

Ephemeral Stream-Flow Monitoring Using SRP Flowtography®

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WESTCAS 2016 ANNUAL CONFERENCE, SANTA FE, NM

JUNE 22, 2016



Salt River Project

SALT RIVER VALLEY WATER USERS ASSOCIATION

- Established 1903
- A Federal reclamation project
- A private corporation
- Delivers almost 1 million acre-feet per year

SRP AGRICULTURAL IMPROVEMENT AND POWER DISTRICT

- Established 1937 as a political subdivision of the state of Arizona
- 32,571 million kWh sold in FY10
- 1,000,000+ customers in and around the Phoenix metro area

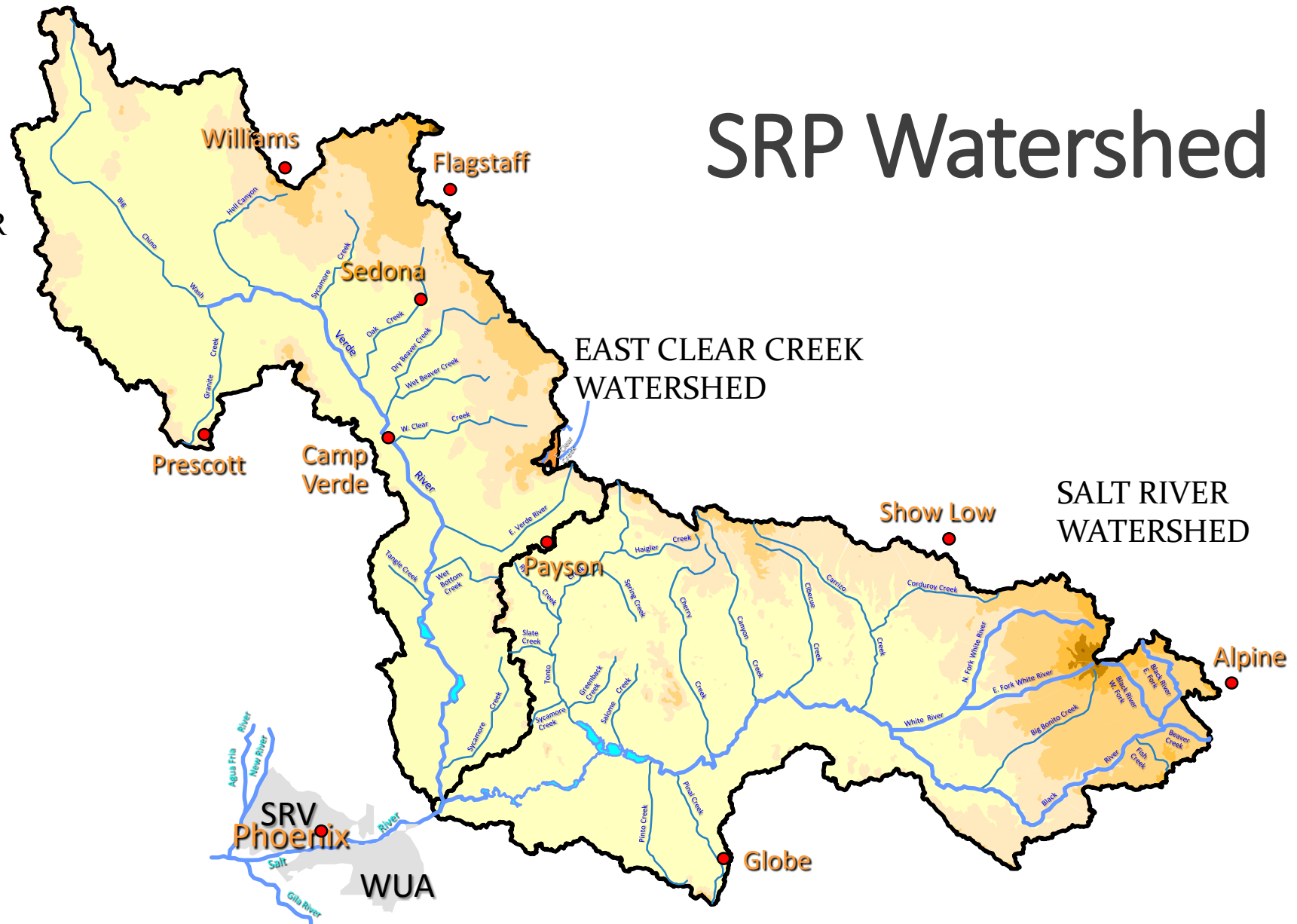


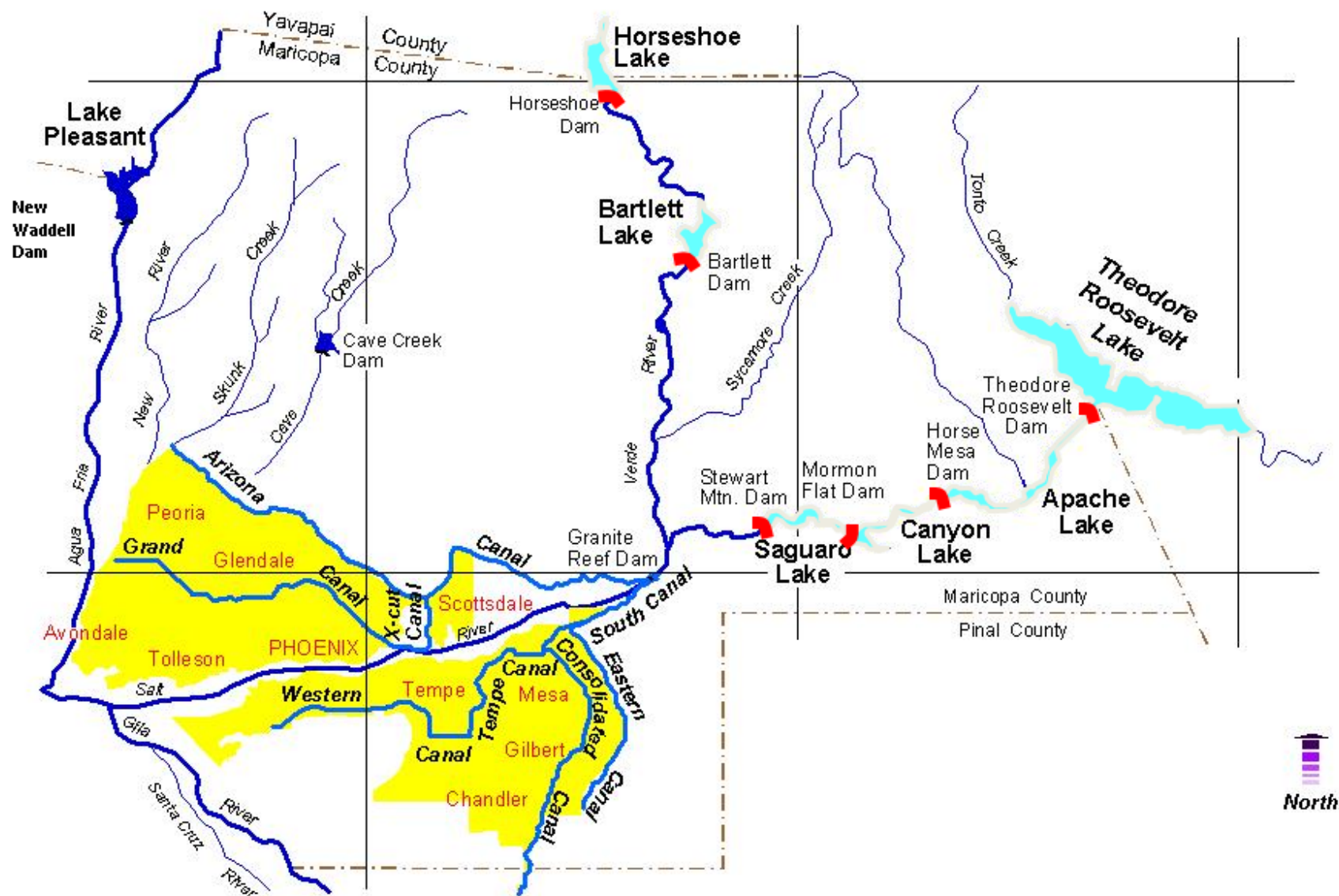
