

Healthy Watersheds California: A New Approach to Water Security



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Private Forests. Public Treasures.

California's water system relies on both natural and built infrastructure

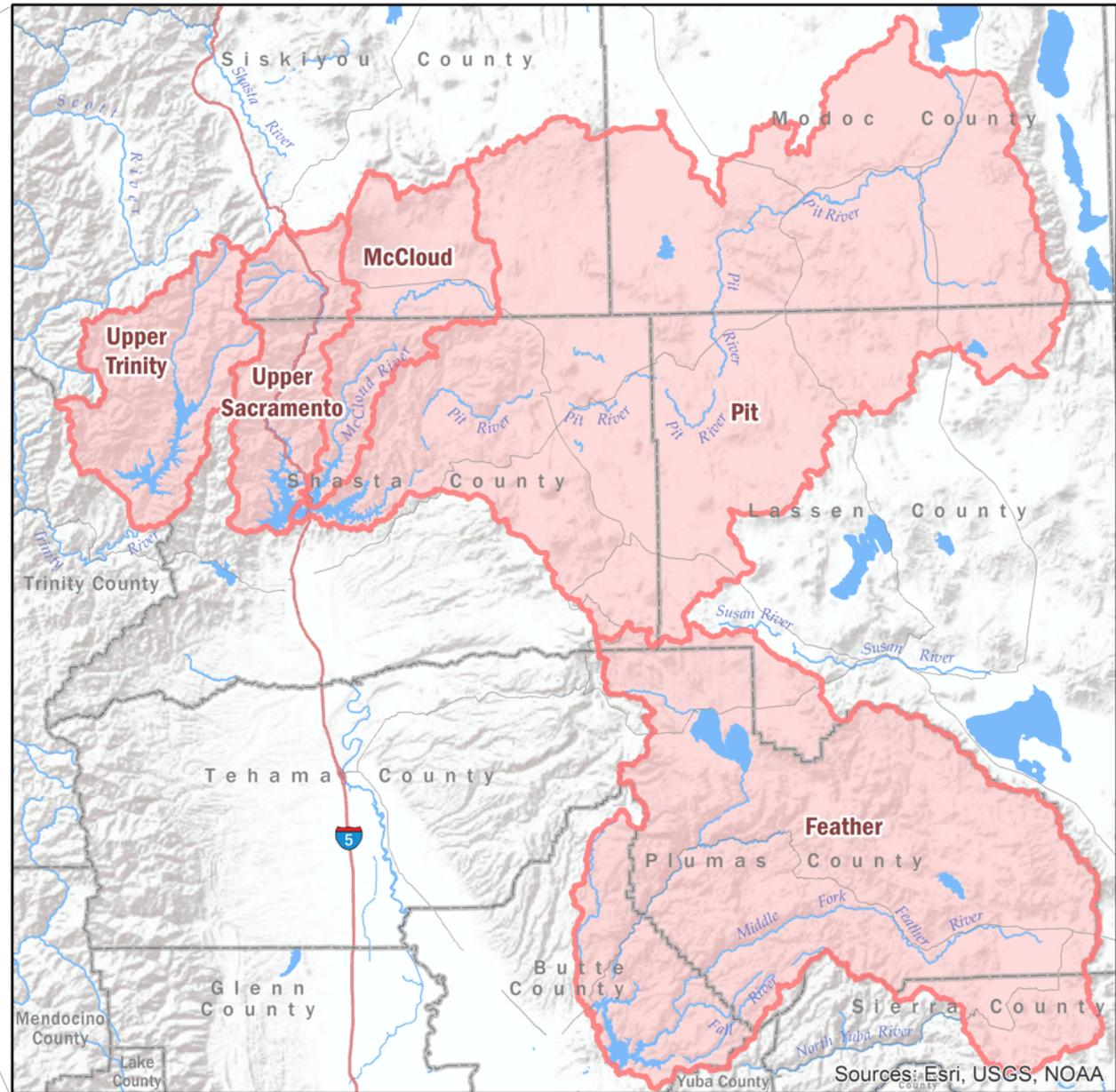


Five watersheds provide 80% of reservoir supply:

- 8M acres irrigated agriculture
- 40% of LA drinking water
- Drinking water for 25+ million people

