

Agricultural Water Challenges Outside of Central Arizona

Water Resources Research Center Annual Conference

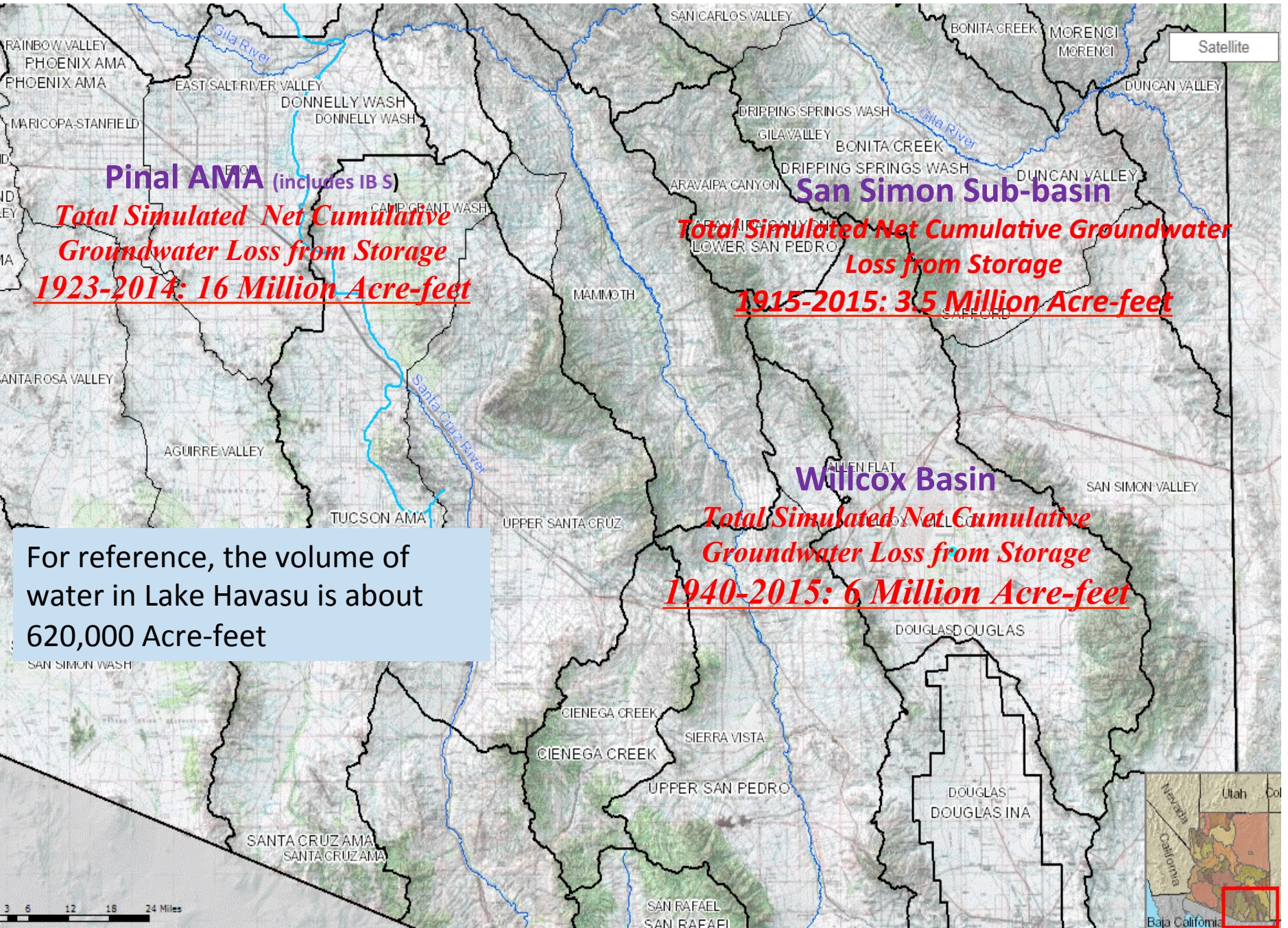


*Clint Chandler
Assistant Director*

Arizona Department of Water Resources

March 28, 2017

DRAFT Transient Net Cumulative Change-in-Storage (Volumes in AF)