SRP Watershed

VERDE RIVER
WATERSHED

EAST CLEAR CREEK
WATERSHED

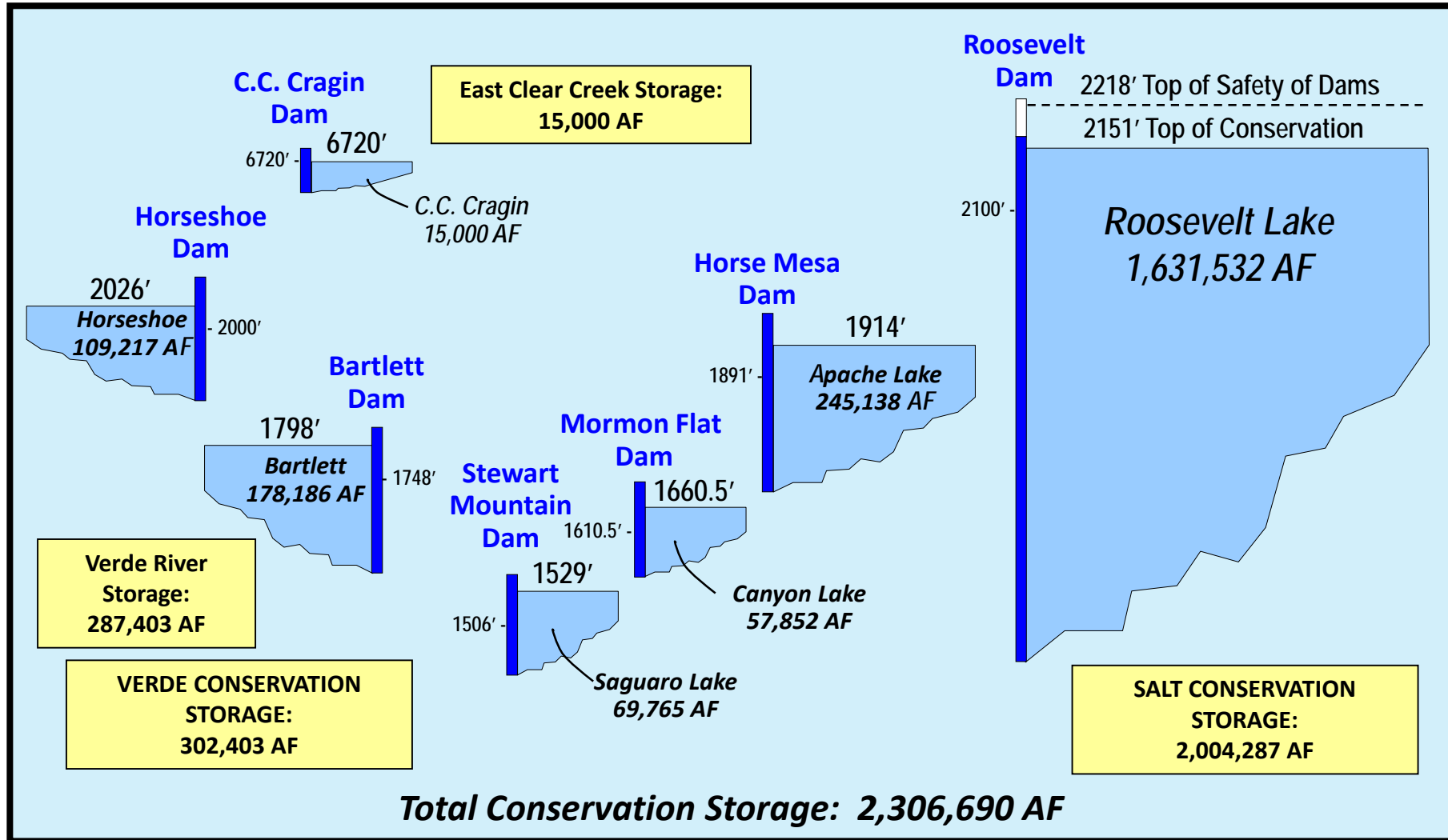
SALT RIVER
WATERSHED



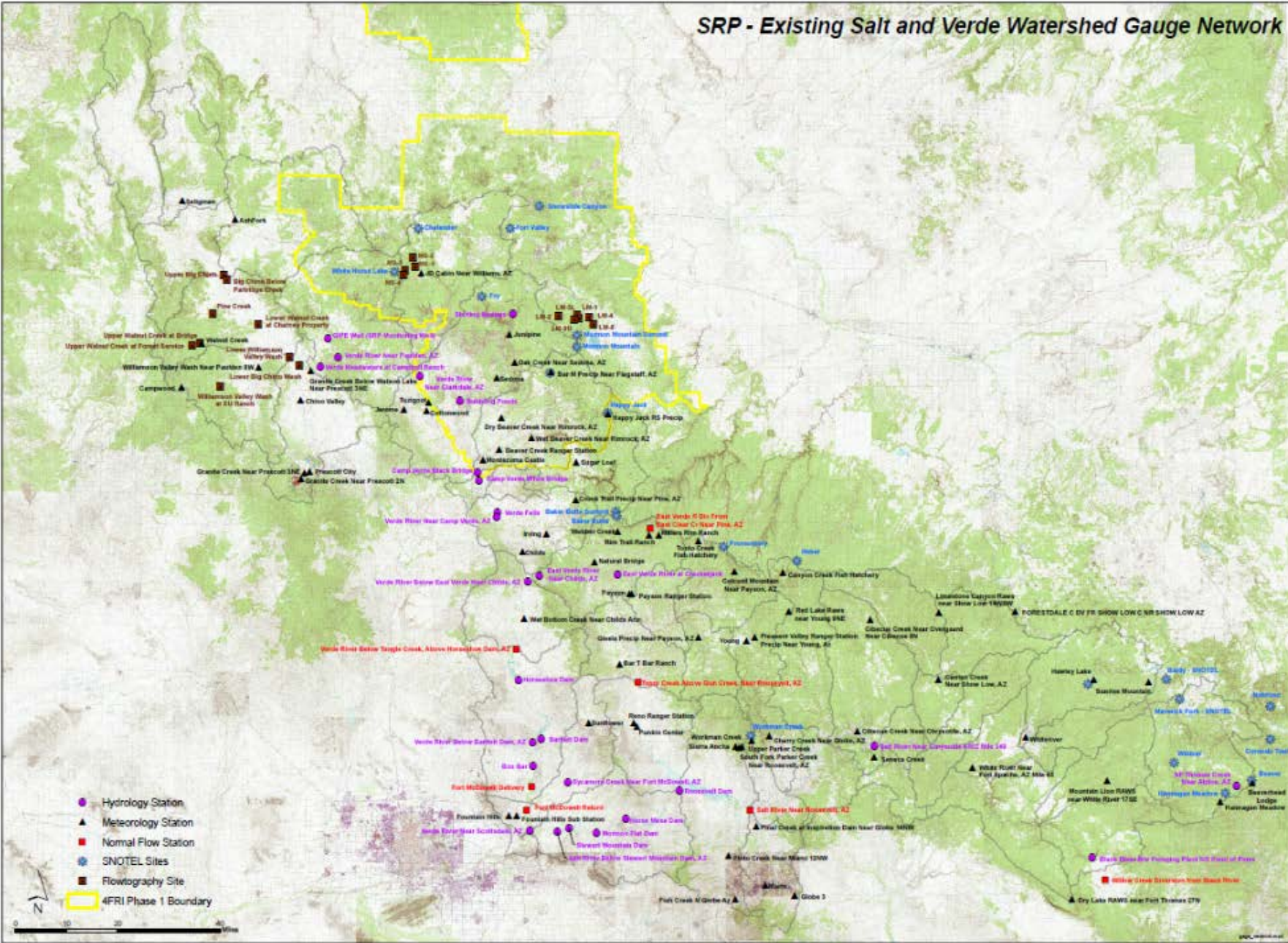




Salt River Project Reservoir System