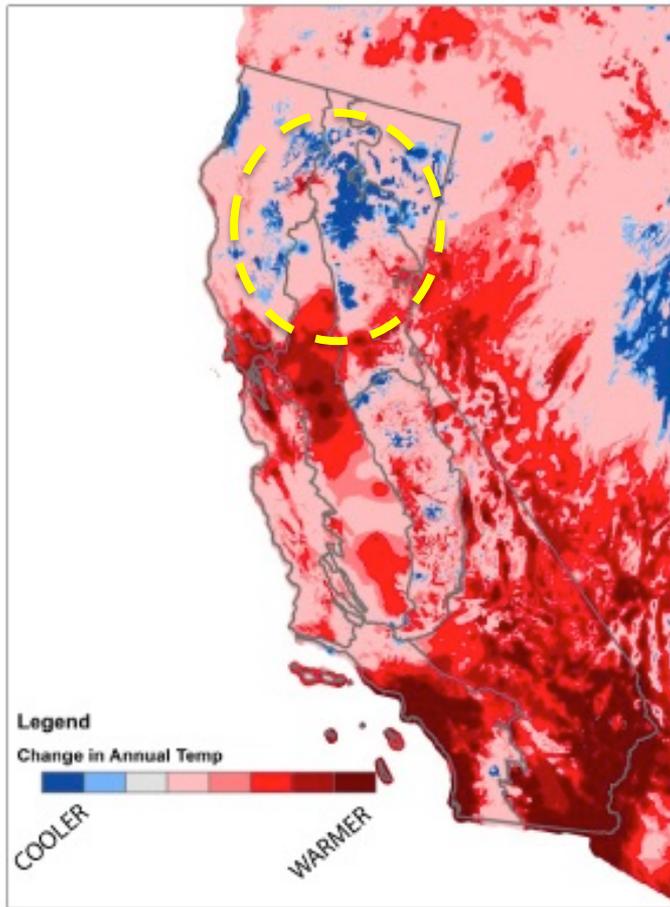


Watersheds Analyzed: SWP; CVP main system feeders

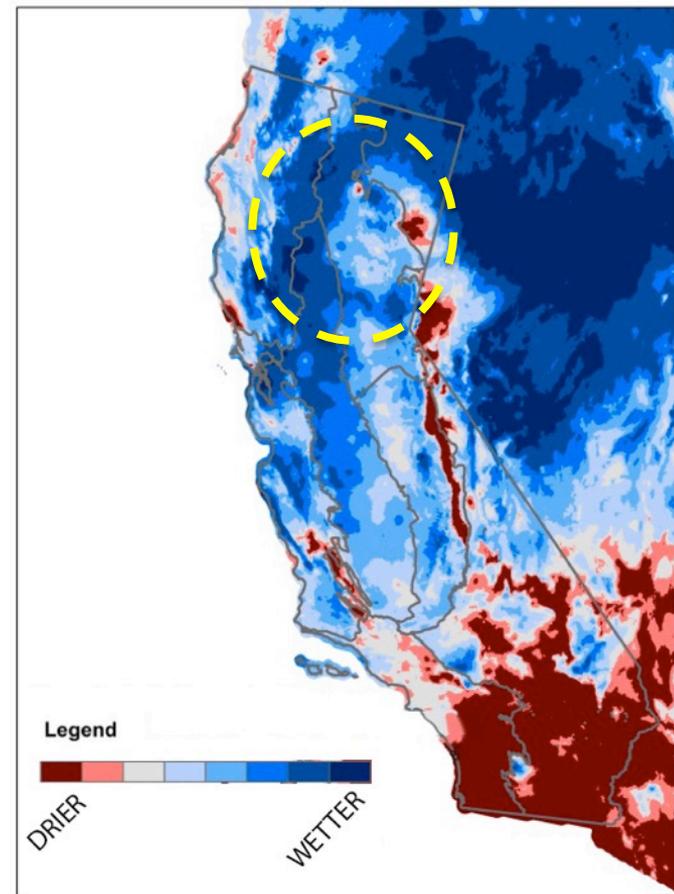


20th Century Climate Change in CA

Temperature Change:



Precipitation Change:



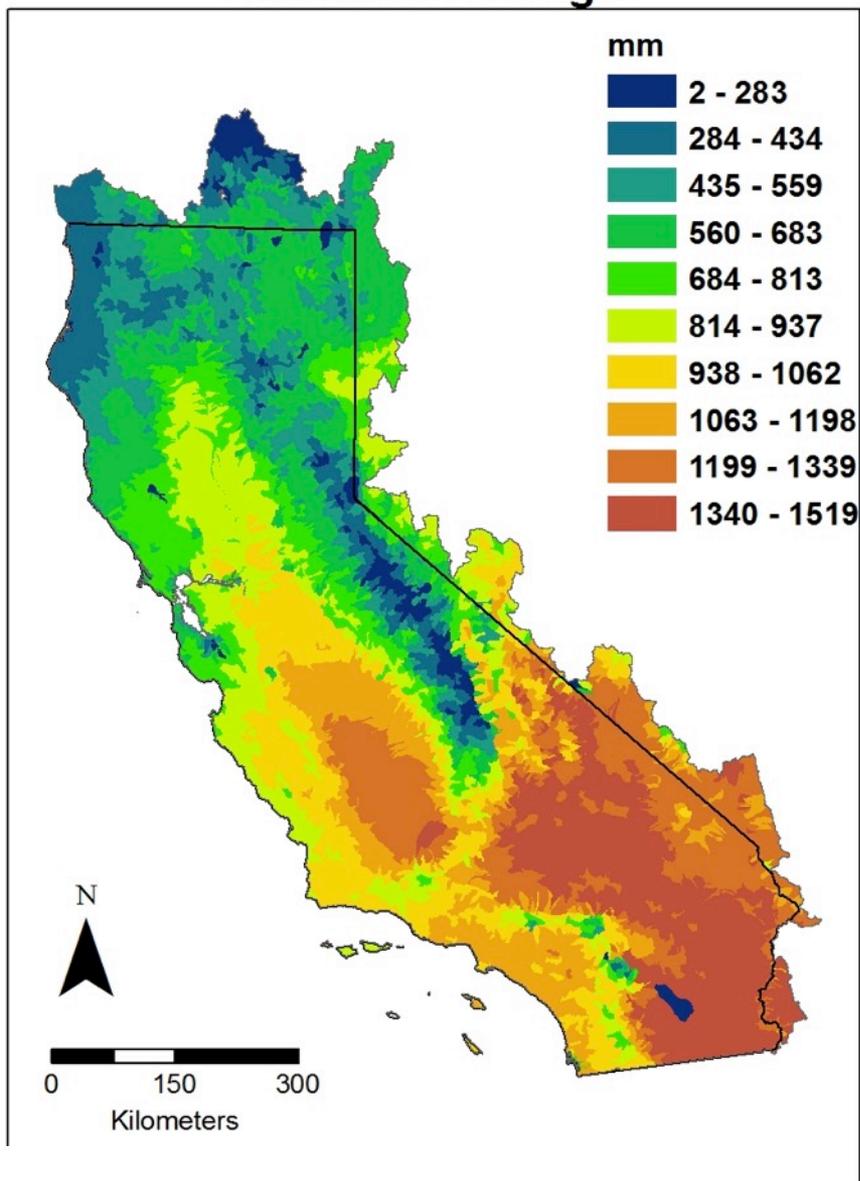
Rappuciolo, et al 2014

Projected to remain cooler & wetter than rest of California

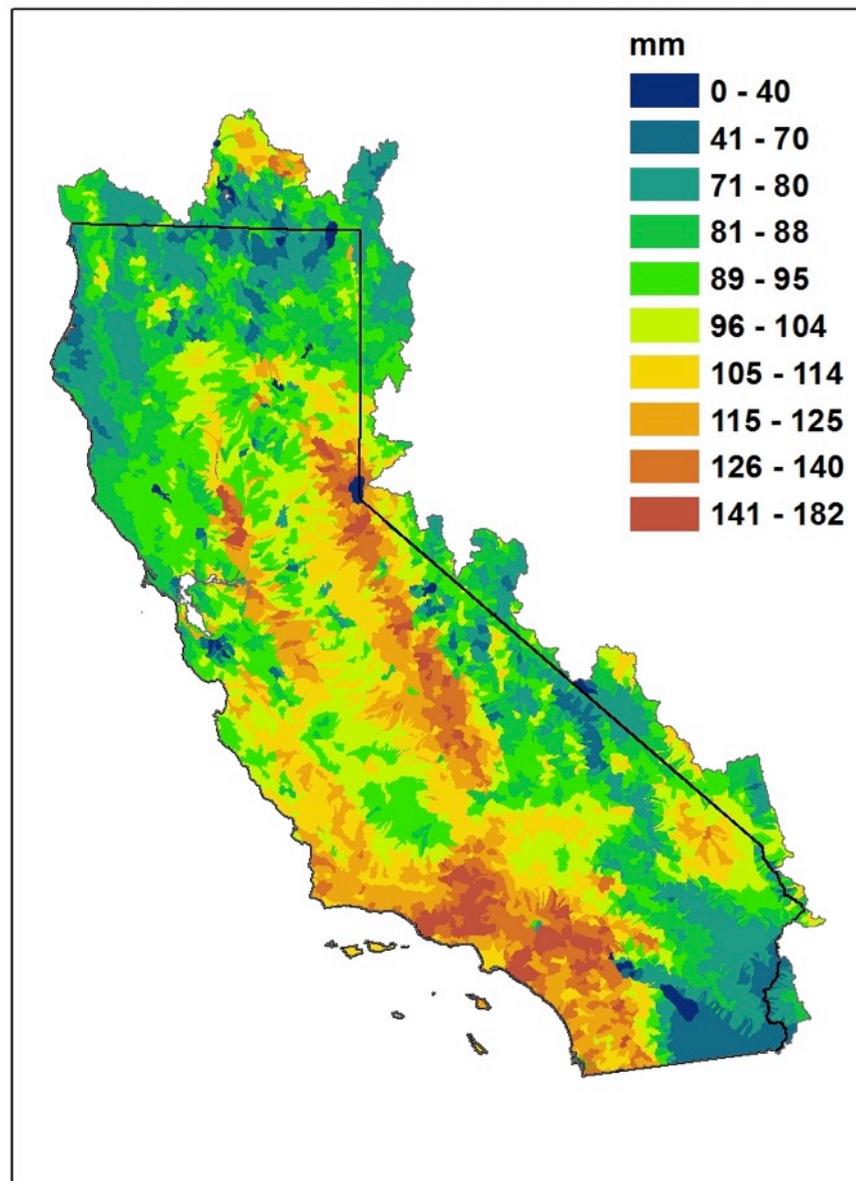


Climatic Water Deficit

1981-2010 Average

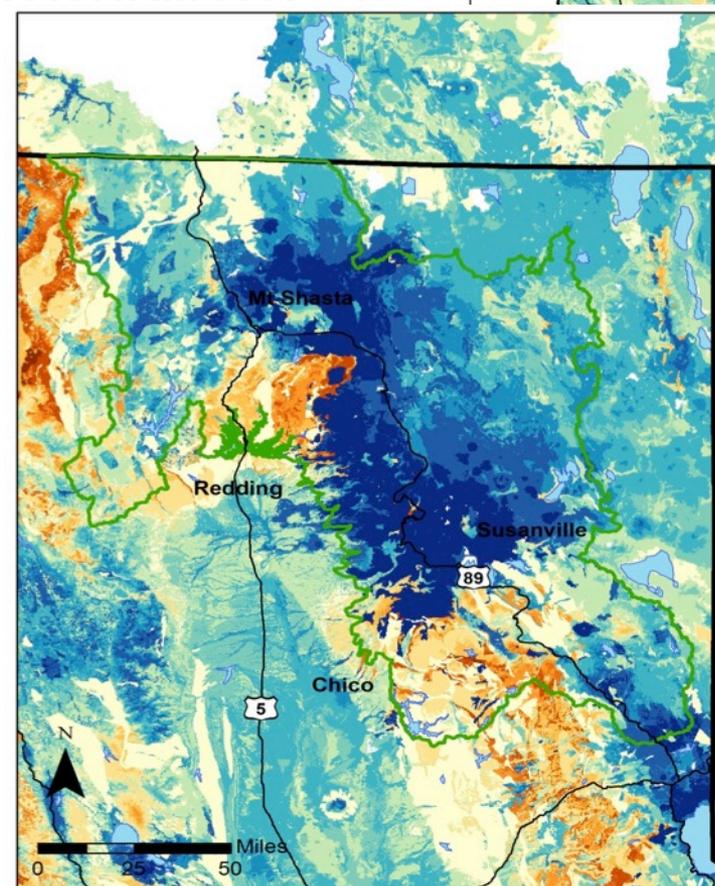
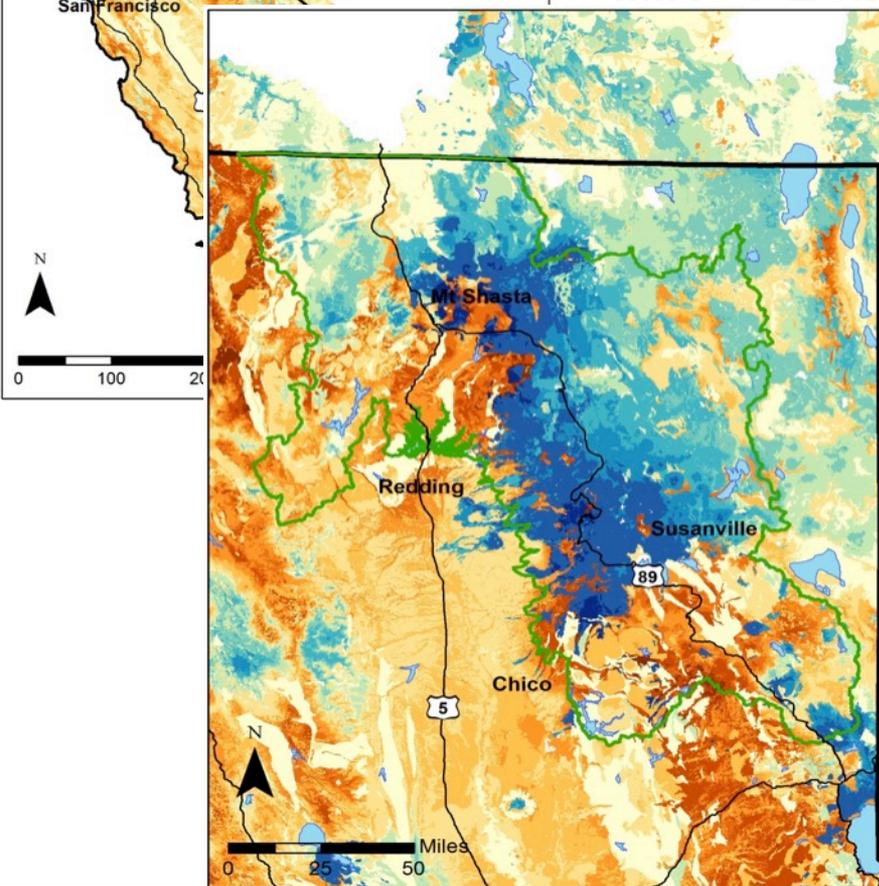
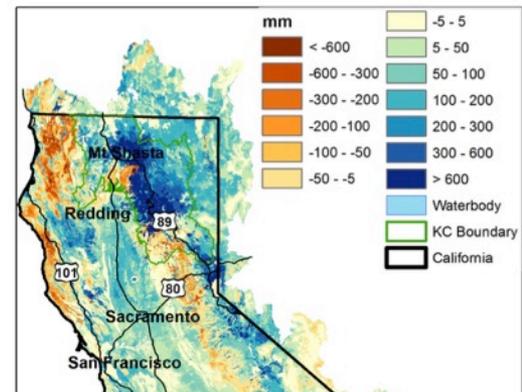
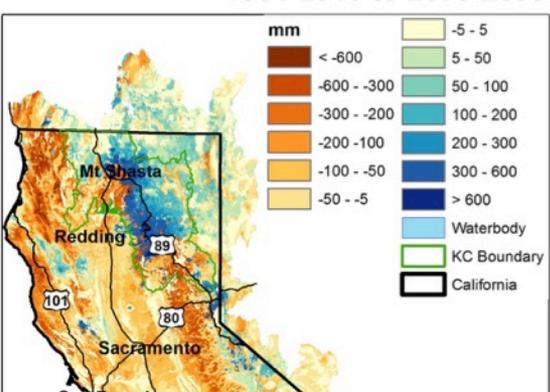


