California's Attempts to Find a Balance Between Fish and Feathers and Farms and Folks Though the Sustainable Groundwater Management Act (SGMA)

Acknowledgements:

MADERA COUNTY

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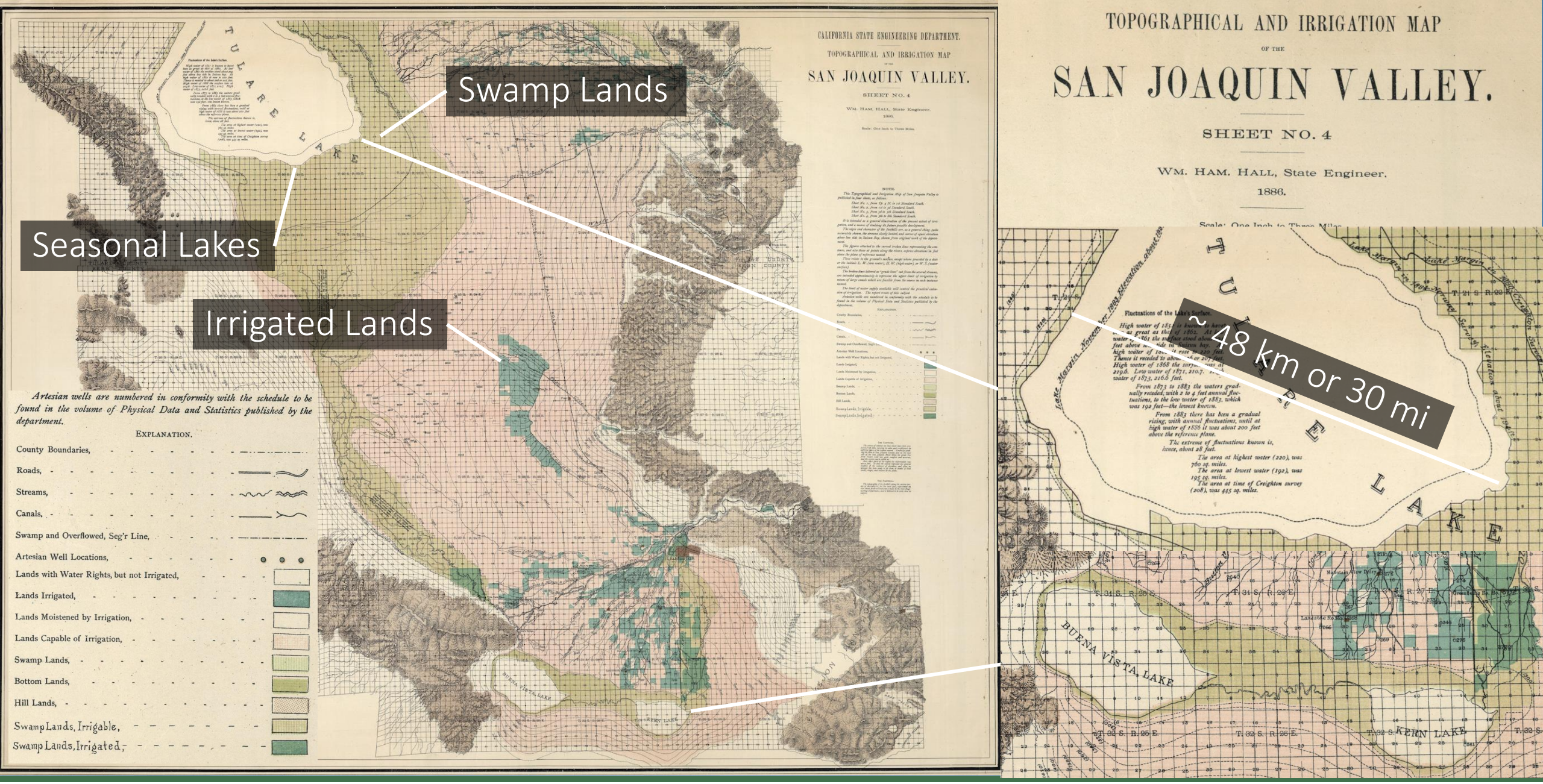
Outline