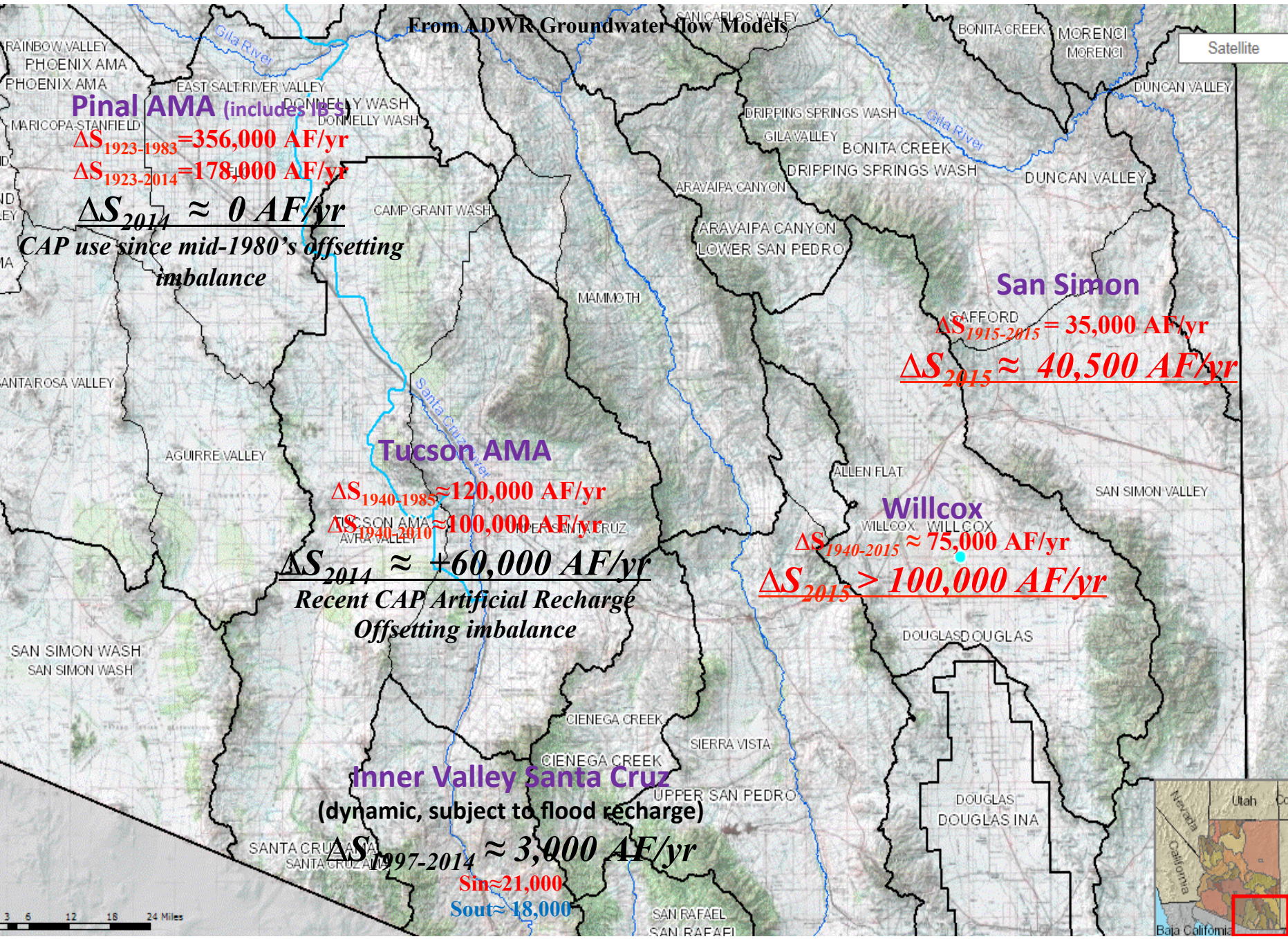
Pinal AMA (includes IB S)
Total Simulated Net Cumulative Groundwater Loss from Storage 1923-2014: 16 Million Acre-feet

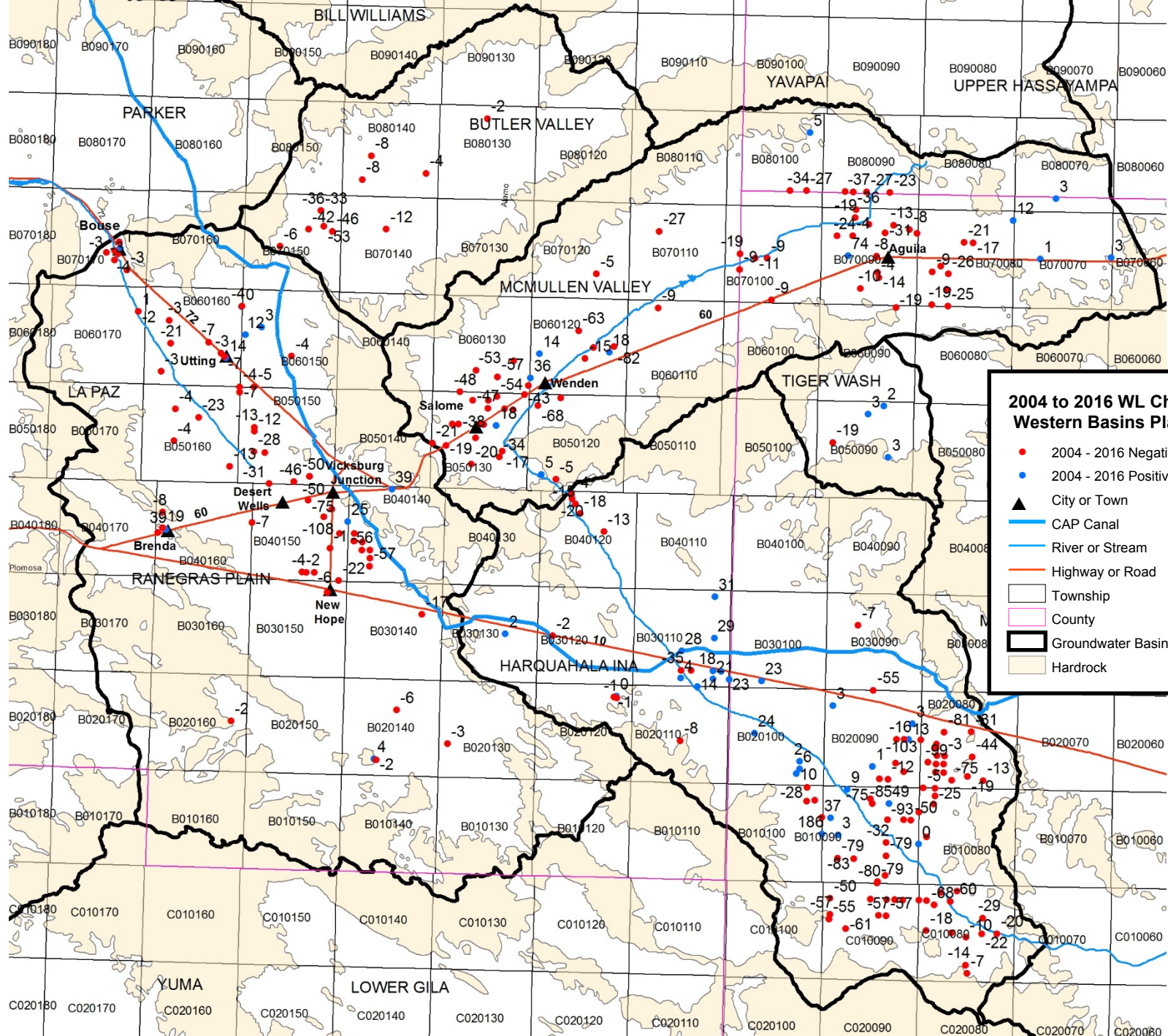
San Simon Sub-basin
Total Simulated Net Cumulative Groundwater Loss from Storage 1915-2015: 3.5 Million Acre-feet

