

Northern Arizona's Water

Pipeline of the Past / Pipeline of the Future

Presented by

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Phoenix, Arizona

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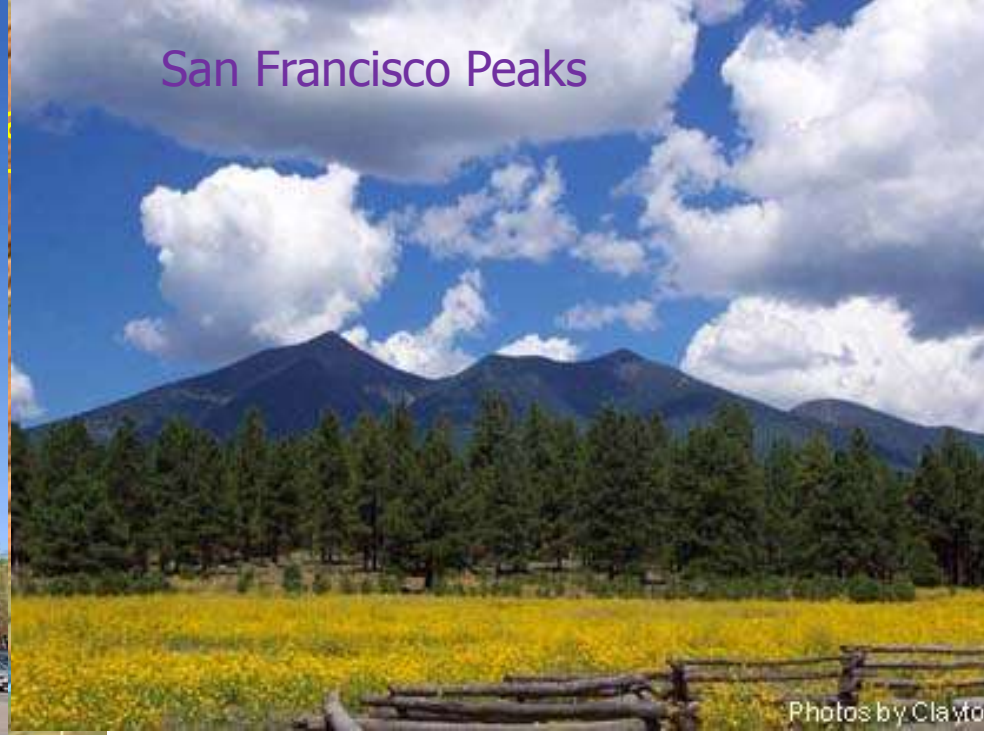


Downtown Flagstaff



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San Francisco Peaks



Photos by Clayton

Upper Lake Mary



City of Flagstaff - founded in 1882
65,900 population @ 7,000 feet elevation

Surrounded by –
Arizona's highest point – Mt. Humphreys
2 National Forests
5 National Monuments
Grand Canyon National Park

