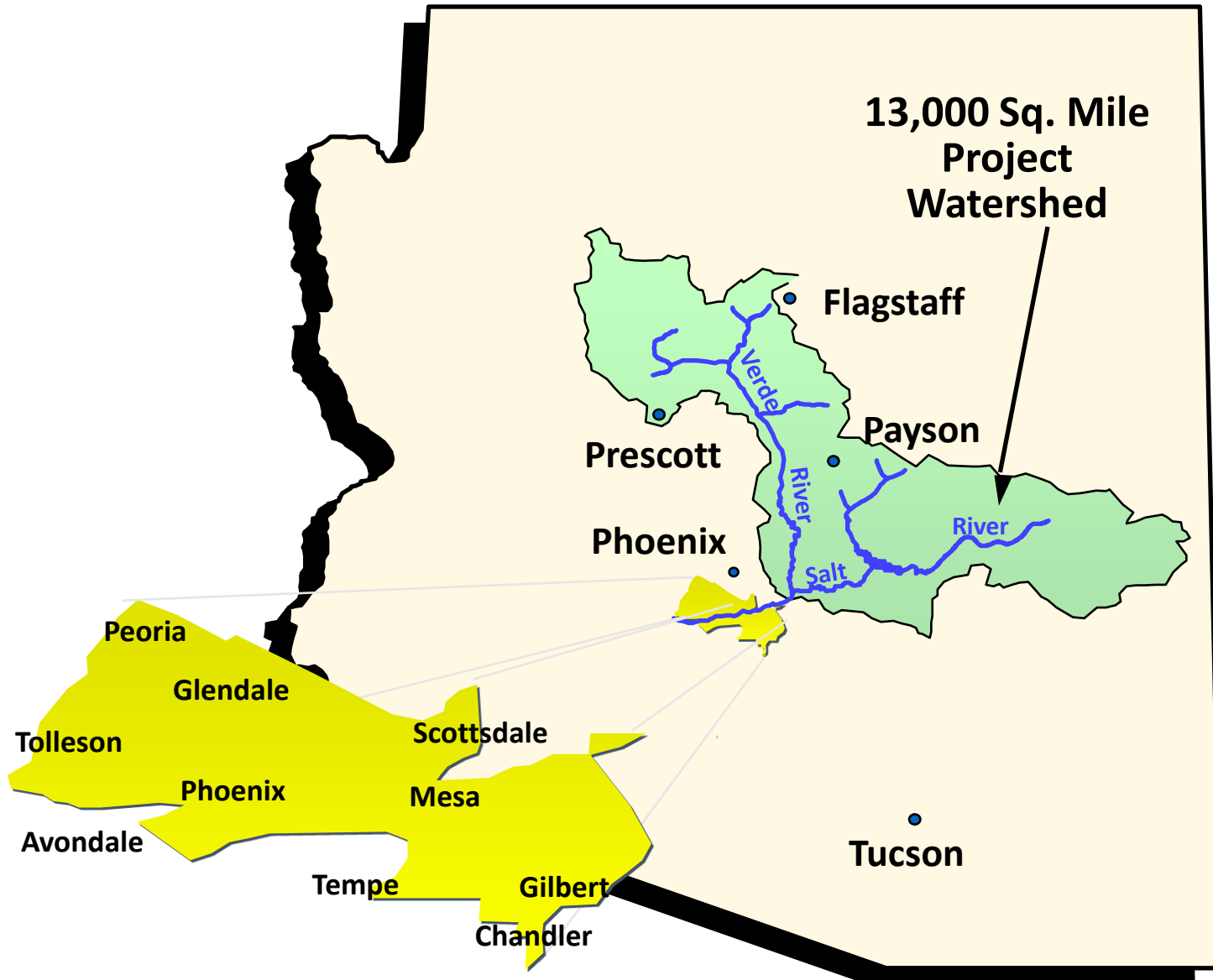
- **Political Subdivision of the State**
- **Property Title Holder**
- **Created to Provide low-cost Water**