Willcox Basin
Total Simulated Net Cumulative Groundwater Loss from Storage 1940-2015: 6 Million Acre-feet

For reference, the volume of water in Lake Havasu is about 620,000 Acre-feet

DRAFT Transient Annualized ΔS Rates (Acre-feet/year)





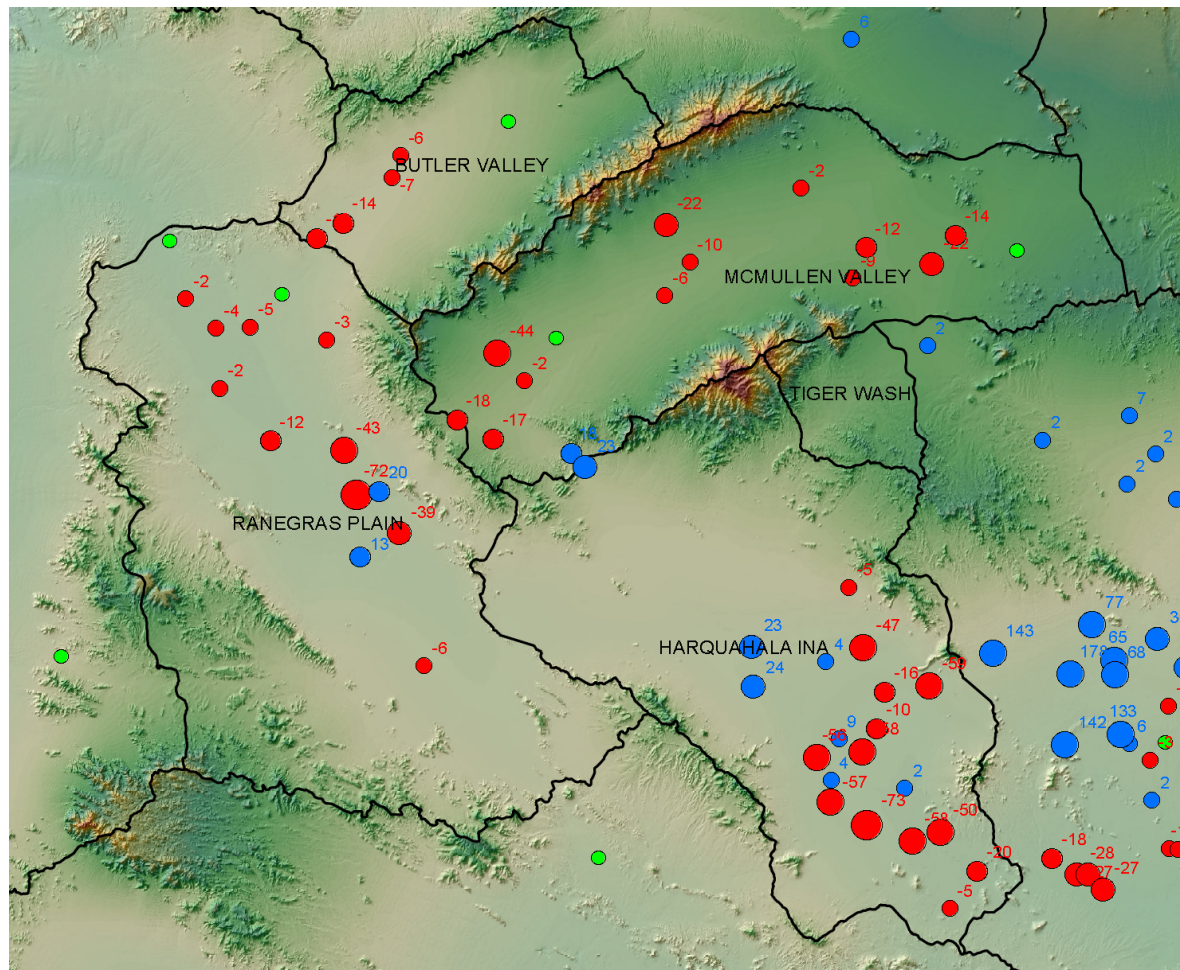
2004 to 2016 WL Changes In the Western Basins Planning Area

- 2004 - 2016 Negative Water Level Change (Feet)
- 2004 - 2016 Positive Water Level Change (Feet)
- ▲ City or Town
- CAP Canal
- River or Stream
- Highway or Road
- Township
- County
- Groundwater Basin
- Hardrock

2004 – 2016 Water Level Change Statistics For West Basins Planning Area
(Units of Water Level Change = Feet)

Basin		RANEGRAS PLAIN	McMULLEN VALLEY	BUTLER VALLEY	HARQUAHALA	TIGER WASH	WBPA
Count	All	68	76	10	107	4	265
	WL -	57	65	10	81	1	214
	WL +	11	11	0	26	3	51
Negative WL Changes	Ave -	-23.9	-30.0	-21.7	-54.2	-18.6	-37.1
	Med -	-7.2	-26.5	-10.2	-57.9	-18.6	-26.7
	Max -	-135.0	-85.6	-53.3	-213.7	-18.6	-213.7
	Min -	-1.3	-3.9	-2.3	-0.6	-18.6	-0.6
Positive WL Changes	Ave +	14.3	16.9		21.5	2.4	17.9
	Med +	12.3	12.0		13.6	2.7	12.0
	Min +	0.1	1.1		0.3	1.6	0.1
	Max +	39.0	73.6		186.2	2.8	186.2

2006 to 2016 Water Level Changes In ADWR Index Wells West Basins Planning Area



Explanation

Groundwater Level Change (feet)


- > 40
- 20 to 40
- 10 to 20
- 1 to 10
- < 1 foot change
- -1 to -10
- -10 to -20
- -20 to -40
- -40 to -60
- > -60