Northern Arizona University

Flagstaff's Water Supply

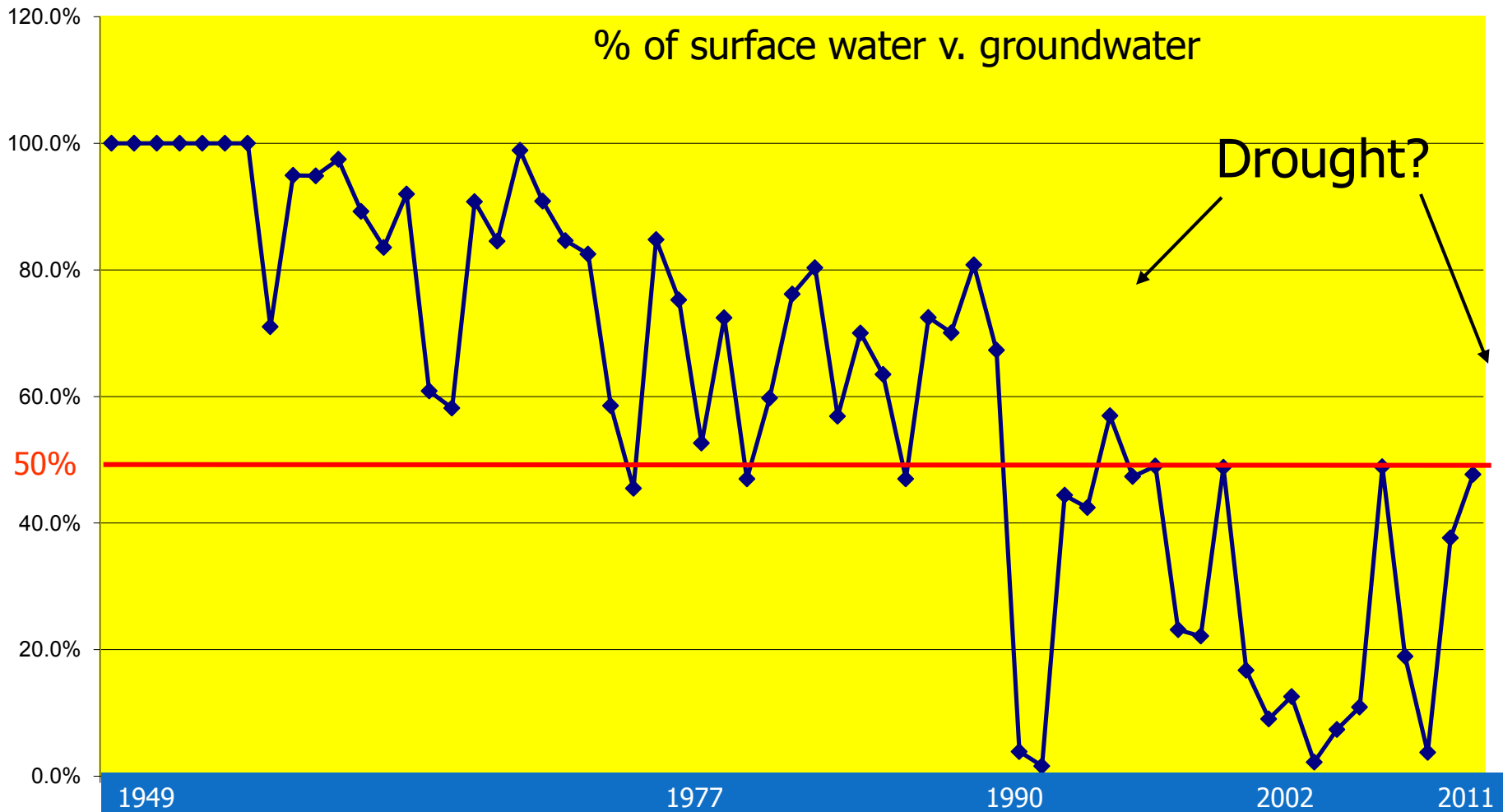
- 2011 -

- GROUNDWATER 46% 4,880 AF
- SURFACE WATER 33% 3,416 AF
- RECLAIMED WATER 21% 2,212 AF



Flagstaff's Water Supply

1949 - 2011



San Francisco Peaks

PIPELINE OF THE PAST

3 pipelines: 1890s, 1930s, 1990s

2.0 MGD Summer Peak Flow ~15% of demand



San Francisco Peaks

Schultz Fire – June 2010

~ 24 sq.miles burned

Governor Brewer declared State of Emergency - July 2010

President Obama declared Disaster Area - October 2010





Flooding & Debris Flows inundate homes

1990s



1890s



1930s



Site 16 Summer 2010





Inner Basin Pipeline - 2010





Waterline Road today



Each Crossing

Rock gabbion baskets
(each 3 feet tall)

Pipeline encased
in concrete





\$4.6 million

75% FEMA

15% ADEM

10% City of Flagstaff

Reconstruction completed October 25, 2012



Pipeline of the Future?