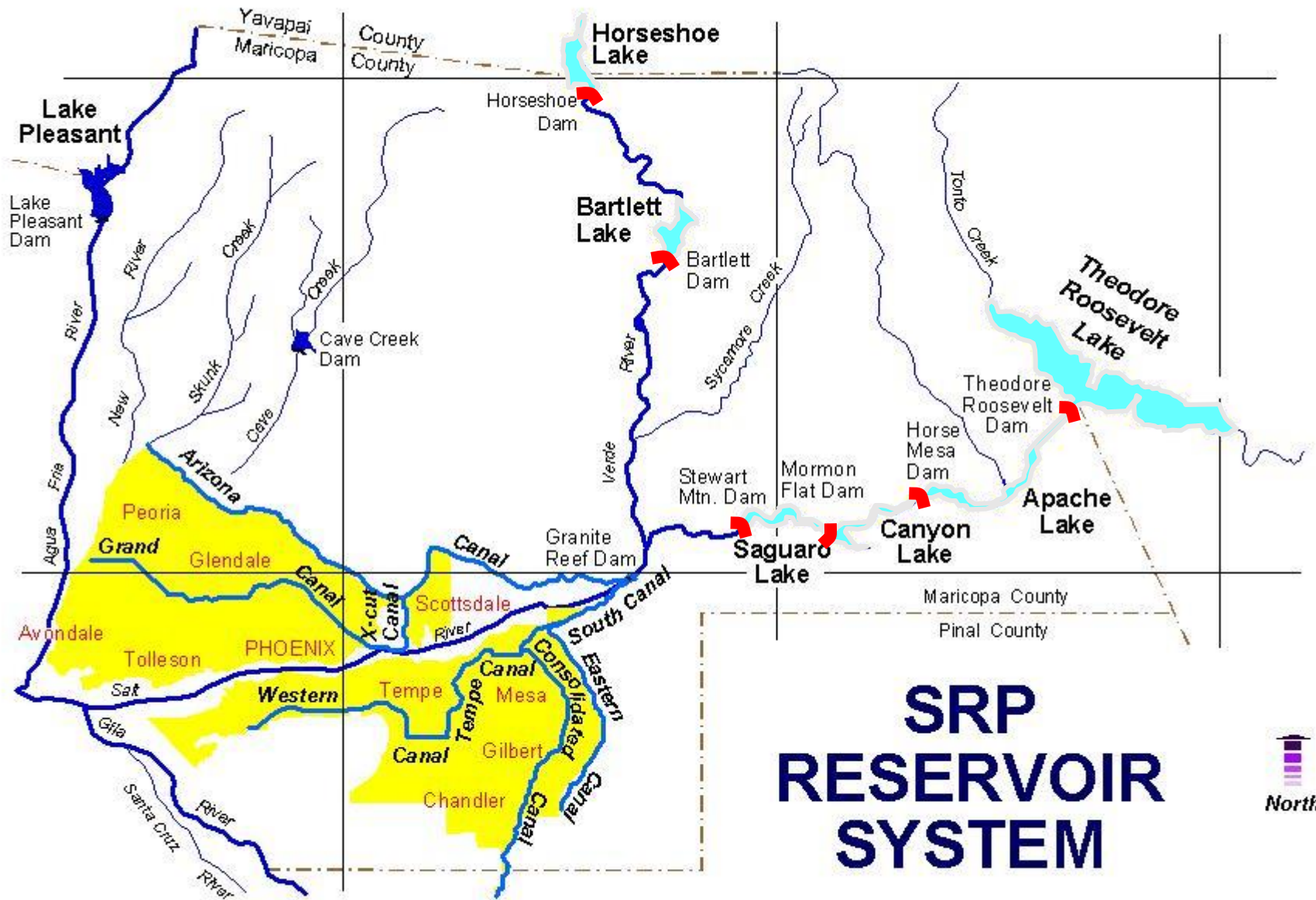
**SRP is the nation's third largest public power entity providing power to over 1,000,000 accounts.**

# SRP Today

- **Association delivers nearly 800,000 acre-feet of water per year**
- **Seven dams and reservoirs**
- **131-miles of canal**
- **275 wells to augment surface water**
- **Primary Water Supply to Metropolitan Phoenix**