- Roadways
- Streams
- ADWR Groundwater Sub-basin
- State Boundry

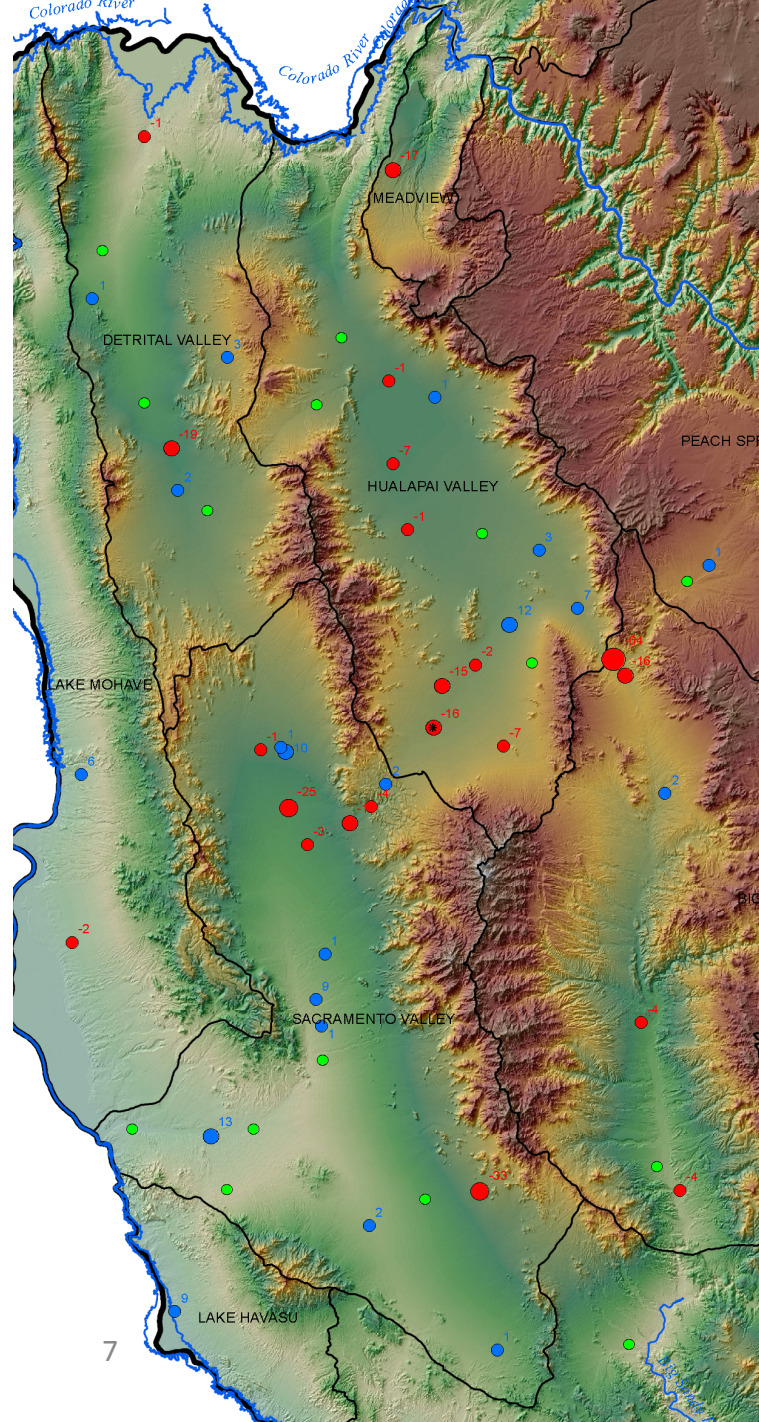
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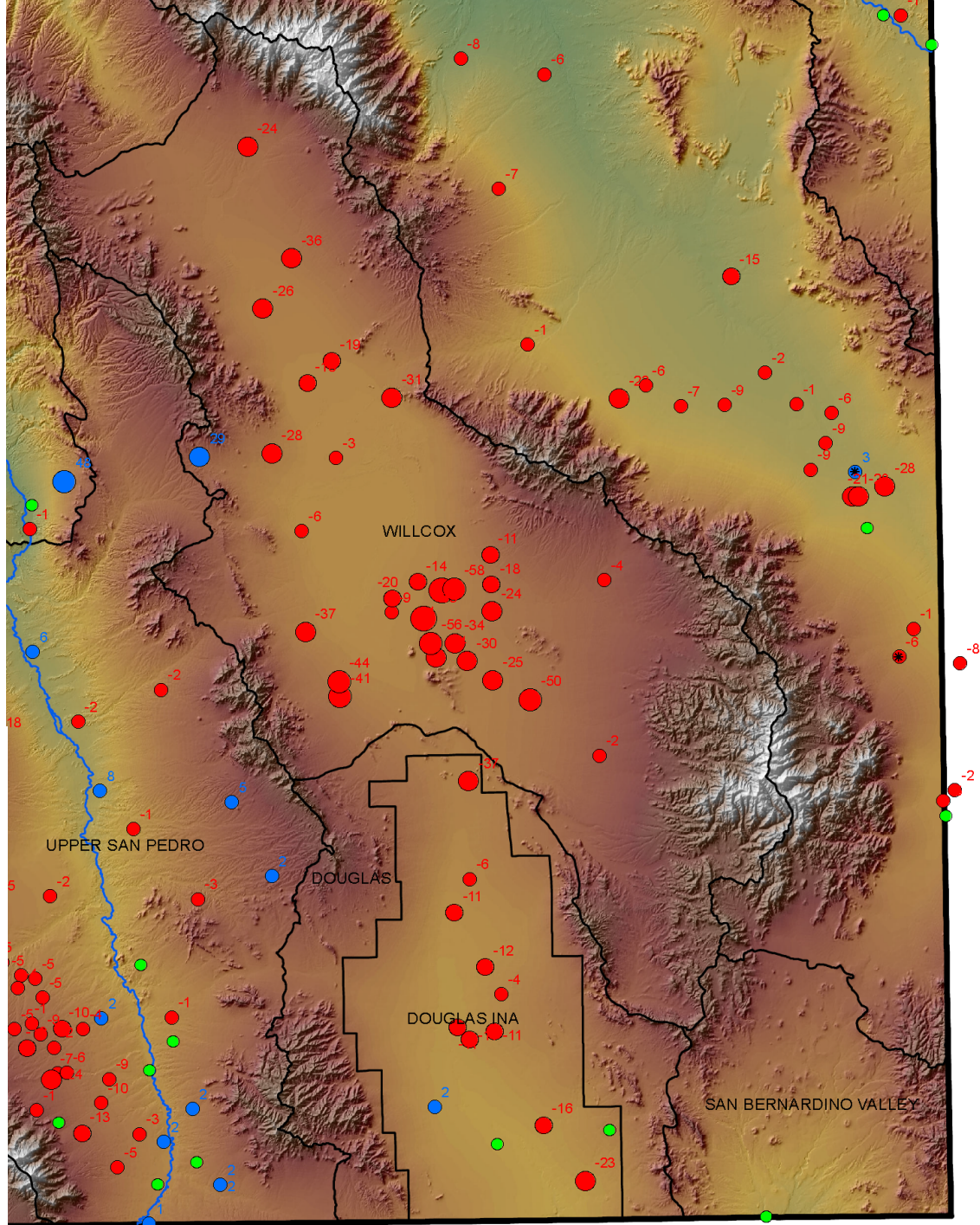
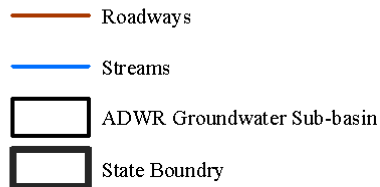
-  Roadways
-  Streams
-  ADWR Groundwater Sub-basin
-  State Boundary