Regional Planning

Coconino Plateau Water Advisory Council

established in 2005

Coordinated by U.S. Bureau of Reclamation & ADWR

Coconino County; City's of Flagstaff, Sedona, Page, Tusayan

Navajo Nation; Hopi Tribe; Havasupai Tribe; Hualapai Tribe

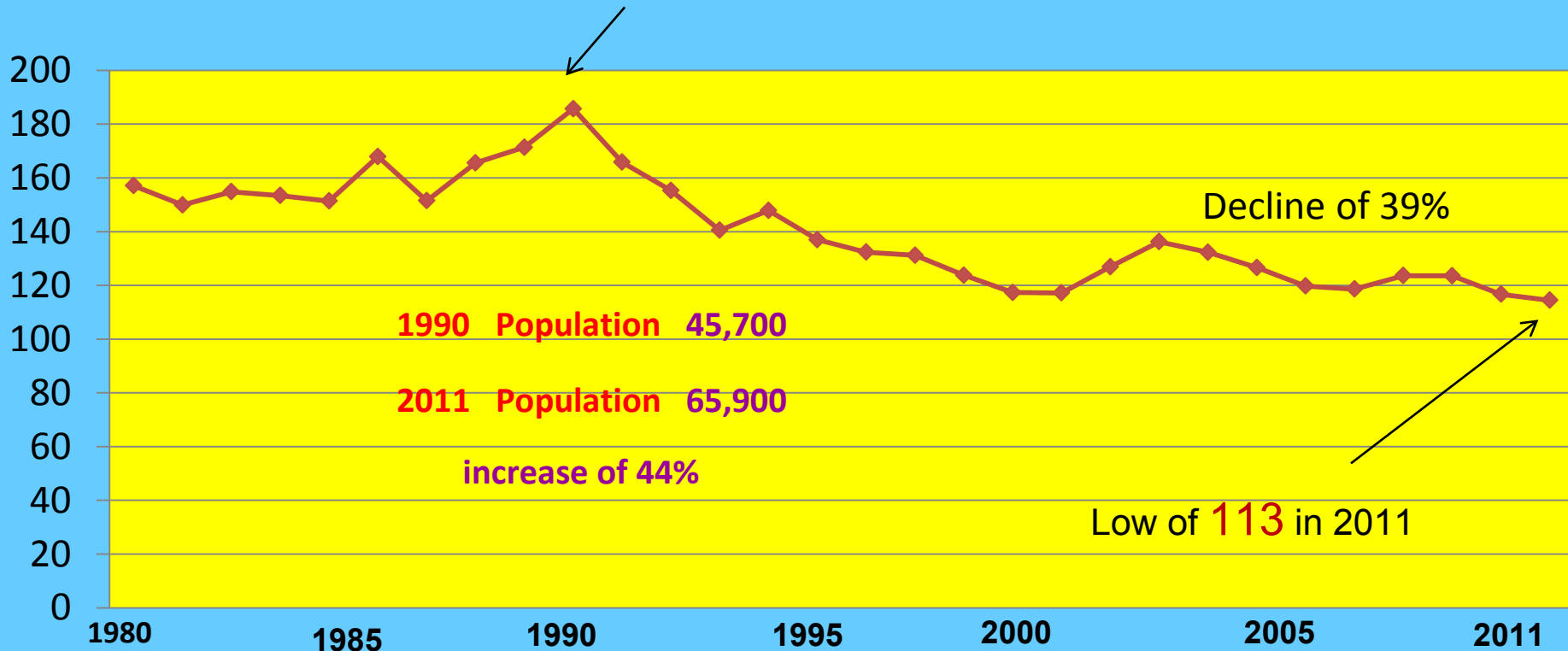
U.S. Geological Survey; National Park Service, Arizona Fish & Game,
Coconino National Forest; U.S. Fish & Wildlife Service



