



WATER SUPPLY CHALLENGES AND SOLUTIONS: 2022 OUTLOOK

Moderator: Sarah Woolf (WaterWise)

Speakers: Paul Gosselin (California Department of Water Resources), David Orth (New Current Water and Land, LLC), Scott Hamilton (Hamilton Resource Economics), Jesse Roseman (ABC)



ALMOND CONFERENCE
DECEMBER 8, 2021

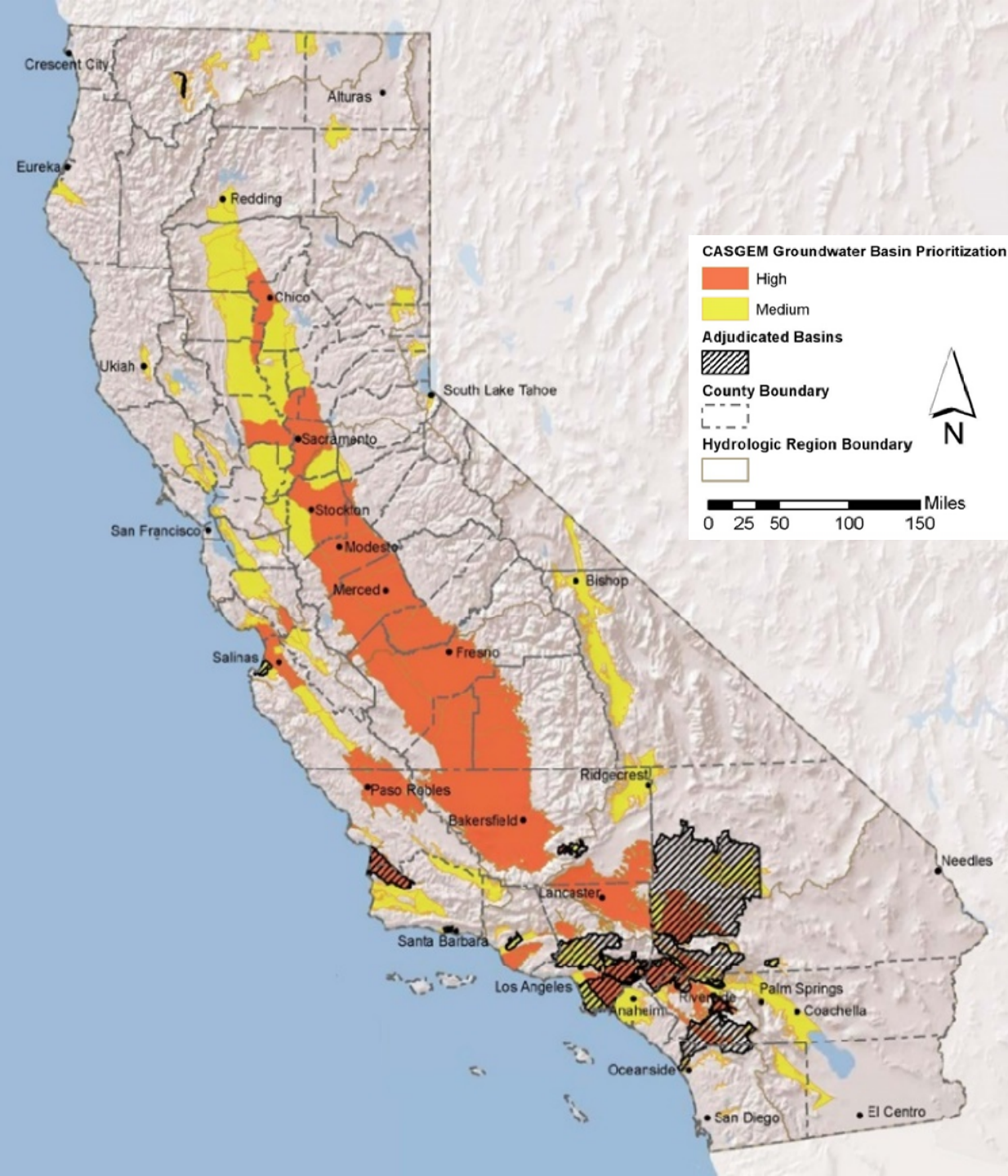
SGMA IMPLEMENTATION/EMERGING
POLICY ISSUES

David Orth
Principal
New Current Water & Land, LLC



SUSTAINABLE GROUNDWATER MANAGEMENT ACT (2014)- OVERVIEW


- ▶ Priority Subbasins required to organize and prepare a Groundwater Sustainability Plan (GSP).
- ▶ Broad reaching – San Joaquin and Sacramento Valleys; Central Coast;
- ▶ GSP(s) must define pathway to sustainable use of groundwater.
- ▶ Coordination among GSAs in a Subbasin is Mandatory.
- ▶ Pathway must be paved with Project and Management Actions
- ▶ Pathway must include measurable objectives, minimum thresholds and interim milestones




- ▶ Groundwater supplies 38%-46% of total California water use.
- ▶ Estimated 6.9 million acres of critically overdrafted basins in the San Joaquin Valley.
- ▶ 1.8 to 2.4 million acre-feet of annual average overdraft.

ESTIMATED ALMOND ACREAGE BY REGION/SUBBASIN/GSA - 2020


- ~850,000 acres in the San Joaquin Valley
 - >100,000 acres in “white” areas (outside of districts)
 - 13 Groundwater Subbasins
 - ~ 95 GSAs
 - ~36 GSPs

 - ~180,000 acres in the Sacramento Valley
 - ~108,000 acres in “white” areas (outside of districts)
 - 8 Groundwater Subbasins
 - ~ 35 GSAs
 - ~ 8 GSPs
- 

WHERE ARE WE NOW?

- GSPs for Critically Overdrafted Subbasins were submitted to DWR by January 31, 2022
 - DWR has until January 31, 2022 to review
 - As of 11/18/21, six GSPs found “adequate”
 - Six GSPs have received notices of “deficiencies”