SRP - Existing Salt and Verde Watershed Gauge Network



Traditional measurements



Precipitation Gages



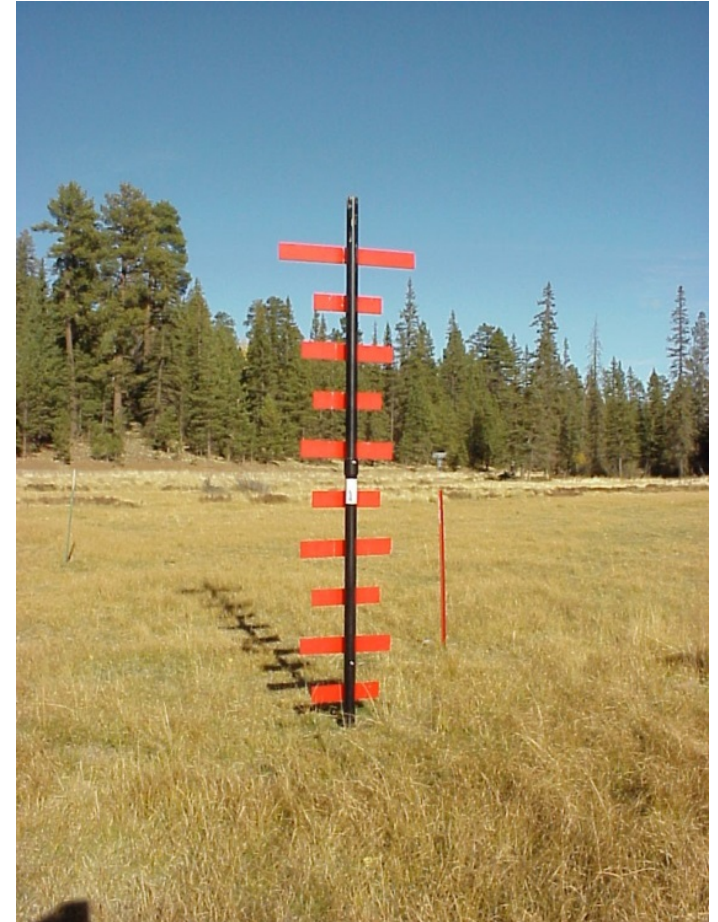
Rain gage



Snow gage



Aerial Snow Markers