2006 to 2016 Water Level Changes In ADWR Index Wells Cochise Planning Area

Explanation

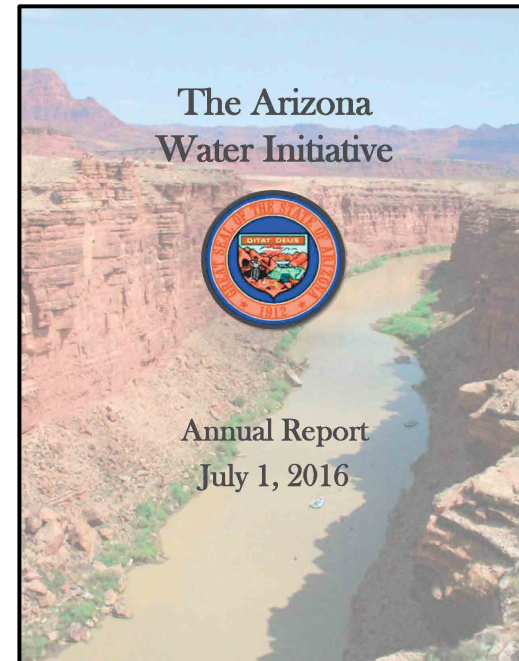
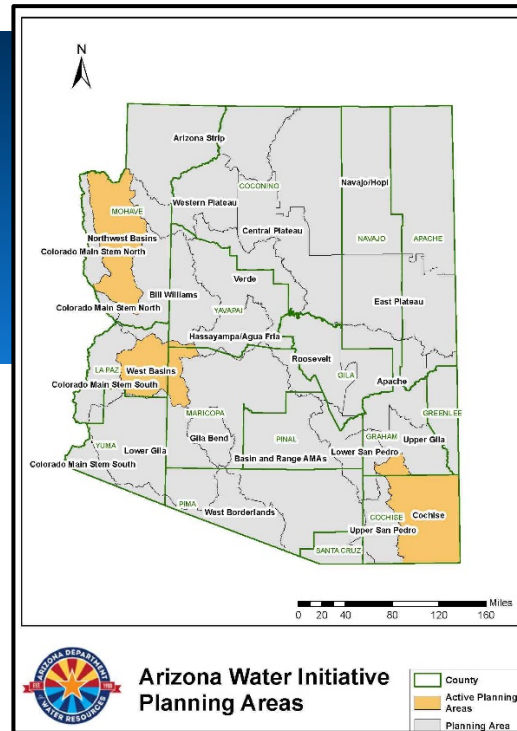
Groundwater Level Change (feet)



Governor Ducey's Arizona Water Initiative

Purpose: To help ensure the certainty and vitality of Arizona's water supply long into the future.

- Announcement made on October 5, 2015
- Continues the work published in Arizona's Strategic Vision
- Implemented December 16, 2015 through Executive Order 2015-13