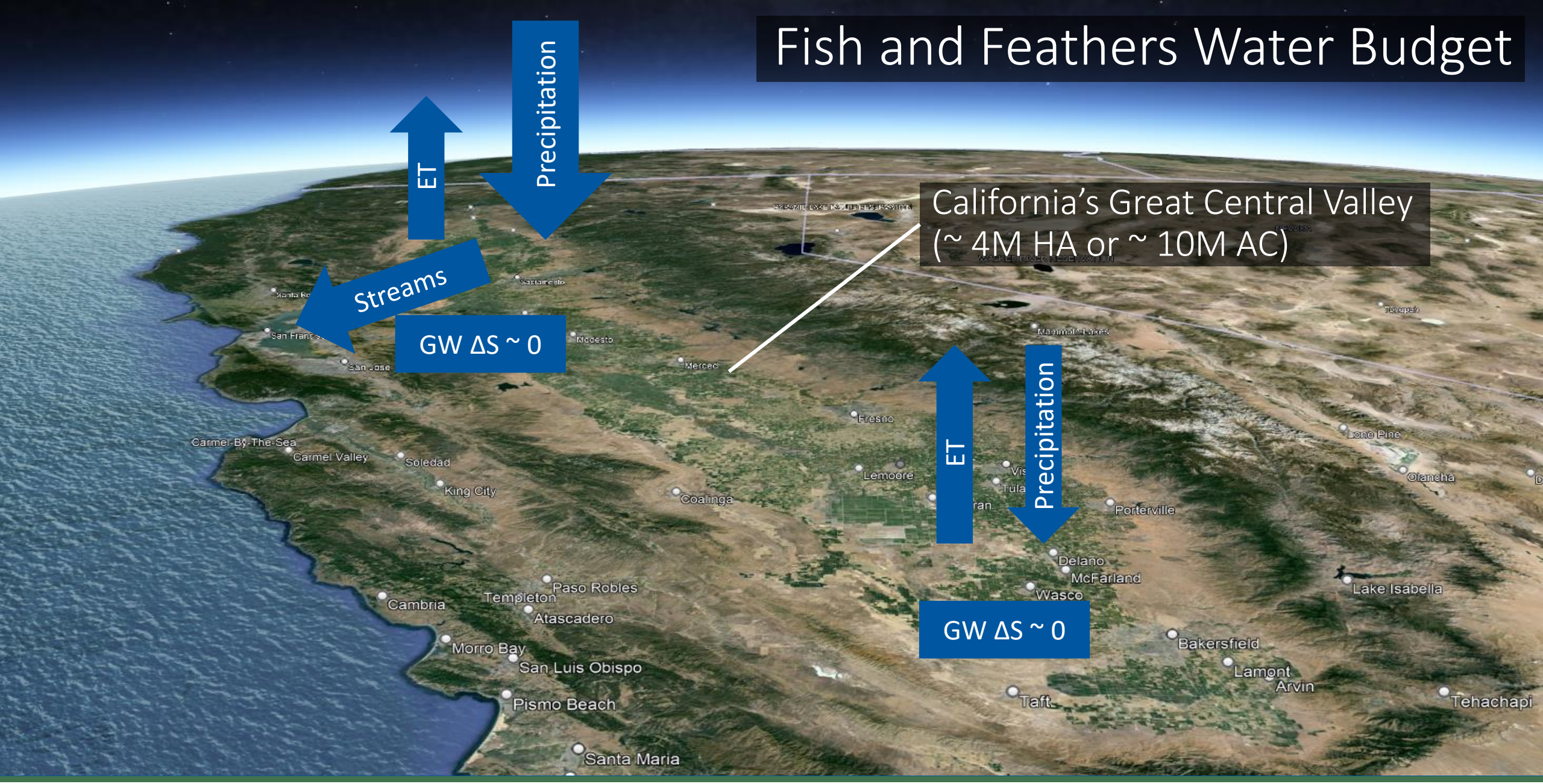
- California History: Transition from *Fish and Feathers* to *Folks and Farms*
- Sustainable Groundwater Management Act (SGMA)
- Groundwater Demand Management: Groundwater Allocations
- Madera County GSAs: A Case Study in Groundwater Allocations
- Conclusions
- Questions and Discussion



Topographical and Irrigation Map of the San Joaquin Valley, William Hammond Hall (1886)