SRP Flowtography®



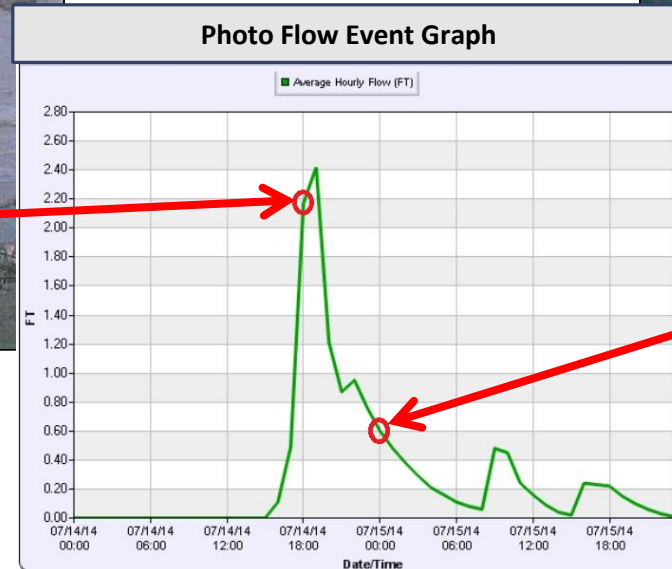
SRP Flowtography®



Installation



Image Collection and Processing

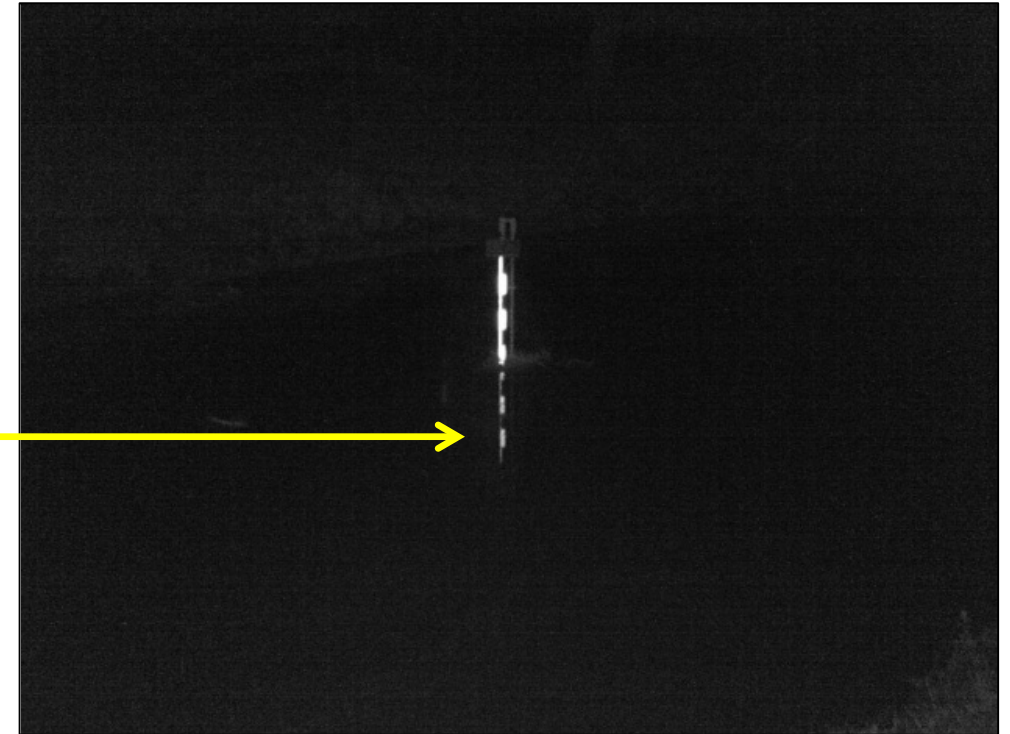


Images are collected every 15 minutes.