Historic drinking water use – GPCD

Gallons per Capita per Day

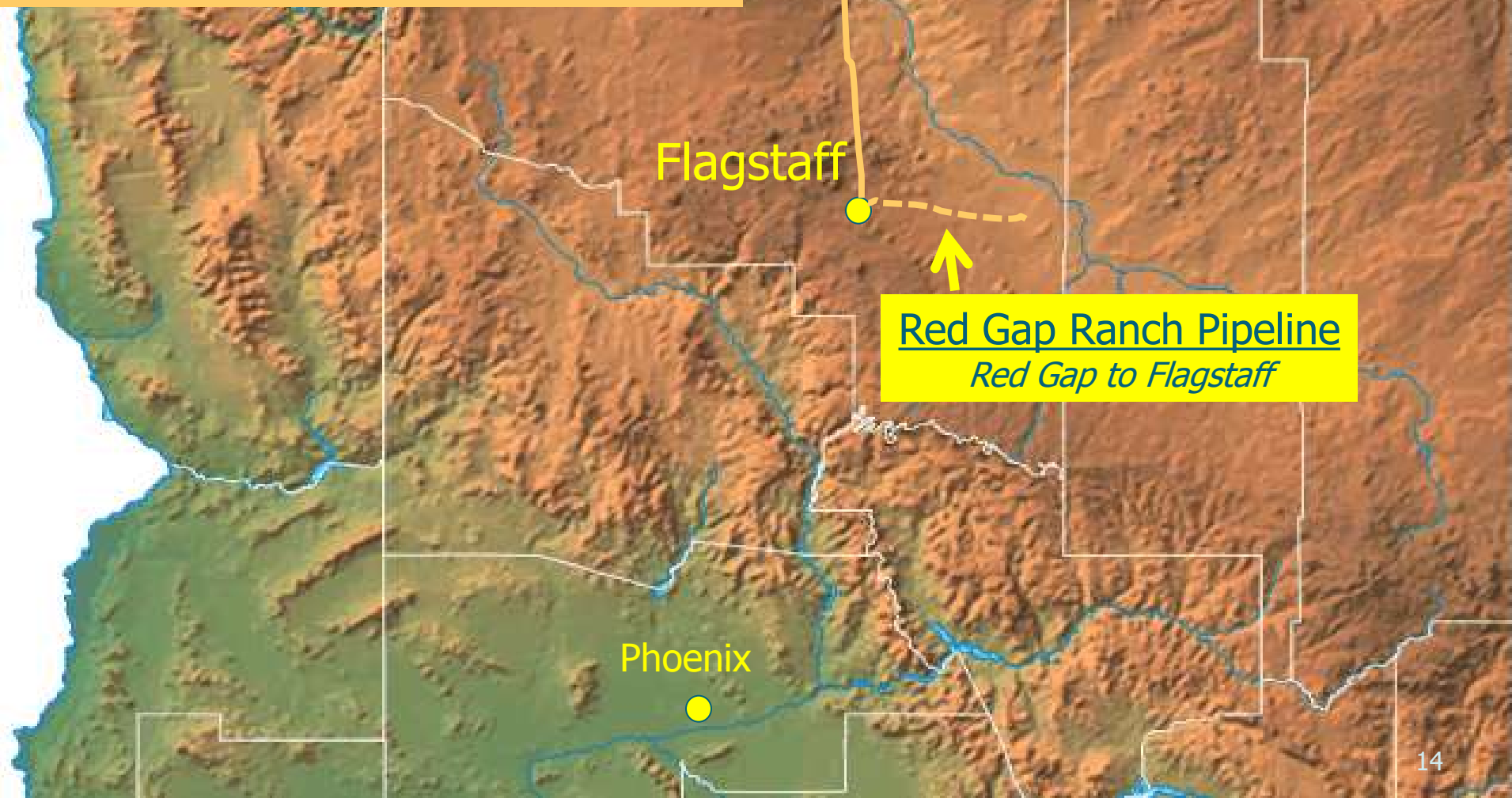
TOTAL GPCD Peaked at **186** in 1989



Residential : 58 GPCD – *Lowest in State*
Non-Residential: 42 GPCD

USBR North-Central Arizona Appraisal Level Study

- Completed in 2006
- Evaluated water conservation >20%
- Unmet water needs ~25,000 AF/year by 2050
- 2 regional pipeline alternative solutions