1981-2010 Standard Deviation

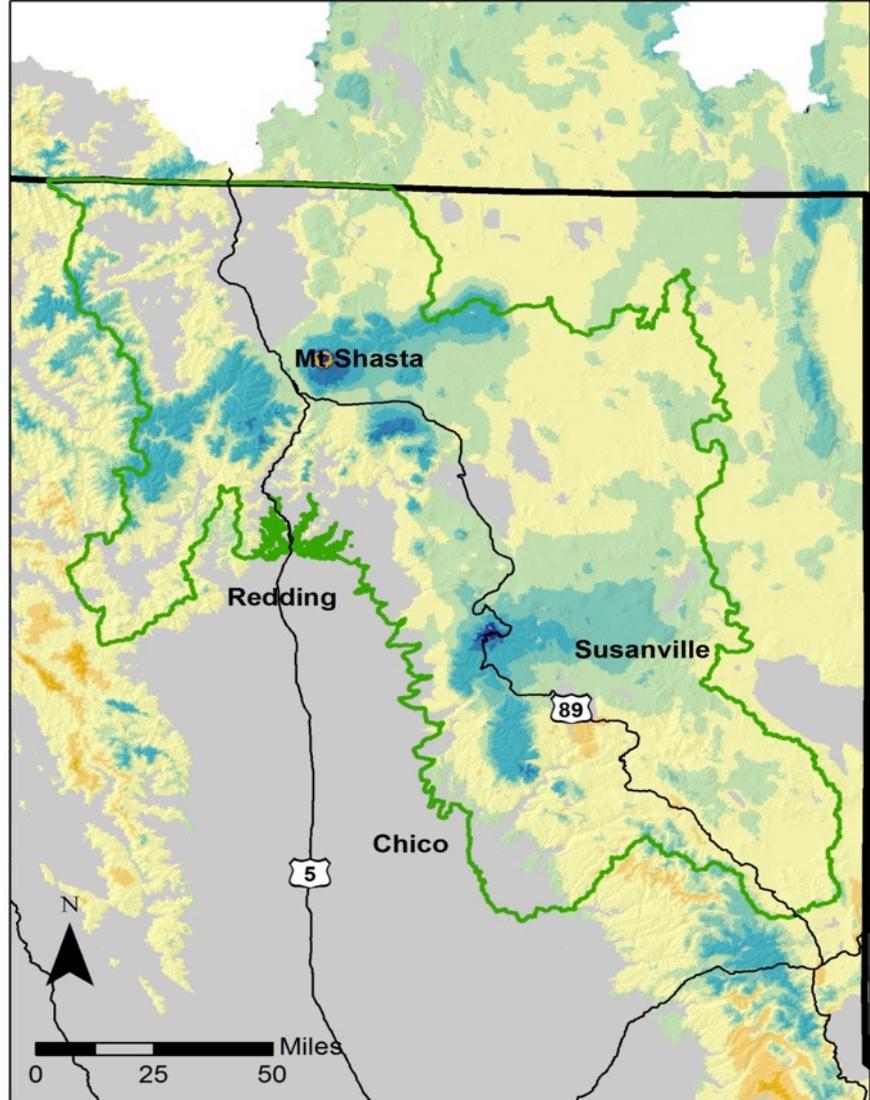
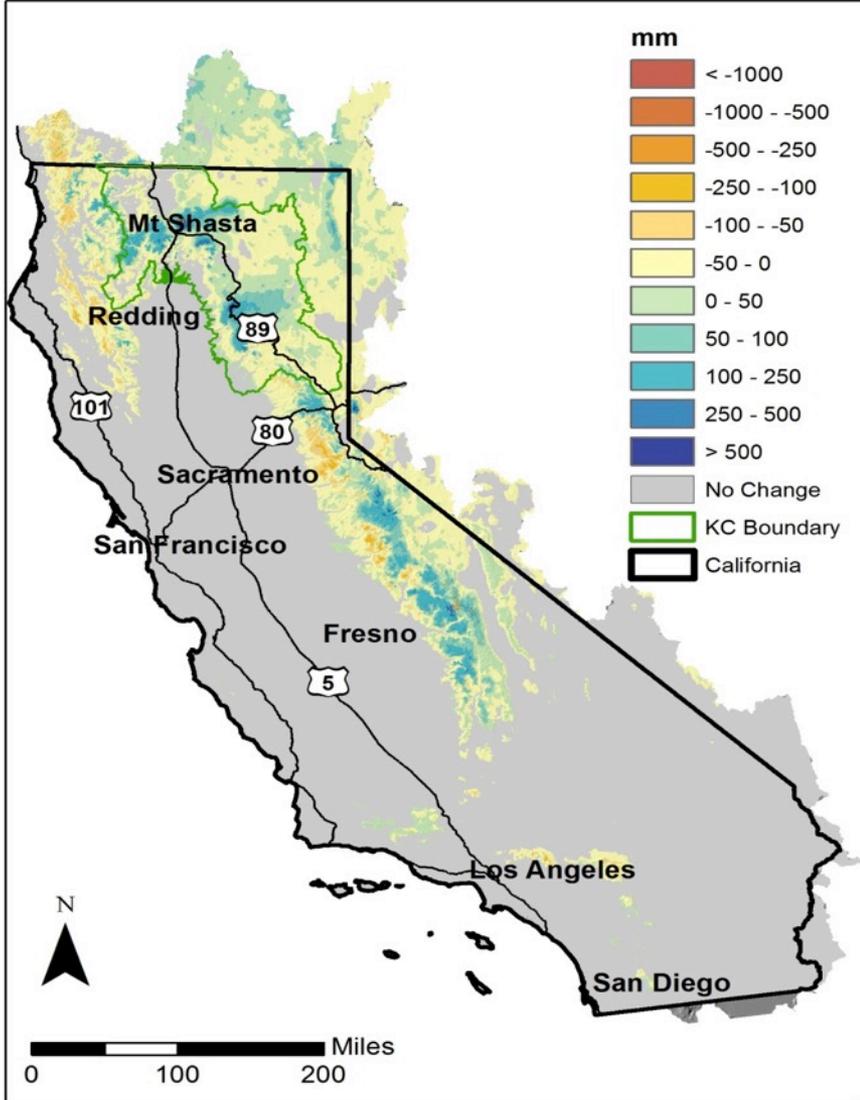