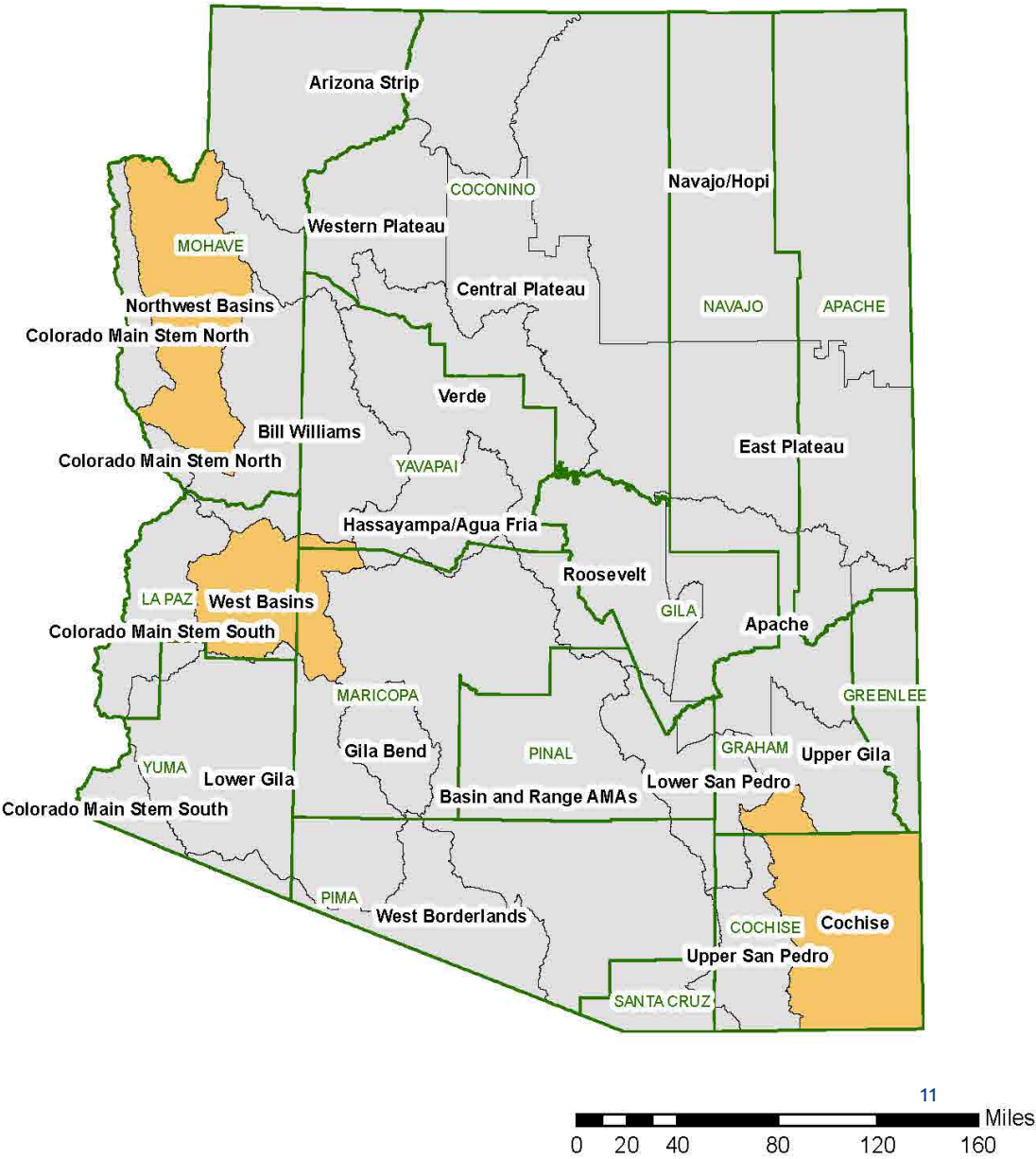


Governor's Water Initiative First Track – Planning Area Process

- Prioritize and evaluate all of the 22 Planning Areas identified in the Strategic Vision
- ADWR will work closely with 22 Planning Areas individually to refine water supply and demand issues and identify strategies to meet future water demands
- Goal to develop stakeholder driven set of solutions for future water demand and supply imbalances
- Goal is to complete the process within a Planning Area within 1 year