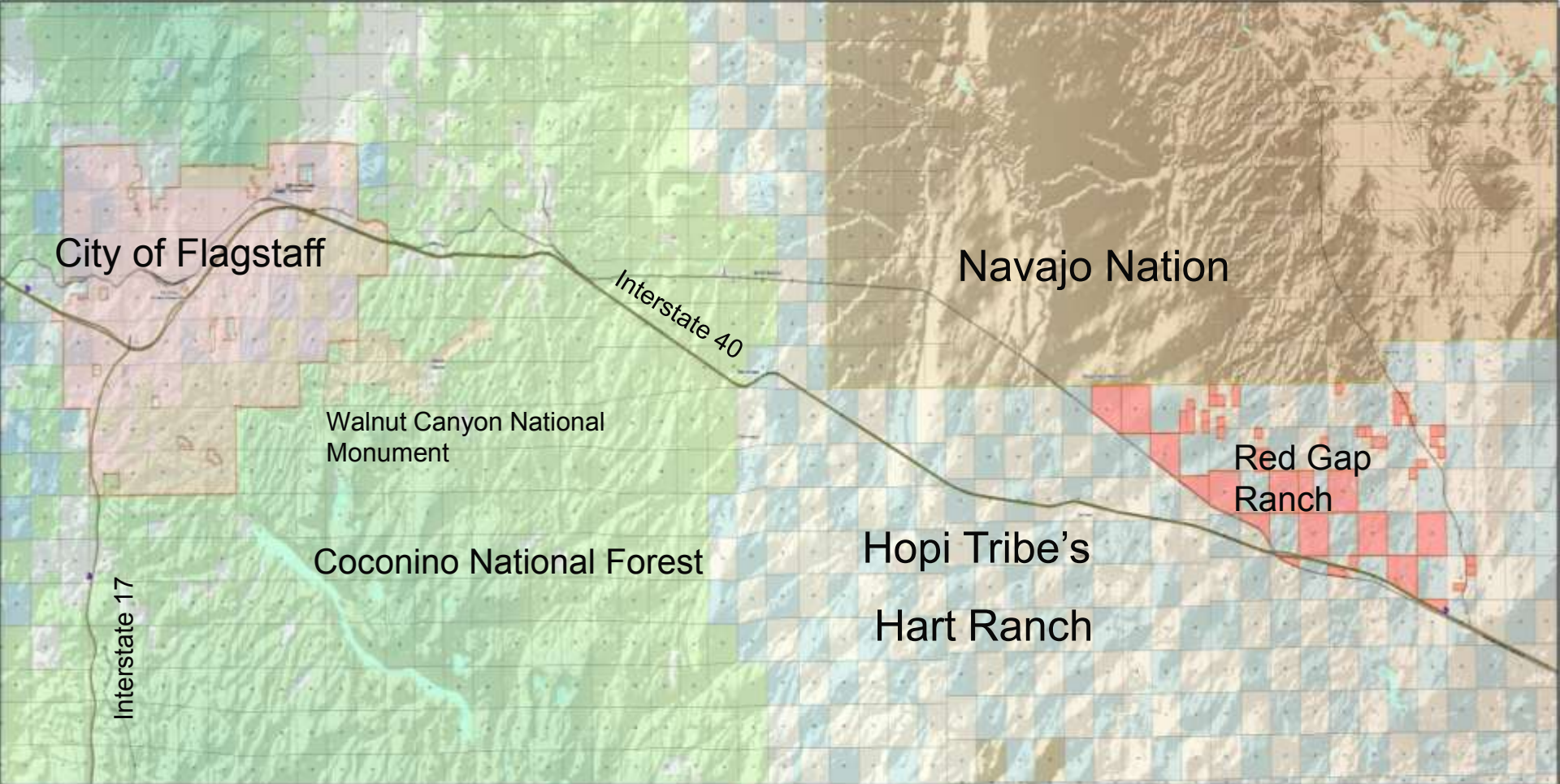


Western Navajo Pipeline
Lake Powell to Flagstaff

Red Gap Ranch Pipeline
Red Gap to Flagstaff

Flagstaff

Phoenix



Legend

1:40,000

- Red Gap Ranch
- Hopi Tribe's Hart Ranch
- Coconino National Forest
- Walnut Canyon National Monument
- City of Flagstaff
- Interstate 40
- Interstate 17

Red Gap Ranch

N

0 1,650 3,300 6,600 9,900 13,200 Meters

0 1 2 4 6 8 Miles

4 Primary Challenges

1. Navajo Nation Federal Reserved Water Rights
2. Hopi Hart Ranch converted to Trust Lands after City purchase
3. Right-of-Way from Red Gap to Flagstaff
3. Funding



Securing Water Rights @ Red Gap

Stipulation signed by City & Navajo Nation

- Navajo waived Federal Reserved Right Claims
- Allows pumping of groundwater (8,000 af/yr)
- No objection of Right-of-Way along I-40
- Cooperation on environmental impacts of groundwater pumping

HISTORIC Milestone in Flagstaff's water history
and cooperation with the Navajo Nation



- City has drilled 13 water production wells