William Hammond Hall; Google Earth

Fish and Feathers Water Budget



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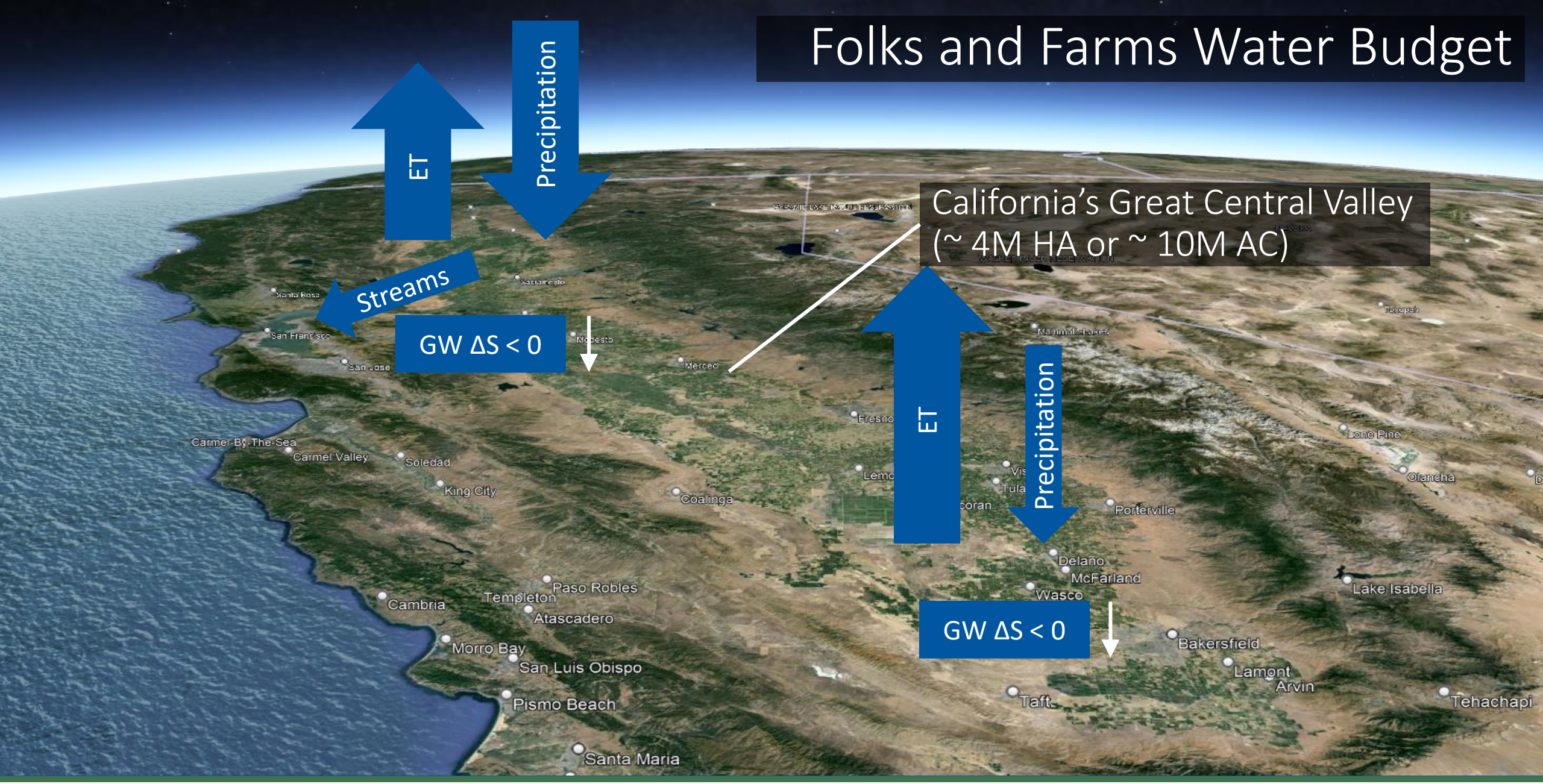
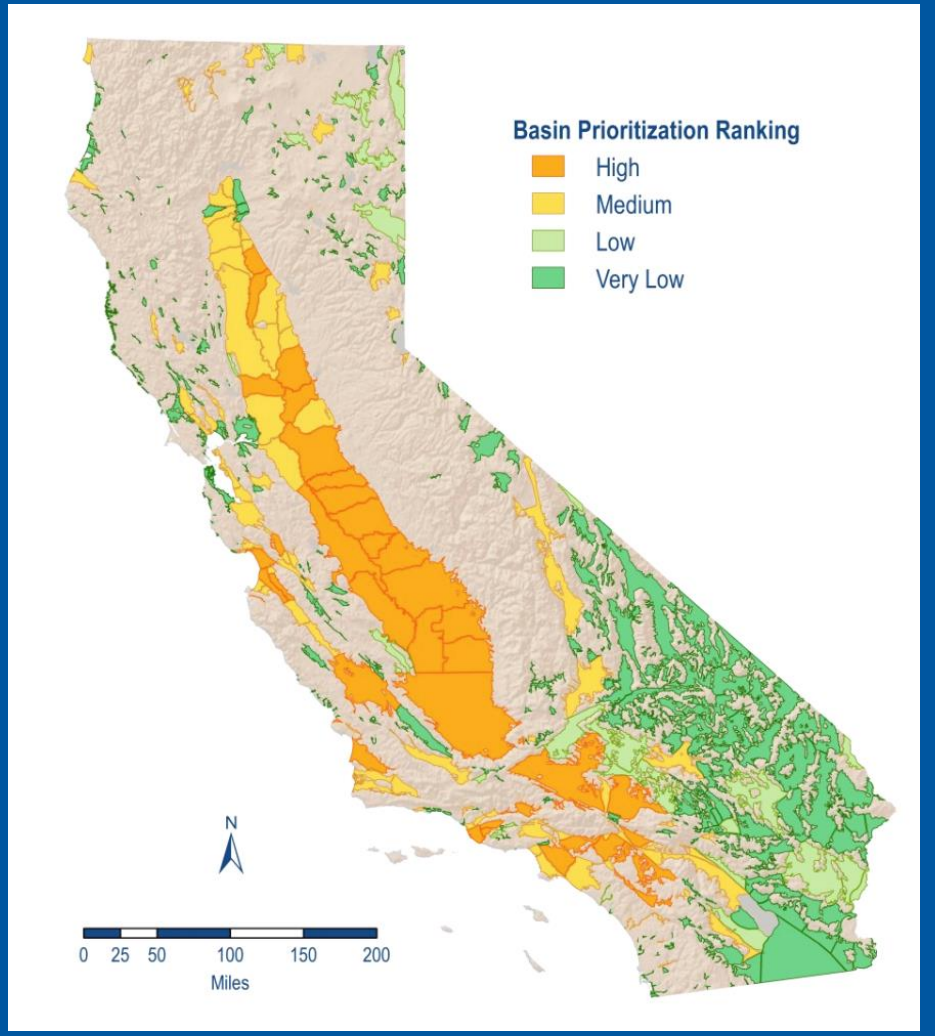
Folks and Farms Water Budget