# SRP Water Service Area





# SRP RESERVOIR SYSTEM



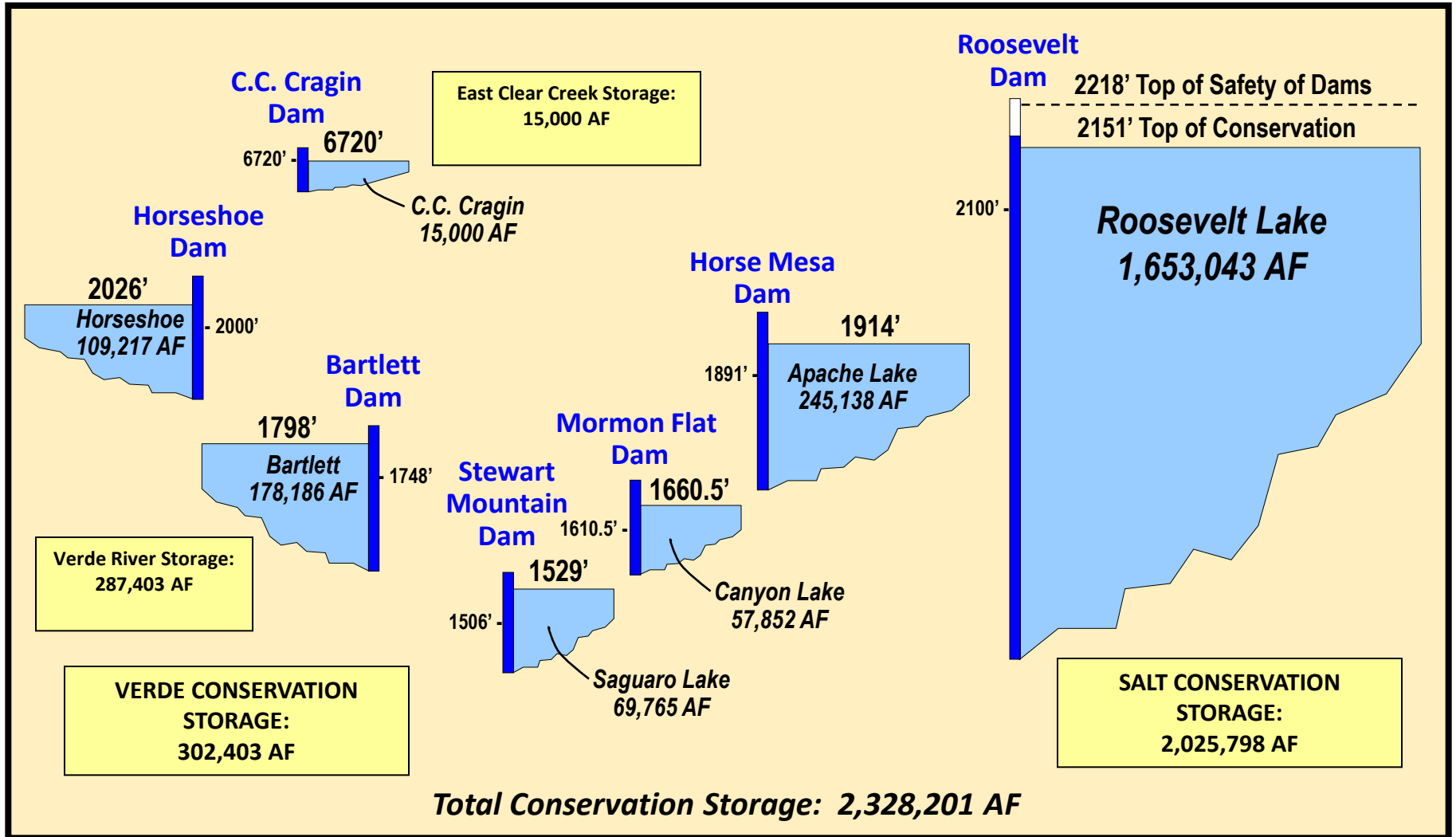
# SRP Reservoir Operations

## Guiding Principles

- 1. Maintain the safety and integrity of the dams.**
- 2. Maintain sufficient SRP storage to water delivery obligations.**
- 3. Optimize reservoir storage for SRP use with the reservoir system.**
- 4. Maintain adequate SRP carryover storage for following years in case of low runoff.**
- 5. Conjunctively manage groundwater pumping given reservoir storage, projected runoff, and demand.**
- 6. Maximize hydrogeneration.**
- 7. Operate to permit facility maintenance.**