Recharge Change 1981-2010 to 2070-2099

MIROC ES M RCM RCP 8.5



April 1st Snowpack 1921-1950 to 1981-2010



California's Natural Water Infrastructure

Problem:

- Sub-optimal watershed health threatens water supply
- Water policy and financing focuses on built infrastructure
- Funding for watershed conservation and restoration is insufficient, inconsistent: *Chronically Under Funded*

Solution:

- New, innovative, cost effective financing model for comprehensive watershed restoration and conservation

Result:

- ***Enhanced water security (and reasonable expectations of quantity) for California in an era of drought and climate change***



Fundamental Problems

- Overly dense, even, closed canopy forests
- Loss of wet and dry meadow “sponges”
- Fragmentation
- Changed flow regimes



Solution: Restore more water-rich forests



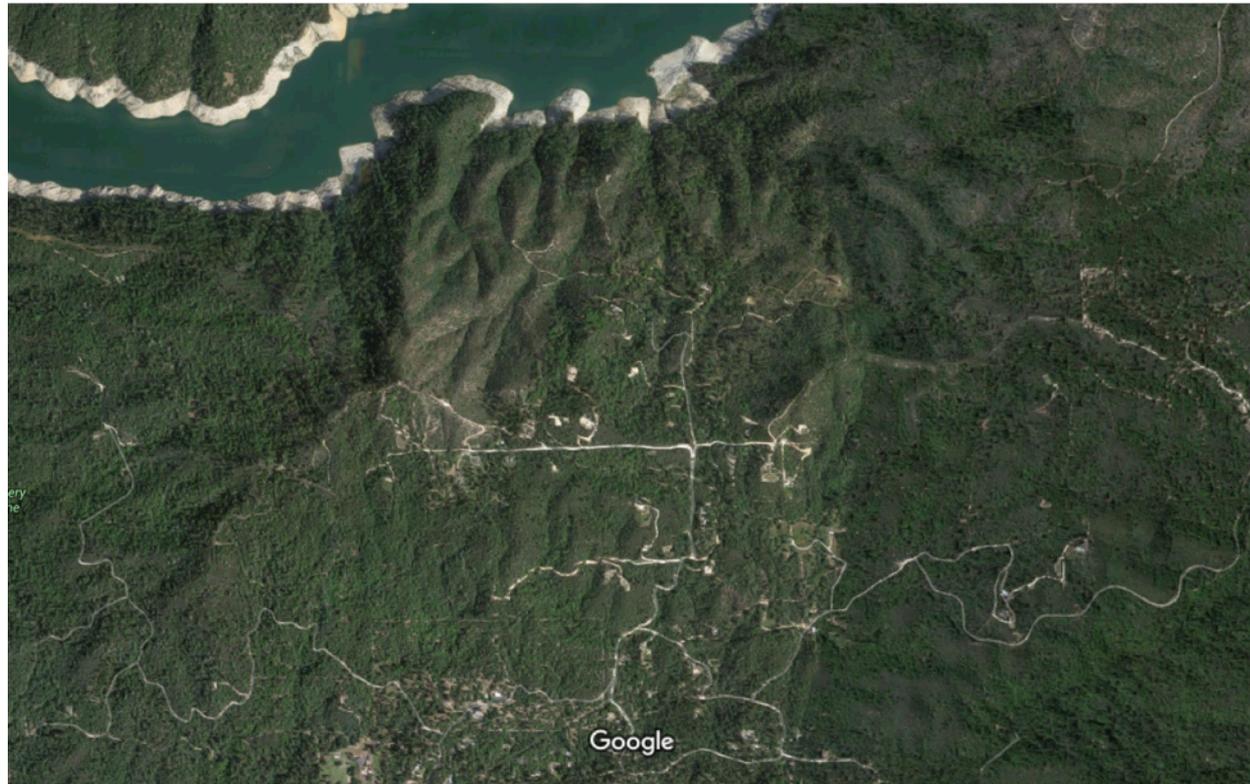
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Solution: Restore wet meadows and degraded streams