SGMA Overview Slide

- 1913 – California Water Commission Act
  - Established rules/regulations/rights for surface water
- 2014 – Sustainable Groundwater Management Act (SGMA)
  - Established rules/regulations for groundwater

Sustainability Indicators



Steps to Sustainability

June 1, 2016
DWR adopts regulations for evaluating groundwater sustainability plans

June 30, 2017
Groundwater sustainability agencies formed

January 31, 2020
High and medium priority basins in critical overdraft managed by groundwater sustainability plans

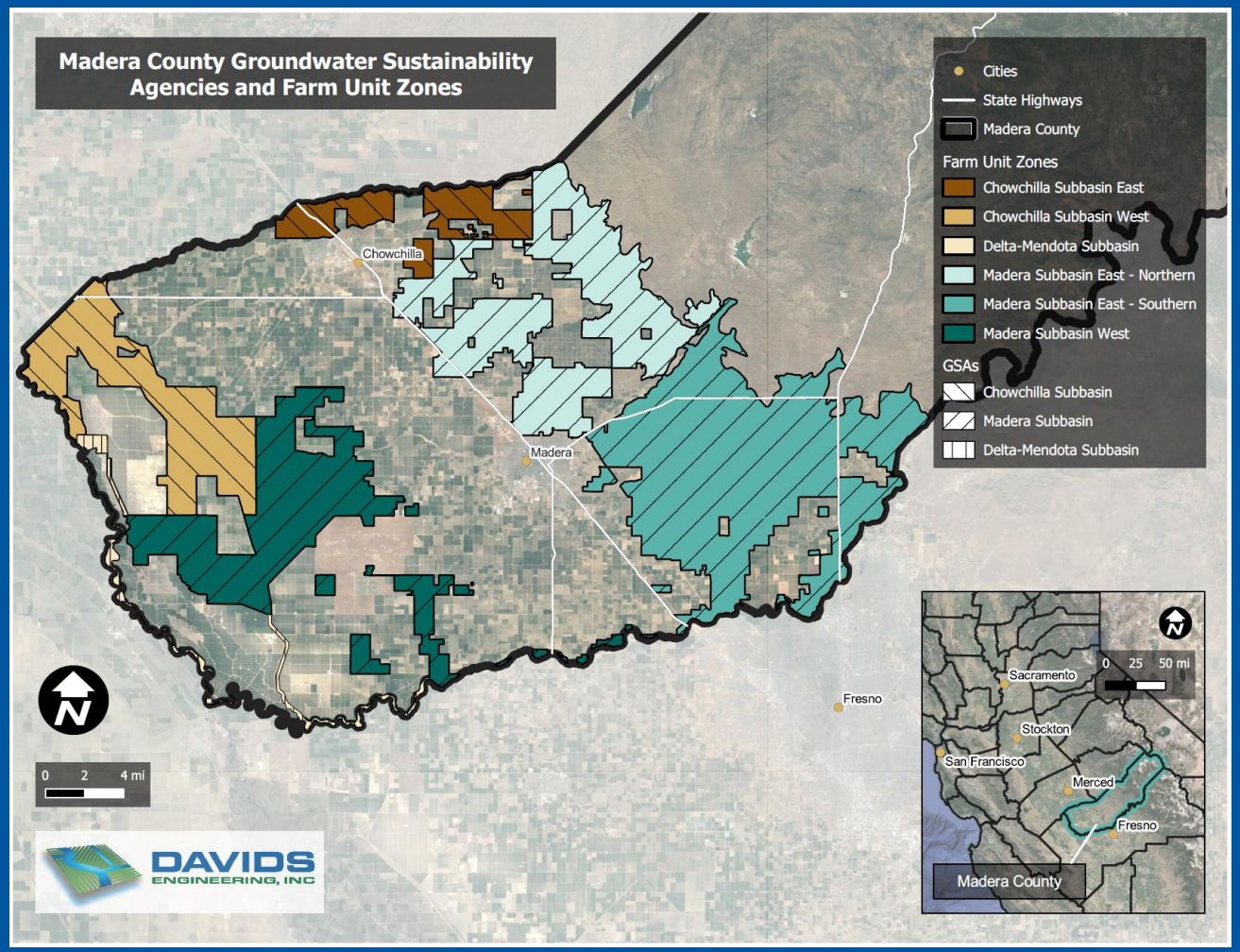
January 31, 2022
All high and medium priority basins managed by groundwater sustainability plans