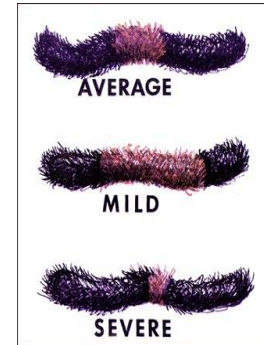
# Salt River Project Reservoir System



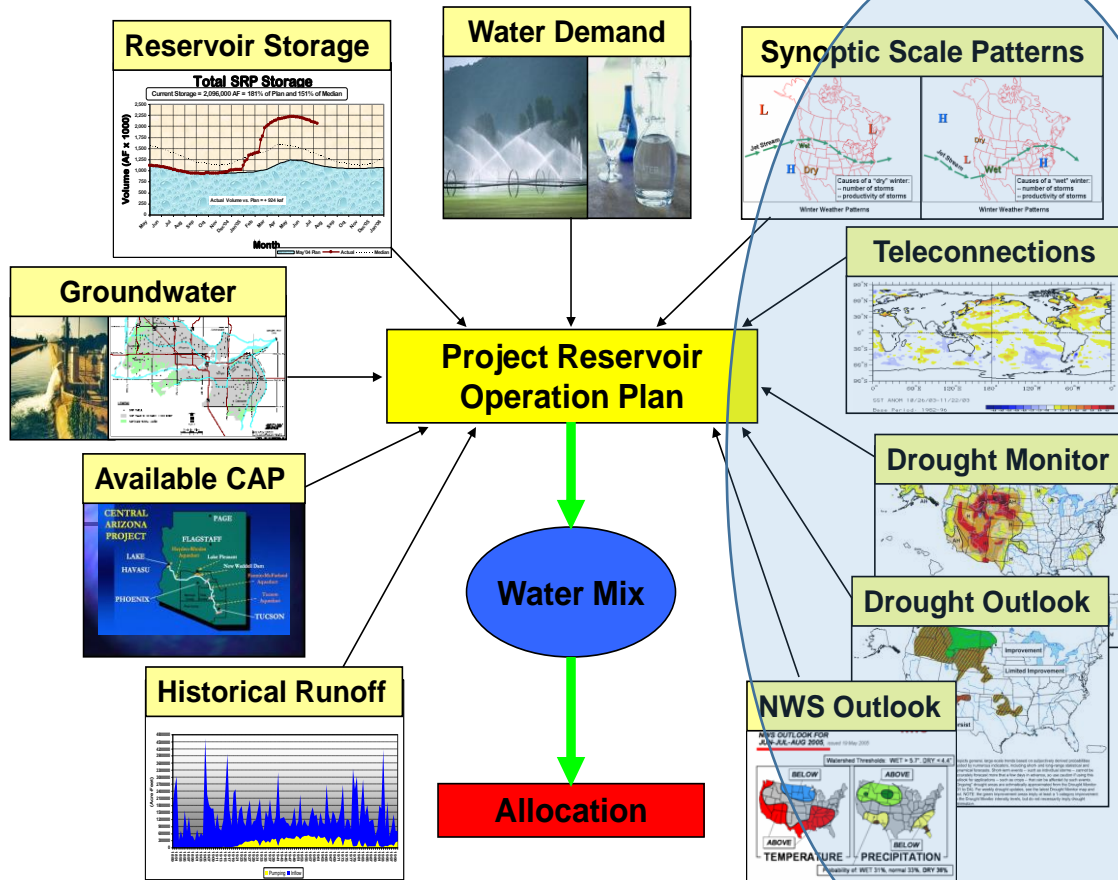
# Weather Forecasts

## Wet Winter Indicators

- Lots of acorns
- Pine cones gathered on the top of the tree
- Frequent rings around the sun
- Large spider webs
- Woolly worms with thin brown stripe
- Bees become secluded
- Woodpeckers sharing trees
- Raccoons with thick tails
- Mice overeating
- Wildlife putting on early and thick winter coats
- Squirrels gathering nuts
- Spleen of big game animals