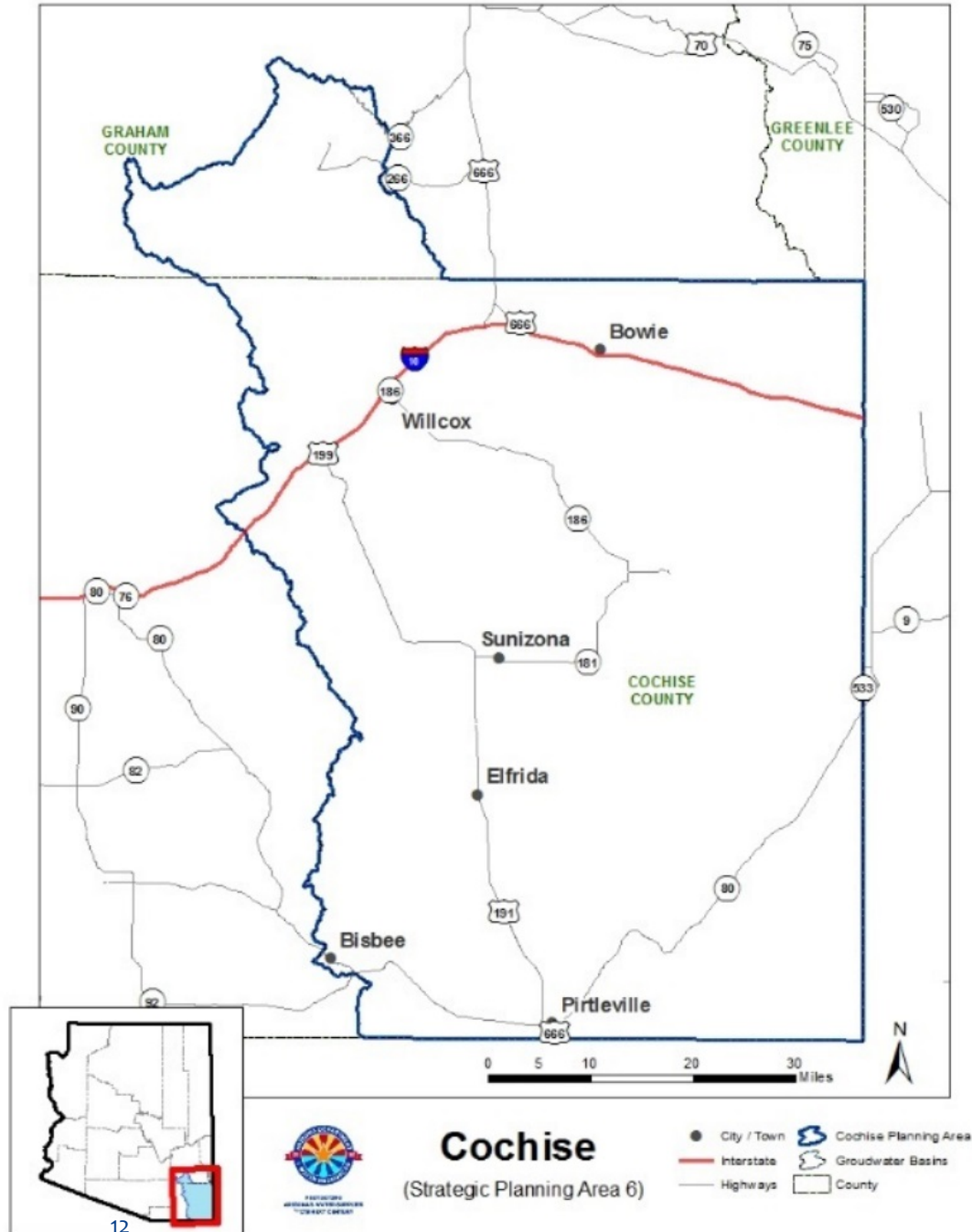
Active Planning Areas



- West Basins
- Cochise
- Northwest Basins

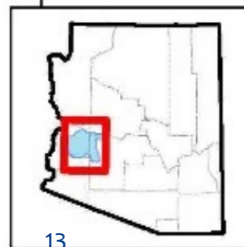
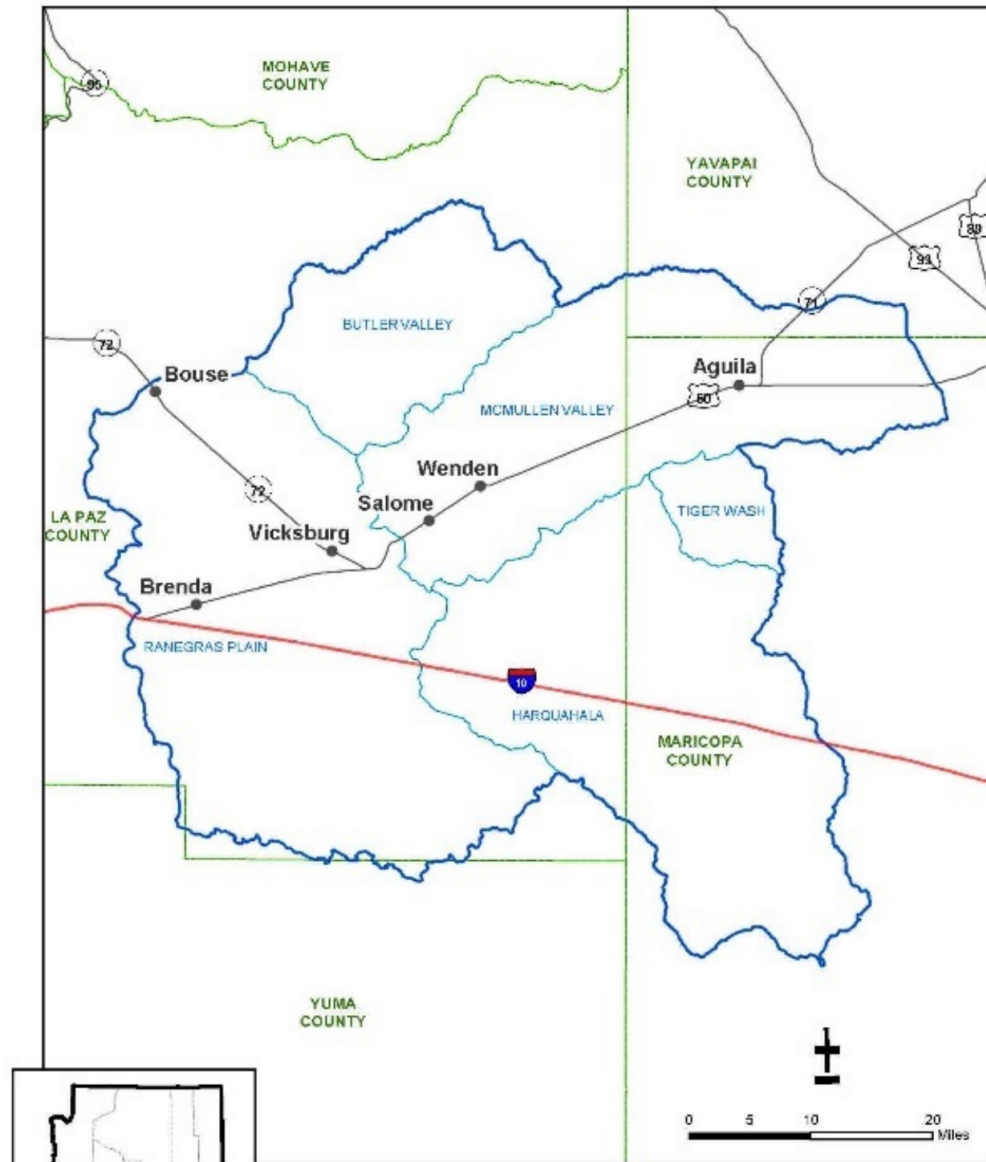
Cochise Planning Area

- Covers portions of Cochise and Graham Counties with a population of 41,412.
- Comprised of the Willcox, Douglas, and San Bernardino Valley Groundwater Basins and the San Simon Valley Sub-basin.
- Unique problems: Natural recharge in the area is low, so heavy demands have led to a significant overdraft and large declines in groundwater levels over time.



West Basins Planning Area

- Includes parts of La Paz, Maricopa, Yavapai, and Yuma counties, with a population of 6,289.
- Comprised of Butler Valley, McMullen Valley, Tiger Wash, Harquahala INA, and Ranegras Plain groundwater basins.
- Unique problems: Residents are concerned about their wells going dry, due to increased AG pressure.