 - GSPS for all other High and Medium Priority Subbasins must be submitted to DWR by January 31, 2022.
 - DWR has until January 31, 2024 to review those plans.
 - GSPs must demonstrate Subbasin-scale Sustainability within 20 years of Plan adoption
 - GSP's must be updated every 5 years
- 


EMERGING ISSUES

- ▶ DROUGHT has accelerated impacts and implementation of management actions
 - ▶ Ramp down to Sustainable Yield - $\sim .50-1.50$ AF/acre
 - ▶ Drinking Water Protection – Shallow Domestic Wells
 - ▶ Subsidence
 - ▶ Availability of Water Supplies to Expand Recharge
 - ▶ Groundwater Dependent Ecosystems
 - ▶ Groundwater Trading Markets
 - ▶ Land Repurposing
- 

STATE AGENCY REVIEW & RESPONSE

- DWR Review – 3 potential outcomes
 - Approved
 - Incomplete (deficiencies capable of being timely corrected)
 - Inadequate (not compliant with SGMA)
- What is the grading scale? DWR says it doesn't expect perfection; but what will be acceptable?
- SWRCB intervention at the Basin scale? Or just the “bad actor”?
 - SWRCB invention = Fees, extraction reporting, pumping restrictions

KEY IMPLEMENTATION OBJECTIVES

- ▶ Objectives
 - ▶ Support Local Management
 - ▶ Allow for time to fill Data Gaps
 - ▶ Support Recharge wherever possible; eliminate barriers
 - ▶ Use up to 20 years to achieve Sustainability
 - ▶ Continued Investment in Backbone Infrastructure
 - ▶ Managed Land Use Conversion
- 

LOOKING AHEAD

▶ Questions and Uncertainty

- ▶ Very few of the GSPs can expect an “A” grade; many should expect something below a “passing” grade
- ▶ How much flexibility and discretion are the State agencies willing to apply in the review of GSPs?
- ▶ Enforcement – at the Subbasin level or more localized?
- ▶ Is State management of certain subbasins (or portions) inevitable?
- ▶ Litigation – when? Where? To what conclusion?
- ▶ Are regional solutions and infrastructure attainable?