# Water Resource Management



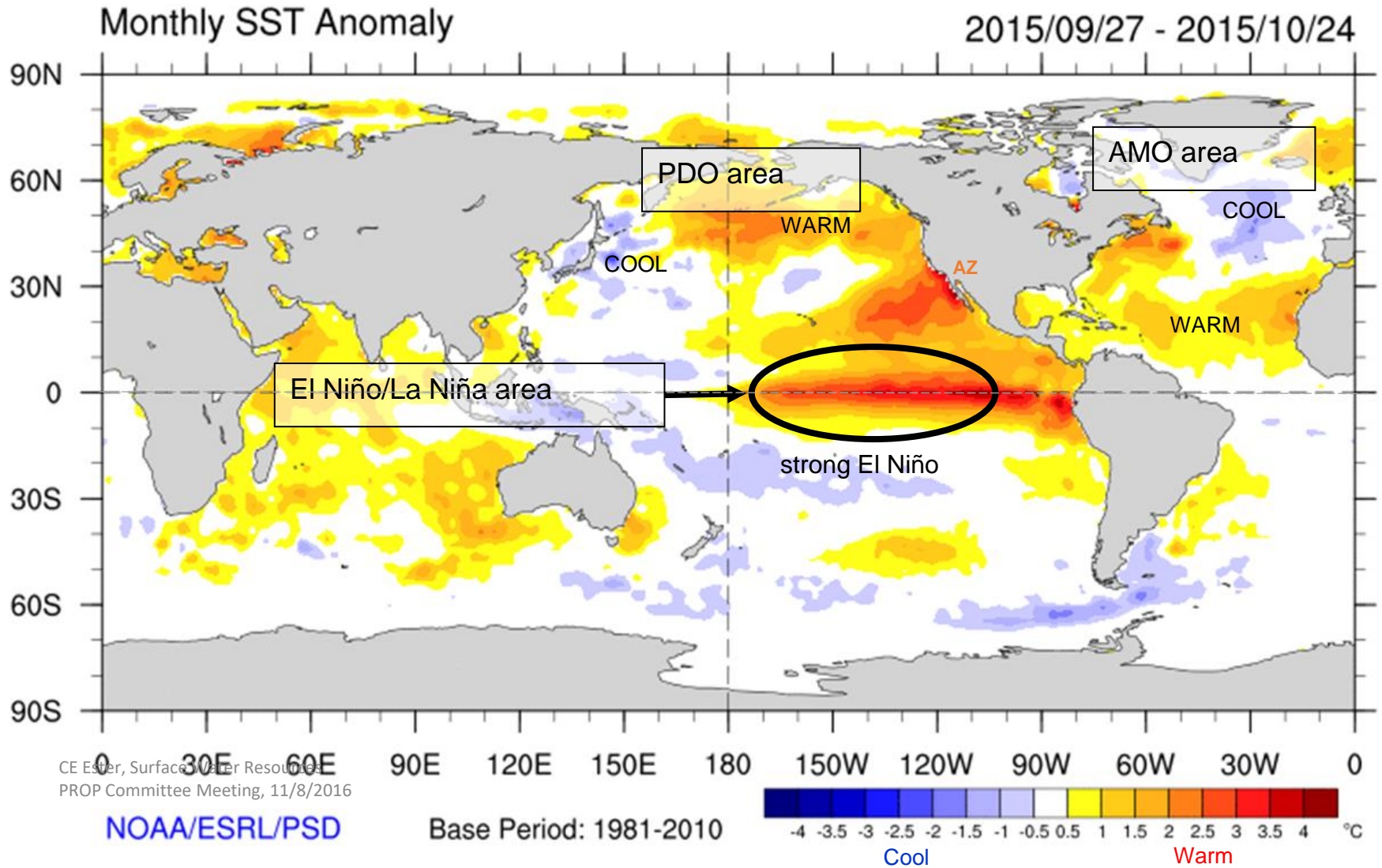
# Weather Forecasts

## Goal of Weather Support

- Effective use of weather information in water and power decision making →
  - Better decisions with full weather knowledge
  - Increased operational efficiency
  - Improved planning for water and power operations