Nighttime



Nighttime



SnowTography



073 F 12-11-2014 11:59:30



021 F 12-13-2014 17:08:56

Annual Variability



Managed Fire



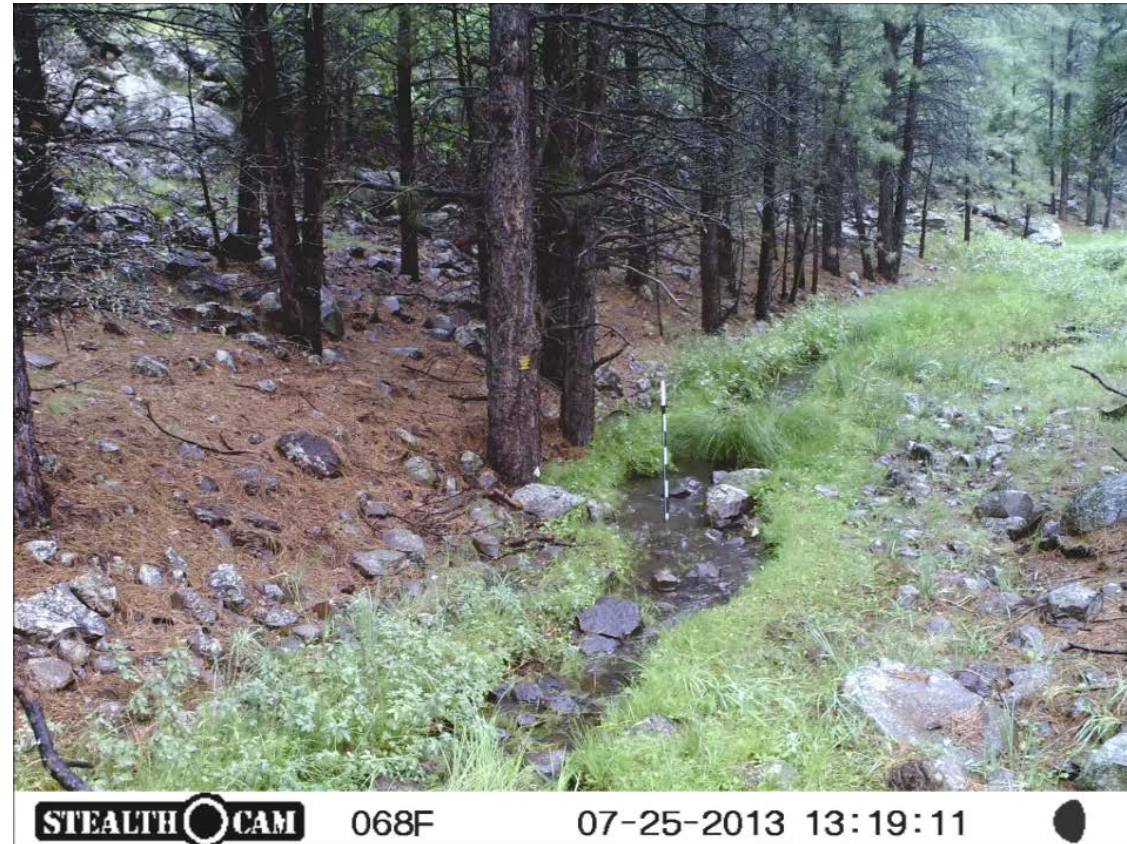
085 F 06-17-2015 18:57:13



103 F 08-04-2015 12:43:04



High Flow



STEALTH CAM

068F

07-25-2013 13:19:11



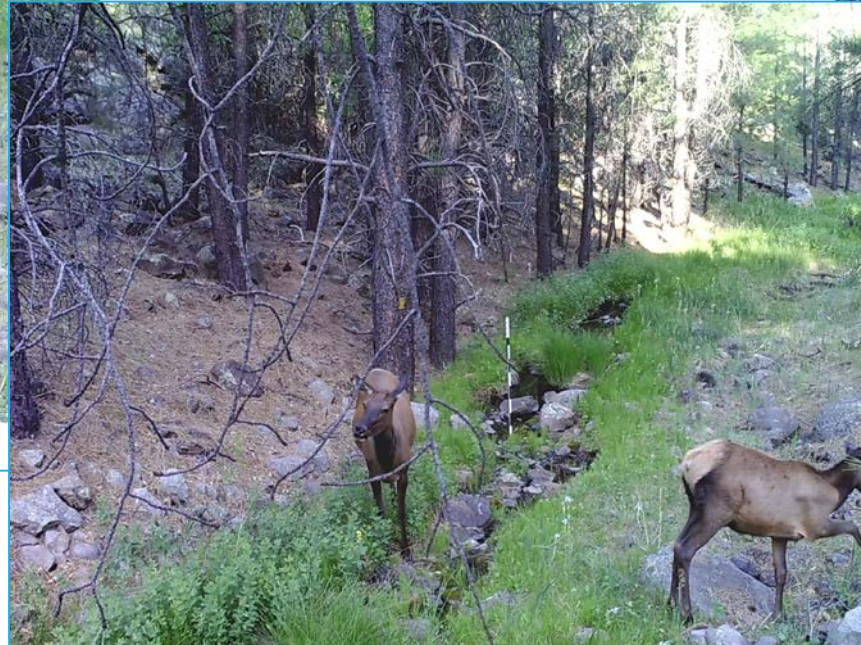
Snow and Runoff Event (At Night)



Wildlife



068F 06-17-2014 19:17:05



082F 06-09-2014 17:36:32



044F 06-24-2014 05:31:10

Sheep, Elk, and Deer



073F 08-23-2013 17:52:



087 F 03-06-2015 17:50:35



075F 09-06-2013 11:10:19

Even Cows



058 F 08-19-2014 12:47:39

There's something about the pole



066 F

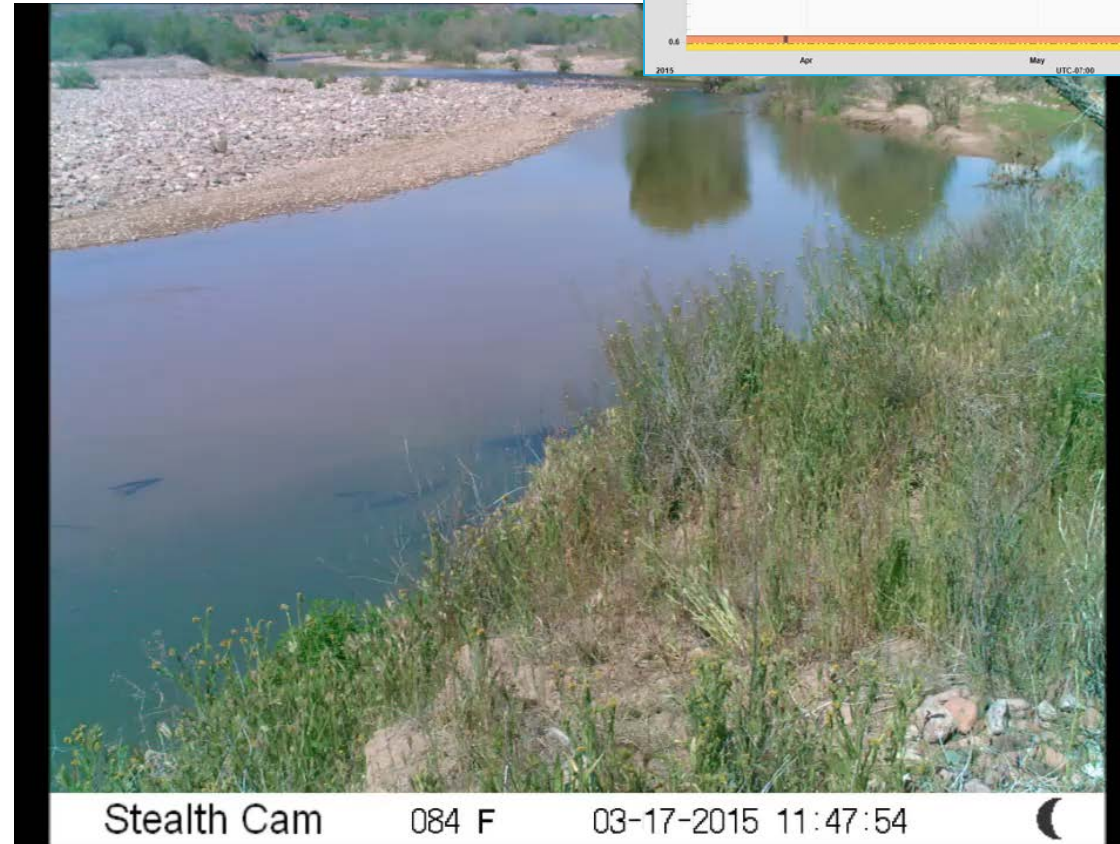
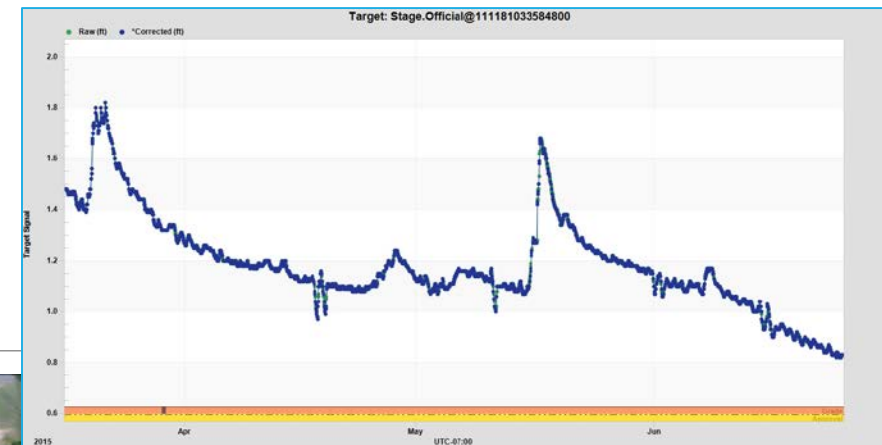


08-19-2014 19:33:15



Other Uses of Flowtography

Tonto Creek Monitoring



Sometimes Events are Larger Than Expected — Little Colorado River



Summary:

Utilizing innovative, creative, and low cost technology methods, SRP is able to monitor the hydrology at ephemeral and remote locations that would normally be cost prohibited to observe.