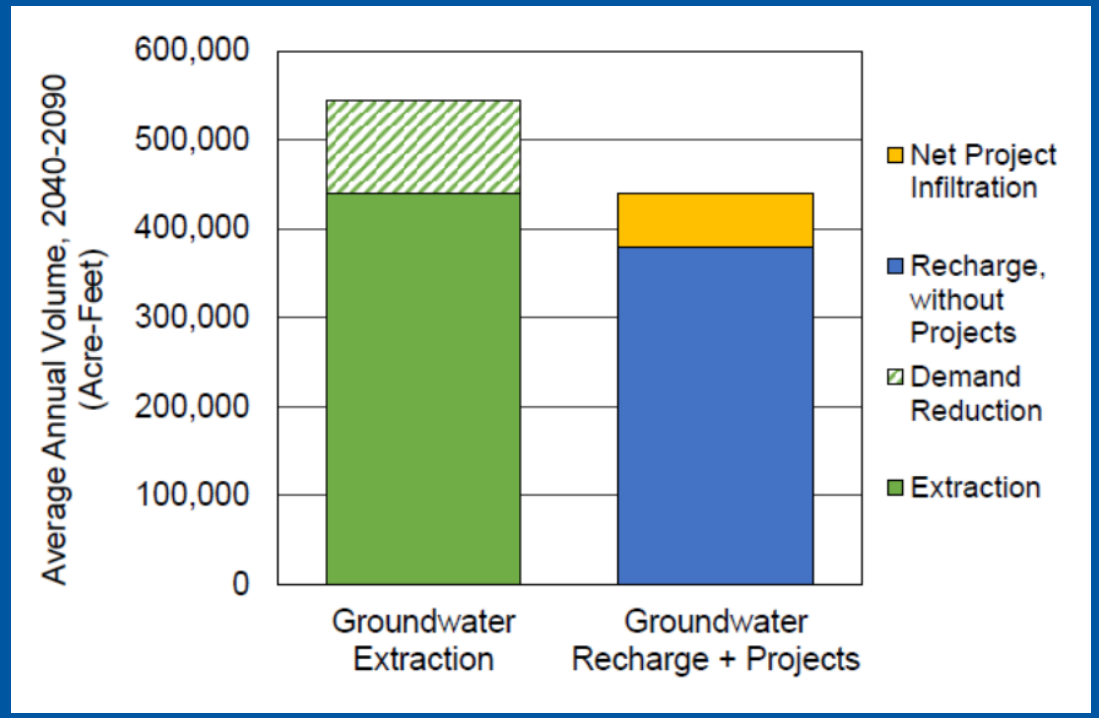
January 31, 2040/2042
All high and medium priority basins achieve groundwater sustainability (twenty years after plan is adopted)

Groundwater Demand Management (GDM)

- How do you define this?
  - Managing or controlling (i.e. reducing) groundwater demand.
- How do you accomplish this?
  - Well permitting
  - Land use control
  - Groundwater allocations
  - Others?
- Groundwater allocation questions:
  - What is a sustainable allocation of groundwater?
  - Allocation based on extracted vs. consumed groundwater?
  - How do you measure extraction/consumption against groundwater allocations?
  - How to you get from where you are to sustainability (transition)?

Madera County GSAs:
A Case Study in Groundwater Allocations





Madera Subbasin

Demand Management facilitated through Groundwater Allocation Program.

GW Allocation Program Overview

- Allocated as inches per year, volume determined based on grower acreages.
- Sustainable Yield + Transitional Water = Total Allocation
  - Transitional water decreases during GSP implementation period until allocation is only sustainable yield in 2040
- Based on groundwater consumed, not groundwater pumped
  - Evapotranspiration of Applied Water (ETAW)
- ETAW can currently be measured by three different methods, depending on grower preference
  - Flowmeters, IrriWatch (by Hydrosat), and Land IQ