# Sea Surface Temperature Anomalies OCTOBER 2015



CE Ester, Surface Water Resources  
PROP Committee Meeting, 11/8/2016



**El Niño Update...**

**THE GIANT BUST  
OF 2016!**



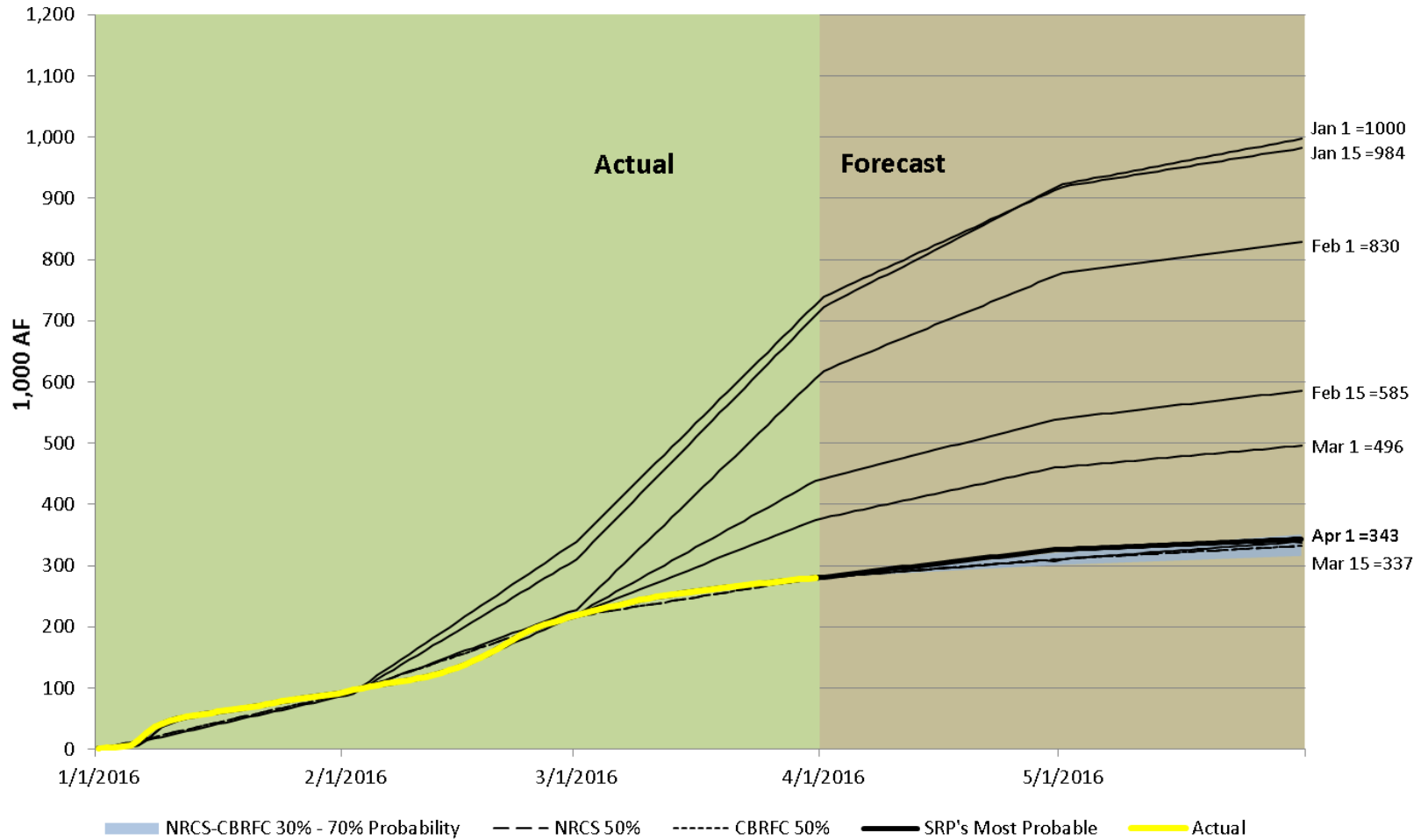


Operations

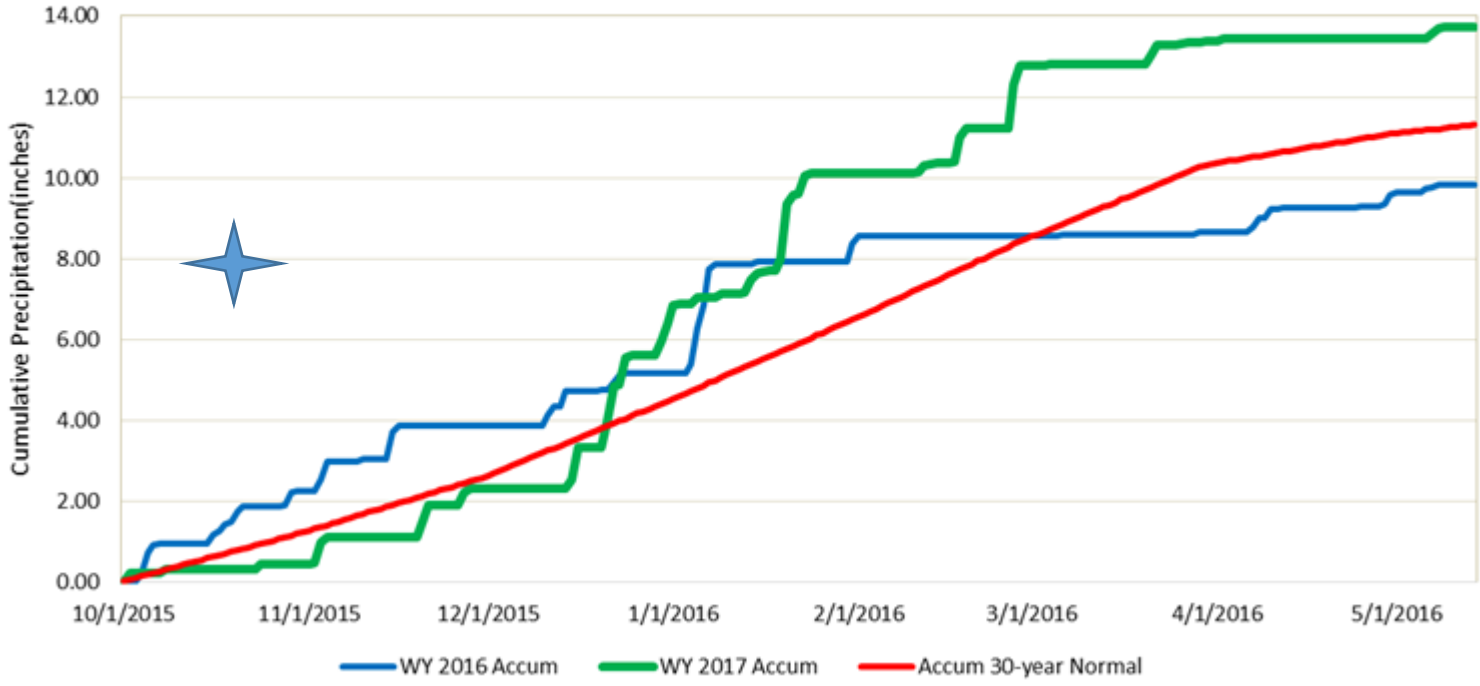


# Water Supply Forecasts

## April 1, 2016 - Salt, Tonto, and Verde Runoff Forecast



### Cumulative Watershed Precipitation: Fall-Winter-Spring



+650,000  
Acre  
Feet

350,000  
Acre  
Feet

# Water Resource Management

## PROJECT RESERVOIR OPERATIONS PLAN

May 2014

Allocation and Mix		
	SW	GW
2014	1.8	1.2
2015	1.2	2.1
2016	1.2	2.1

Supply/Delivery Page  
(1000s Acre Feet)