Solution: Keep watersheds whole



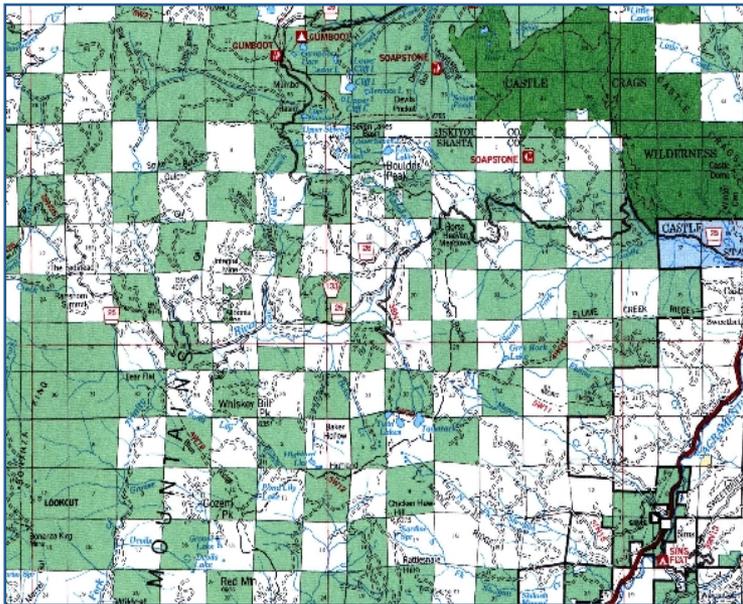
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Solution: Promote restoration across ownerships, public and private