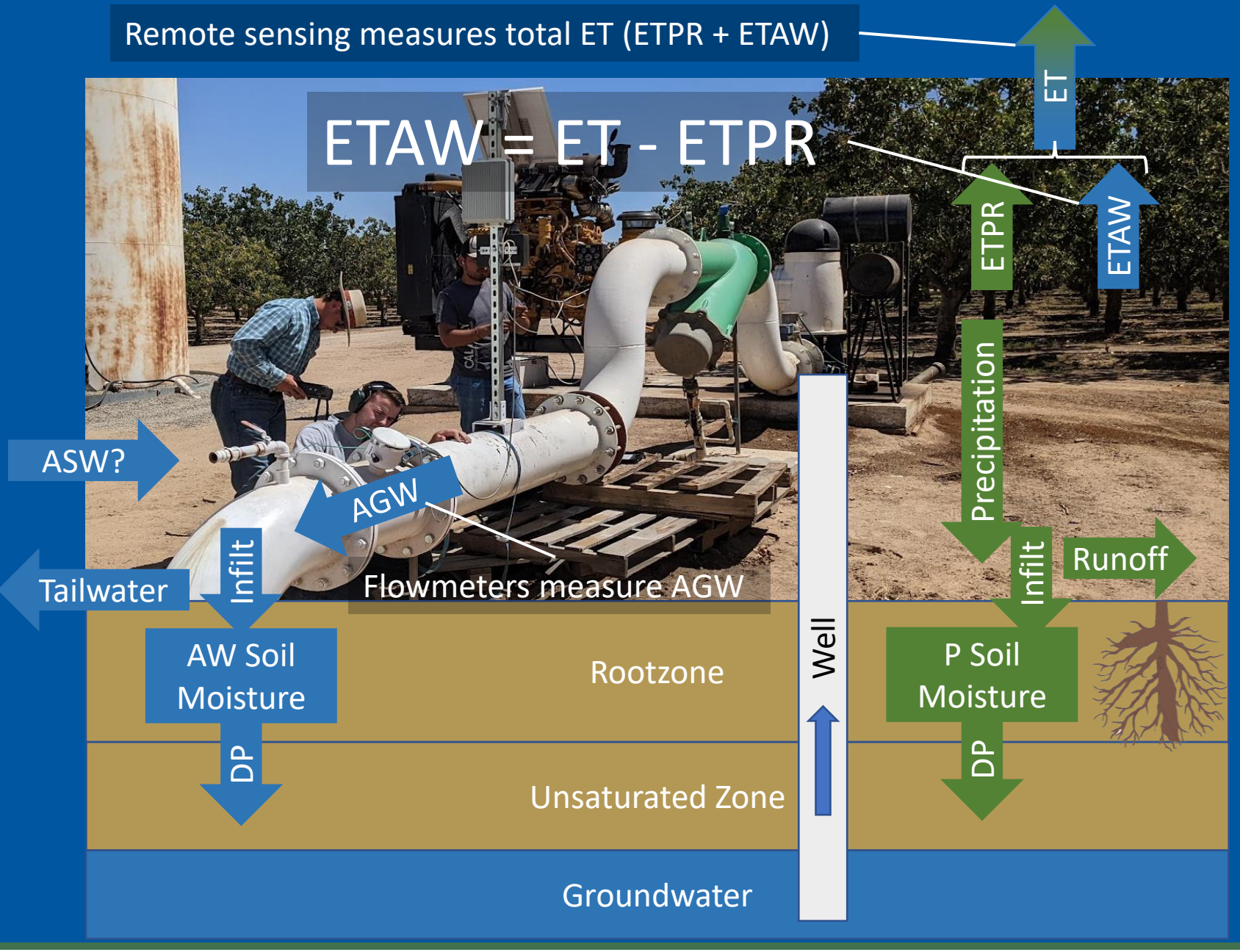
Conceptual Soil Water Budget

Notes

- Green arrows/boxes are precipitation related
- Blue arrows/boxes are applied groundwater related