Month	SRP Demand	Pump Supply				SUPPLIES		EXCESS (- Payback)	Surface Supply				
		Minimum	Special Pump Right	Proposed In Lieu	Additional Physical	Total Physical Ground Water	Total Ground Water		CAP	Salt	Other	Verde	Total Surface
May-14	95.0	5.6	0.0	15.0	16.4	22.0	37.0	0.0	50.0	0.0	8.0	58.0	
Jun-14	116.0	7.1	0.0	18.5	11.4	18.5	37.0	0.0	71.0	0.0	8.0	79.0	
Jul-14	124.0	6.6	0.0	16.6	13.8	20.4	37.0	0.0	79.0	0.0	8.0	87.0	
Aug-14	118.0	5.7	0.0	2.4	24.9	30.6	33.0	0.0	77.0	0.0	8.0	85.0	
Sep-14	82.5	5.2	0.0	1.0	22.8	28.0	29.0	0.0	45.5	0.0	8.0	53.5	
Oct-14	39.0	5.1	0.0	0.0	15.9	21.0	21.0	0.0	0.5	0.0	17.5	18.0	
Nov-14	29.0	5.8	0.0	0.5	4.7	10.5	11.0	0.0	0.5	0.0	17.5	18.0	
Dec-14	27.0	6.7	0.0	3.7	0.6	7.3	11.0	0.0	0.5	0.0	15.5	16.0	