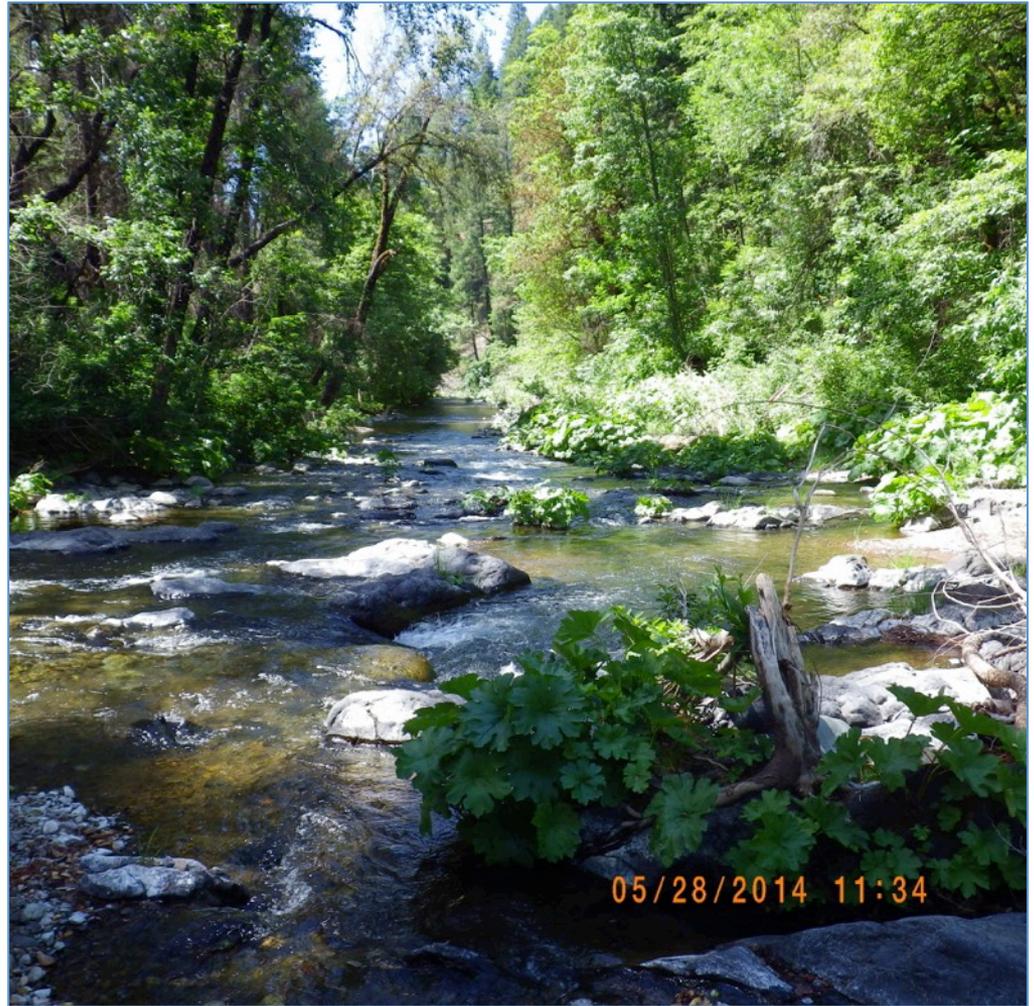


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Promote Resiliency



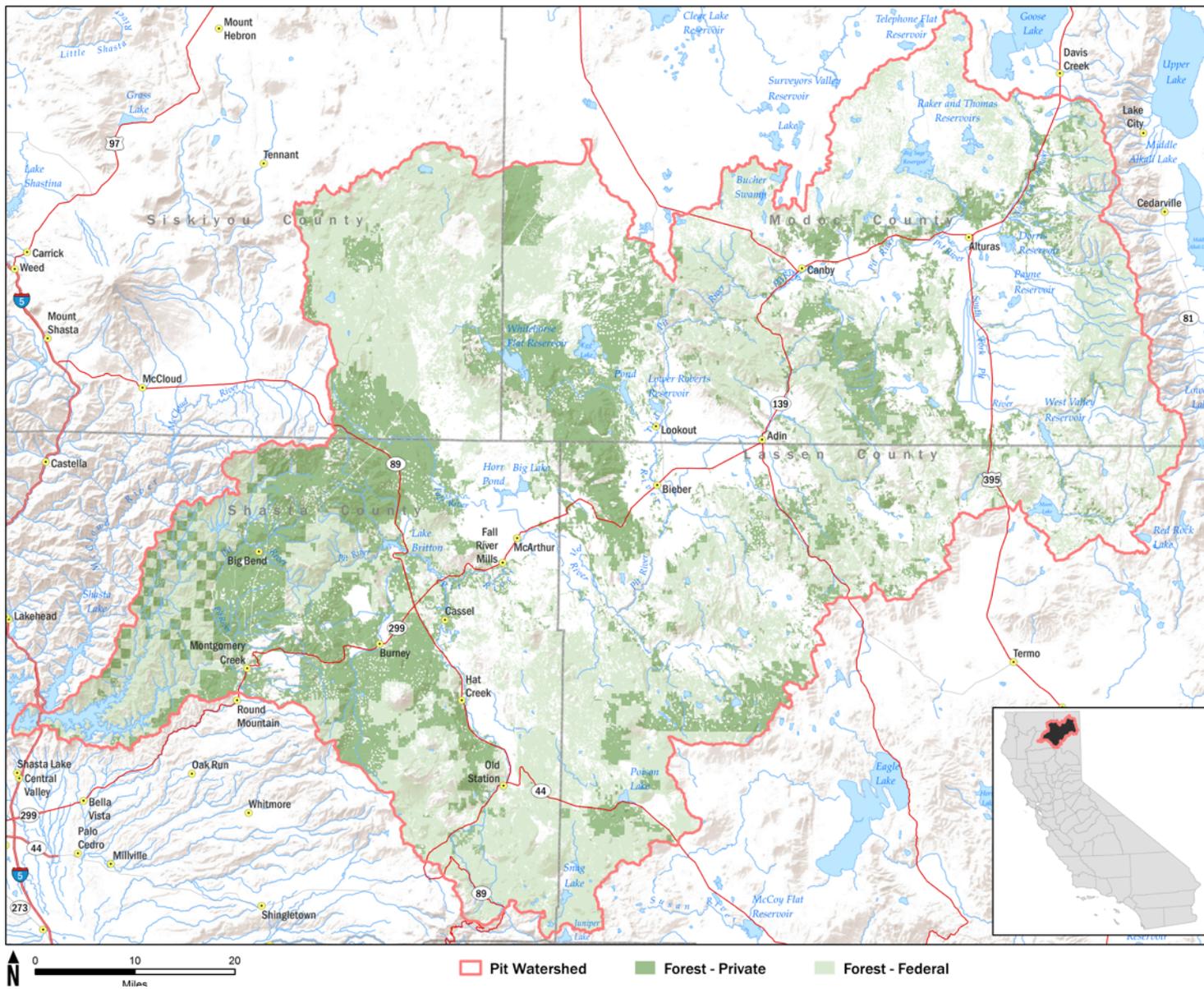
Spring 2013



Squaw Creek May 2014

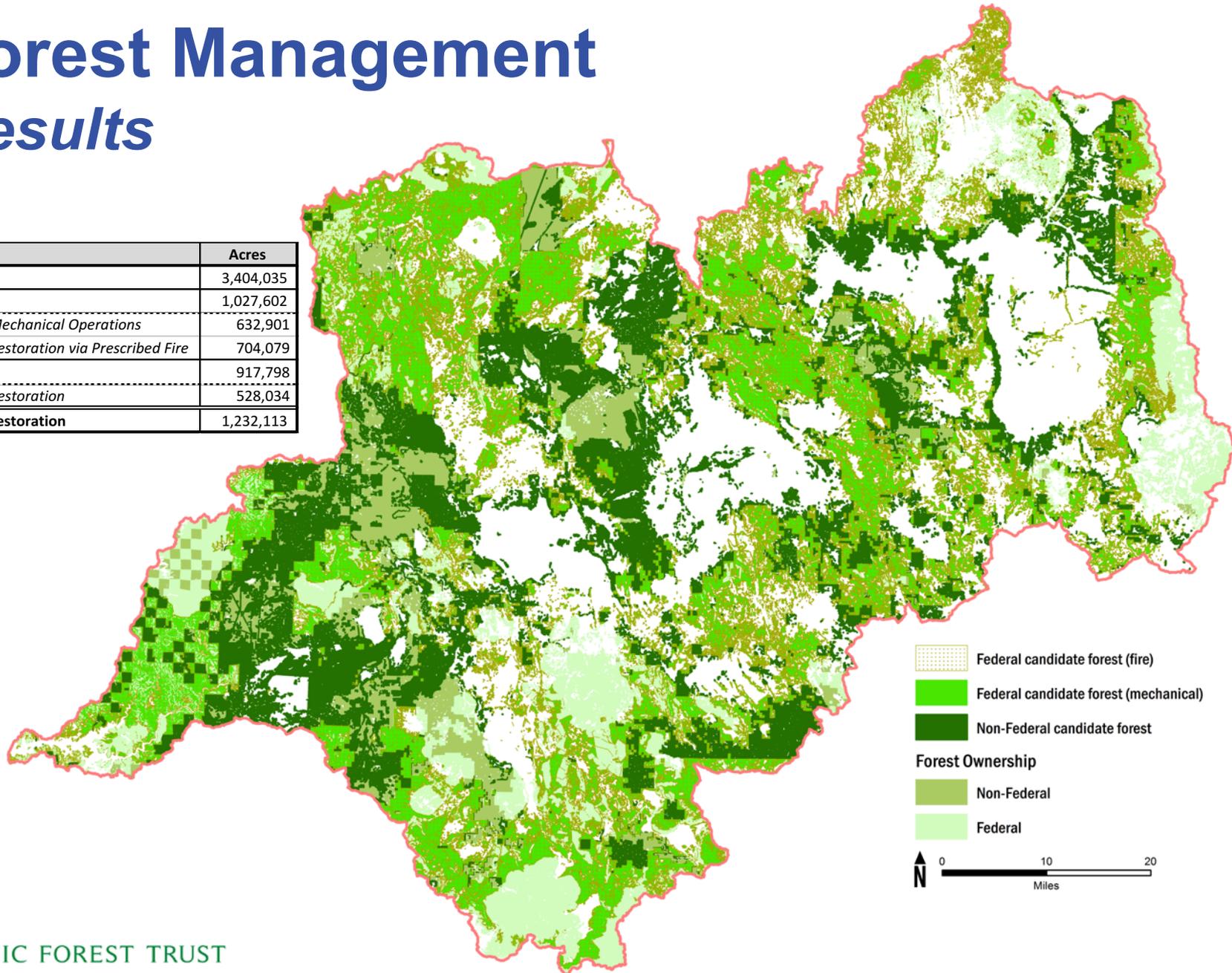


Example of analysis – Pit Watershed



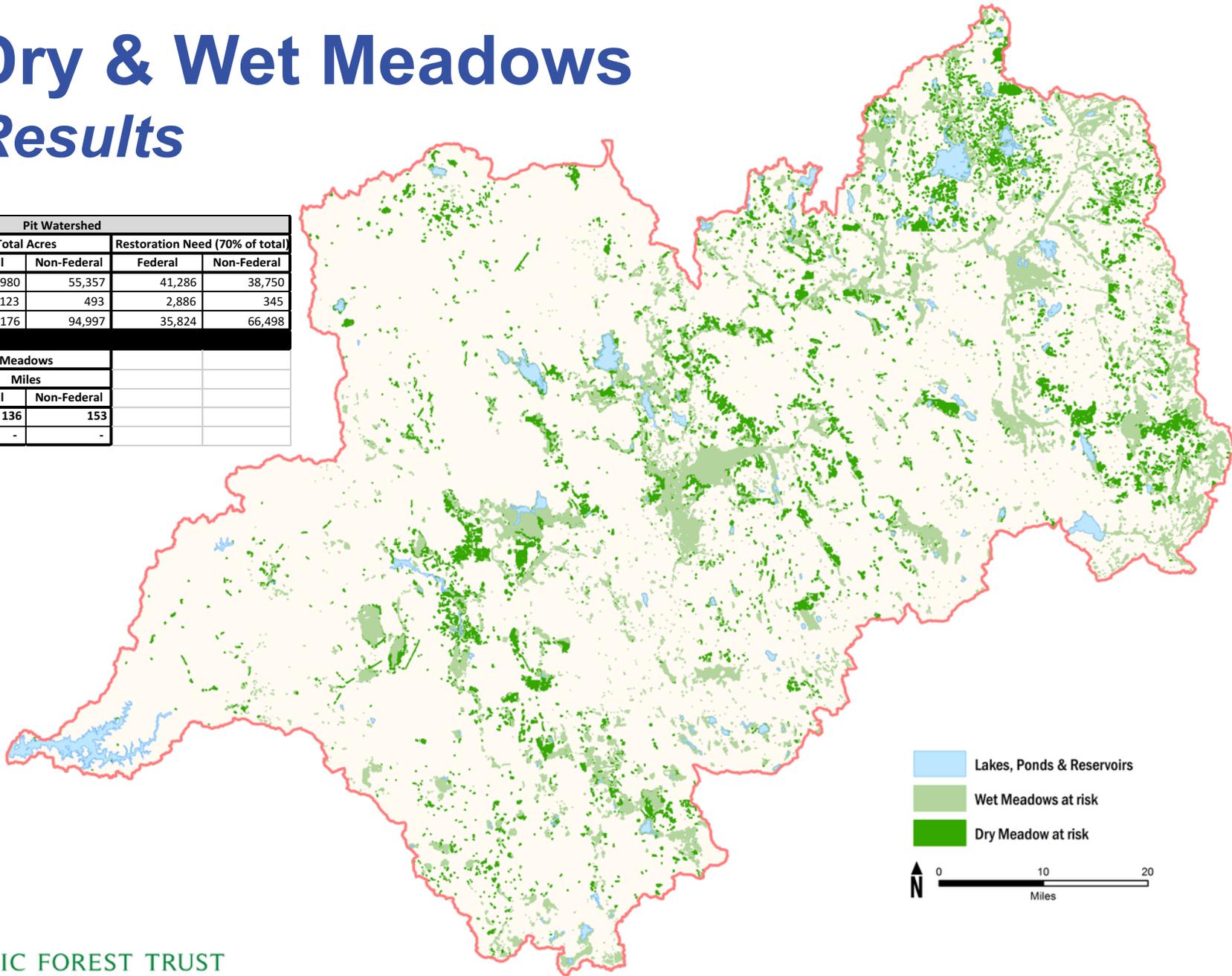
Forest Management Results

Pit Watershed	Acres
Total Watershed	3,404,035
Federal Forestland	1,027,602
<i>Candidate Sites for Mechanical Operations</i>	632,901
<i>Candidate Sites for Restoration via Prescribed Fire</i>	704,079
Non-Federal Forestland	917,798
<i>Candidate Sites for Restoration</i>	528,034
All Candidate Sites for Restoration	1,232,113



Dry & Wet Meadows Results

Pit Watershed				
	Total Acres		Restoration Need (70% of total)	
	Federal	Non-Federal	Federal	Non-Federal
Dry Meadows	58,980	55,357	41,286	38,750
Aspen	4,123	493	2,886	345
Wet Meadows	51,176	94,997	35,824	66,498
Road/Trails in Wet Meadows				
	Miles			
	Federal	Non-Federal		
Roads (unpaved)	136	153		
Trails	-	-		



“Concession”-Financing Model: capture cost in price of water, hydro- power

- WIFIA; EPA Water Finance office (SDW)
- Treasury Revenue Bonds
- Impact Investors, Philanthropy
- Partner with public grants to leverage impact
- Comprehensive watershed by watershed plan of work, timeline, funding, transparency