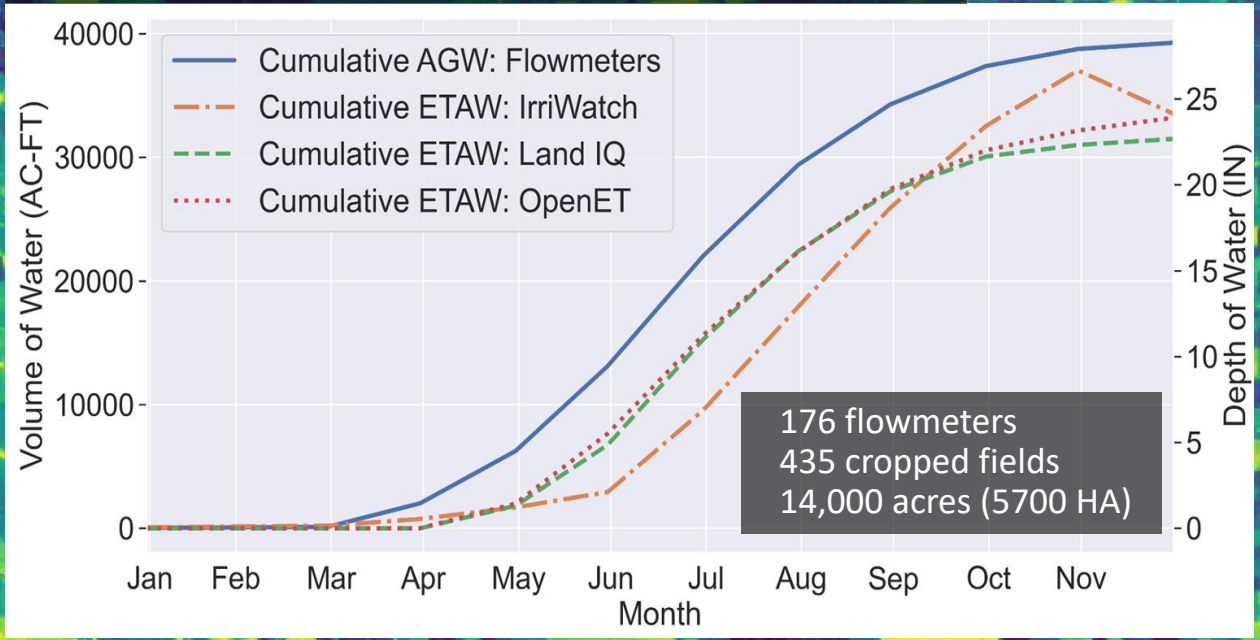
Legend

- AGW = Applied groundwater
- ASW = Applied surface water
- DP = Deep percolation
- ET = Total Evapotranspiration
- ETAW = ET from Applied Water
- ETPR = ET from Precipitation
- Infilt = Infiltration
- DP = Deep Percolation



Administration of Groundwater Allocations

Comparison of flowmeters and remote sensing



Abbreviations

AGW – Applied Groundwater

ETAW - Evapotranspiration of applied water

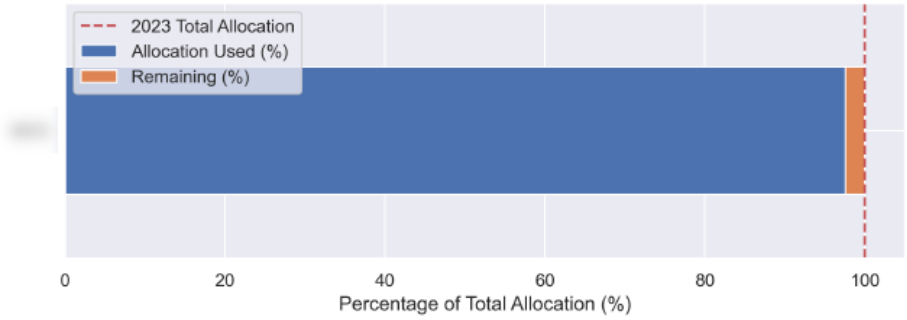
Measurement of ETAW for groundwater allocation management

Master Account Summary

Description	Value
Master Account ID:	
Master Account Name:	
Mailing Address:	
Start Date (YYYY-MM-DD):	
End Date (YYYY-MM-DD):	
Measurement Method:	

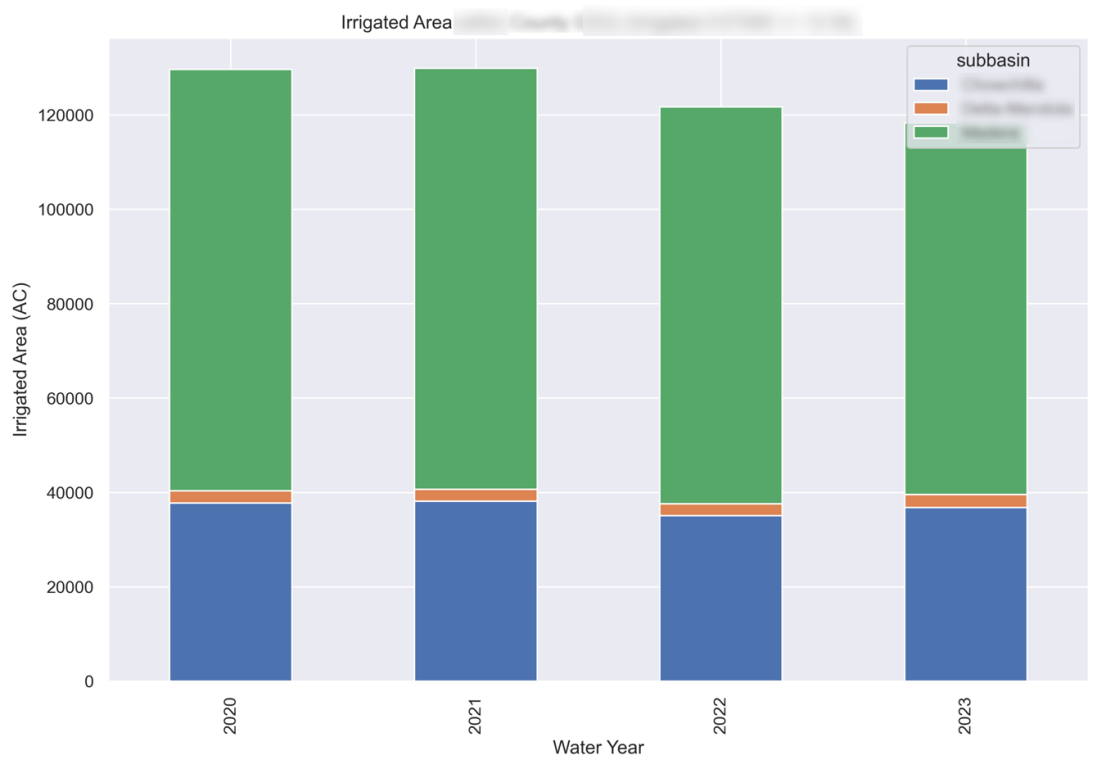
Farm Unit Summary

Farm Unit	Assessed Acreage (AC)	Irrigated Acreage (AC)	2023 Allocation (AF)	Carryover (AF)	2023 Adjustment (s) (AF)	Total Allocation (AF)	ETAW (AF)	Remaining (AF)	Remaining (%)
	420.9	391.2	971.6	0.0	0.0	971.6	948.3	23.3	2.4