**Groundwater is expensive, highly regulated, and a mineral resource!**

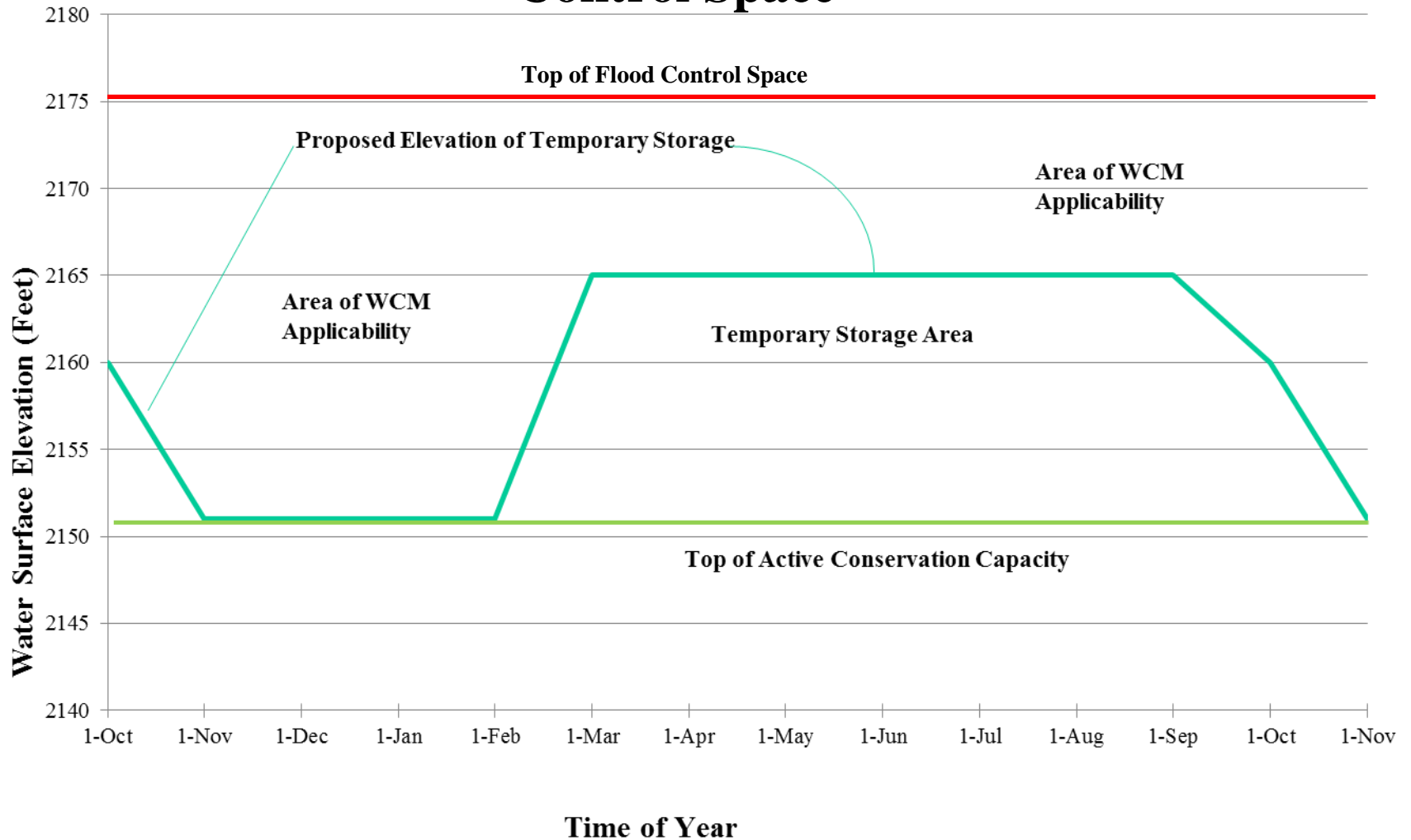
## Roosevelt Dam...SRP's Largest Reservoir



# Potential Joint Use of Flood Control Space

- **Store water in a portion of the Flood Control Space**
  - **Temporary storage February through October**
  - **Up to elevation 2165' (315,000 acre feet)**
  - **Represents a period of reduced flood hazard**
- **Utilize “Forecast Informed Reservoir Operations” and S2S Improved Skill**
- **Work with Corps to modify Water Control Manual to extend releases to allow beneficial use of stored water**

# Modified Roosevelt Dam Temporary (Joint) Use of Flood Control Space



# **Why Improve S2S?**

- **Better Manage Water Resources**
- **Save Groundwater and Scarce Dollars**
- **Store Water in a Portion of the Flood Control Space**
- **Increase Water Supply Utilizing Existing Infrastructure**
- **Better Drought and Flood Management**
- **Solve (or Better Understand) a Scientifically Complex Issue**

# Surface Water Resources



**End**