- ADWR Water Adequacy Determination
- Pipeline Alignment Feasibility Study
- NEPA EIS Groundwater Modeling

Red Gap Ranch Issues

San Francisco Peaks

- *40 miles of pipeline with 2,000 vertical feet*
- *Hopi Hart Ranch Trust Lands - removed condemnation power*
- *R-O-W within Interstate 40 (Governor's office, ADOT & FHWA)*
- Environmental impacts from pumping?
- How to Finance? >\$200 million

Northern Arizona's Water PIPELINE OF THE FUTURE

FUNDING?

- partial with WIFA Loans
 - partial with USBR Rural Water Supply grants
- I. Capital: Bonding; Public – Private Partnership; Statewide
Water Resource Development Revolving Fund?
- II. Repayment: Sales Tax; Water Rates; Impact Fees?
Regional Tax / Property Tax?

Early Flagstaff

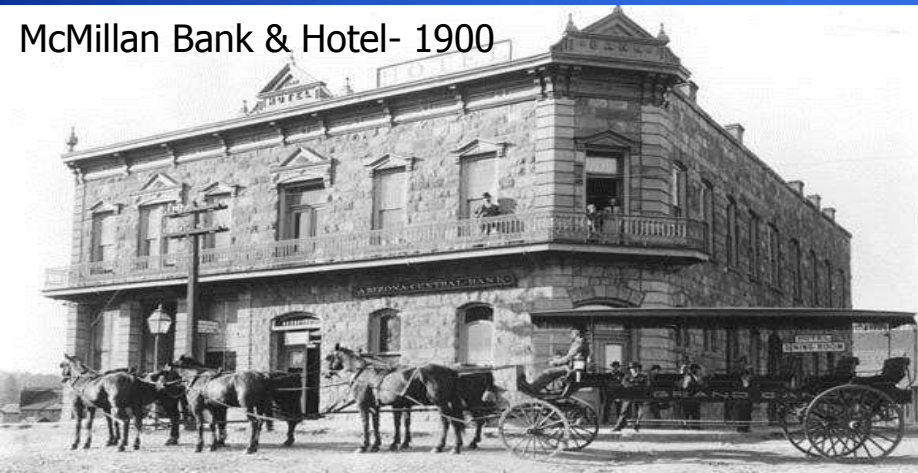


CONCLUSION

Overview of northern Arizona's water & infrastructure needs

Challenges we face in securing a future long-term supply and how we finance and pay for the necessary infrastructure

McMillan Bank & Hotel- 1900



Babbitt Brothers downtown Flagstaff