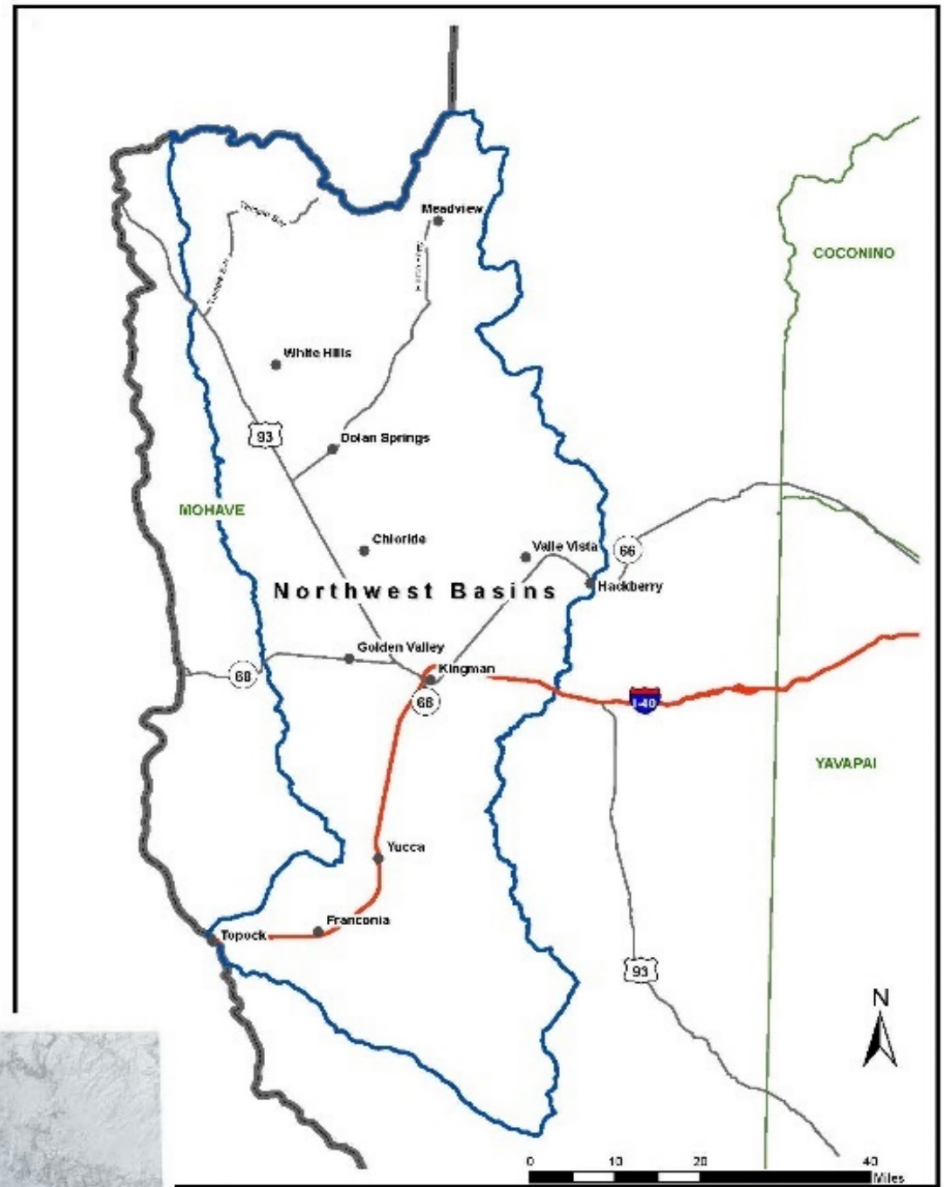


West Basins
(Strategic Planning Area 8)

- City / Town
- Interstate
- Highways
- West Basins
- Groundwater Basins
- County

Northwest Basins Planning Area

- Encompasses 29% of Mohave County and includes a population of 57,572.
- Comprised of the Detrital, Hualapai, Meadview and Sacramento Groundwater Basins.
- Unique problems: Recent large scale agriculture operations in the Hualapai and Sacramento Basins have added a new and unanticipated water demand sector to the Planning Area.



Northwest Basins Planning Area

- City/Town
- Highway
- Interstate
- Northwest Basins Planning Area
- State Border
- County

Common Themes

- Limitations on irrigation expansion
- Metering
- Use reporting
- Increasing natural recharge
- Withdrawal fees
- Current groundwater management tools may not be appropriate for each area



Updated Planning Area Water Demand Estimations & Past Water Demands

West Basins Planning Area Updated Water Demand Data*

Water Use Sector	Year	Estimated Water Demand (acre-feet)
Municipal ¹	2016	643
Industrial ¹	2016	3,634
Agricultural ²	2015	241,000
Total		245,277

Cochise Planning Area Updated Water Demand Data*

Water Use Sector	Year	Estimated Water Demand (acre-feet)
Municipal ¹	2015	4,779
Industrial ¹	2015	11,501
Agricultural ²	2015	280,000
Total		296,280

Northwest Basins Planning Area Updated Water Demand Data*

Water Use Sector	Year	Estimated Water Demand (acre-feet)
Municipal ¹	2016	11,189
Industrial ¹	2016	6,863
Agricultural ³	2016	33,351
Total		51,403

Previous West Basins Planning Area Estimated Water Demand (2010)⁴

Estimated Water Demand (acre-feet)	Water Use Sector
1,016	Municipal
1,107	Industrial
250,000	Agricultural
252,123	Total

Previous Cochise Planning Area Estimated Water Demand (2010)⁴

Estimated Water Demand (acre-feet)	Water Use Sector
8,889	Municipal
6,935	Industrial
256,400	Agricultural
272,224	Total

Previous Northwest Basins Planning Area Estimated Water Demand (2010)⁴

Estimated Water Demand (acre-feet)	Water Use Sector
12,782	Municipal
1,475	Industrial
0	Agricultural
14,257	Total

¹ Provisional Data

² Based on 2015 USGS Irrigation Water Withdrawal Data

³ Agricultural Water Demand Provisional 2016 USGS Estimated Data

⁴Source: A Strategic Vision for Water Supply Sustainability January 2014, Arizona Department of Water Resources

*All Planning Area updated water demand estimates are provisional and subject to change

All water demands are in acre-feet

Groundwater Management

- Registration of all wells
- Adequate Water Supply
- Community Water Systems Documentation

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- Expansion of irrigation is prohibited
- Monitoring and Reporting

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- Management Goals, Plans, & Conservation Measures
- Withdrawal Fees

Statewide

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AMA

Questions?

Clint Chandler

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PROTECTING
ARIZONA'S WATER SUPPLIES
for **ITS NEXT CENTURY**