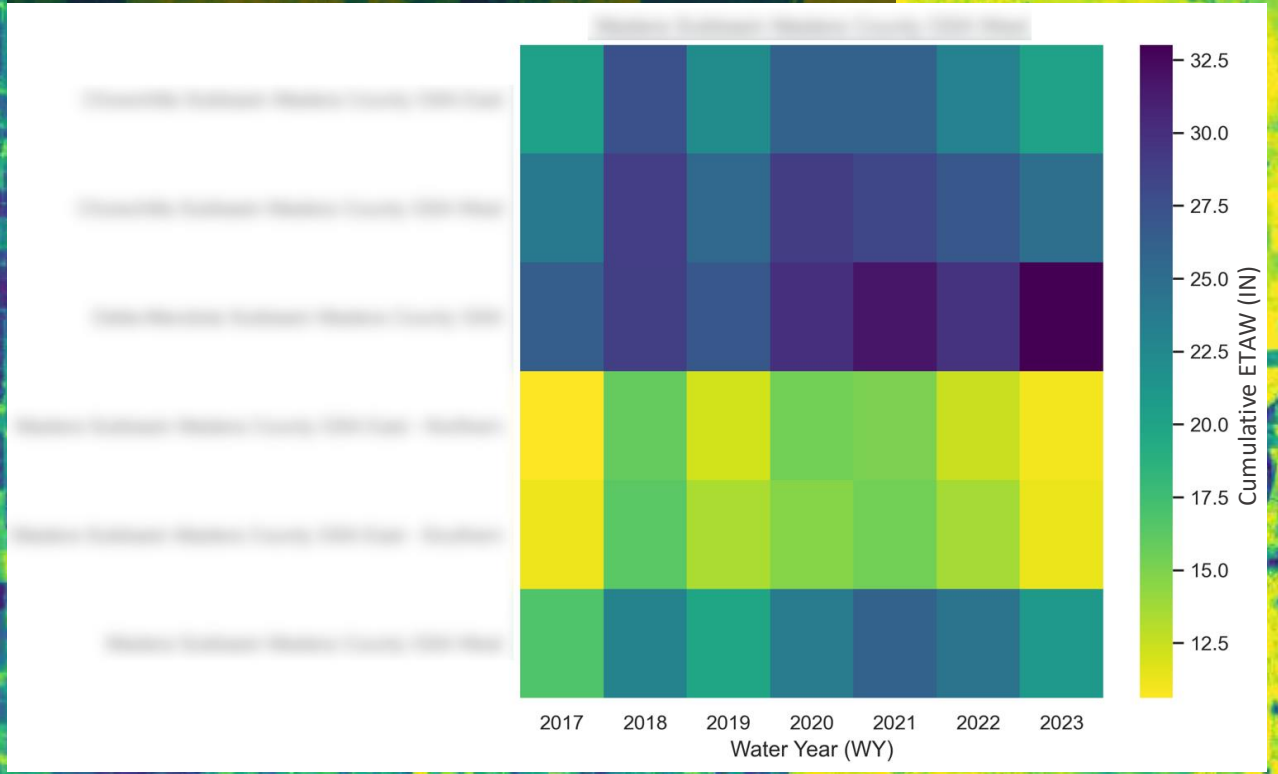


Groundwater Demand Management (GDM) is About Reducing Consumption

Irrigated area analyses



Consumptive use (ETAW) intensity analyses



Conclusions

- *Fish and Feathers* to *Folks and Farms* included unregulated groundwater and unsustainability
- Pendulum swing back is regulated under SGMA

- For Groundwater Demand Management, the GSAs have a monumental, technically complex task to accomplish. We are starting to see effects of Groundwater Demand Management.

Fish and Feathers

Folks and Farms


Strathmore
Springville
Camp Nelson
Corcoran
Porterville
Kettleman City
Pixley
Terra Bella
Alpaugh
Earlimart
Ducor
California Hot Springs
Richgrove
Delano
McFarland
Blackwells Corner
Lost Hills
Wasco
Shafter
Oildale
Buttonwillow
Bakersfield
McKittrick
Tupman
Derby Acres
Lamont
Arvin
Keene
Fellows
Bear Valley Springs
30 mi
Stallion Springs
TULARE LAKE
Questions and Discussion
???
Fish and Feathers
Folks and Farms