The Almond Conference 2021

Water Supply Challenges and Solutions: 2022 Outlook

Paul Gosselin, Deputy Director, Sustainable Groundwater Management Office

December 8, 2021



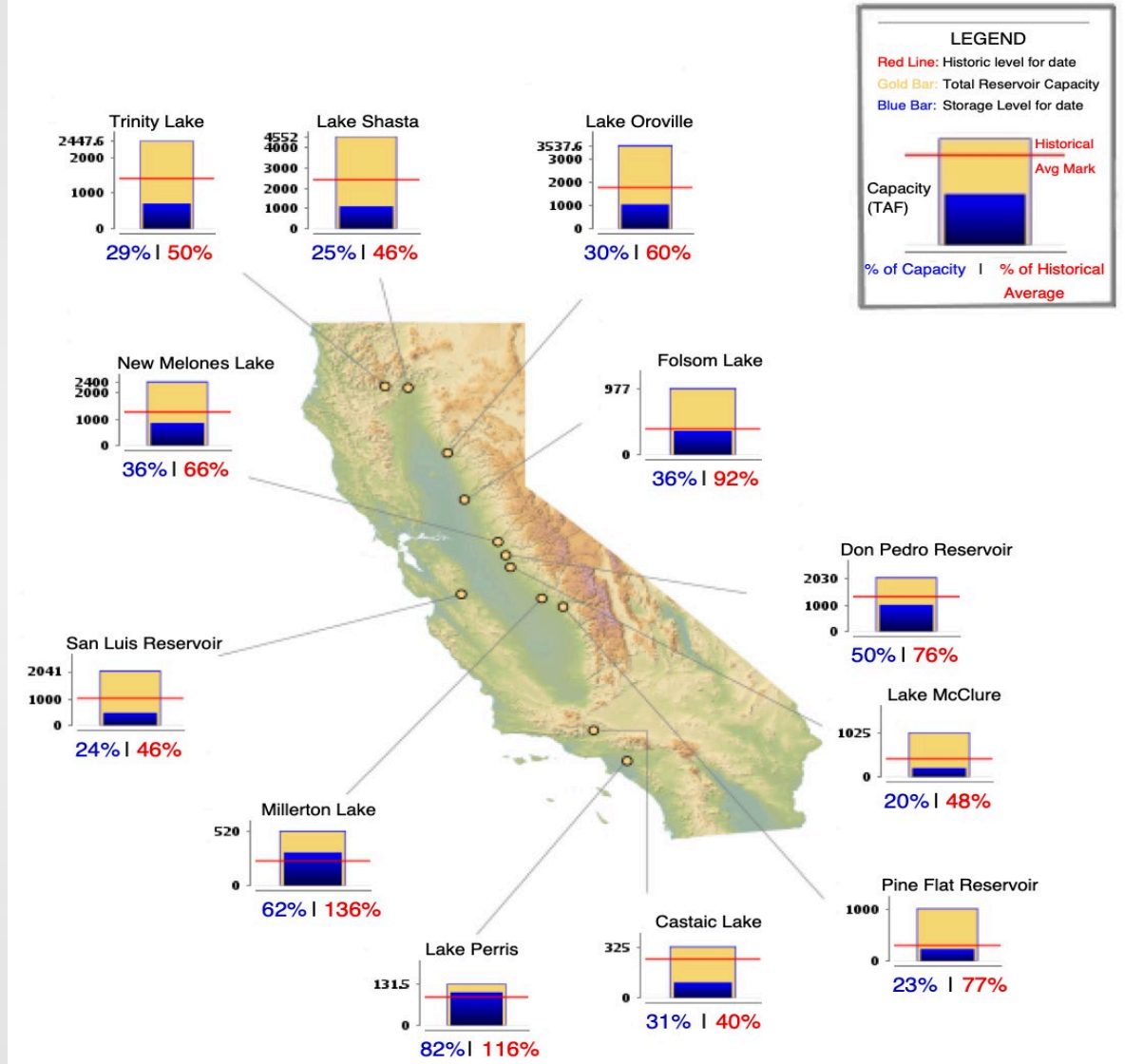
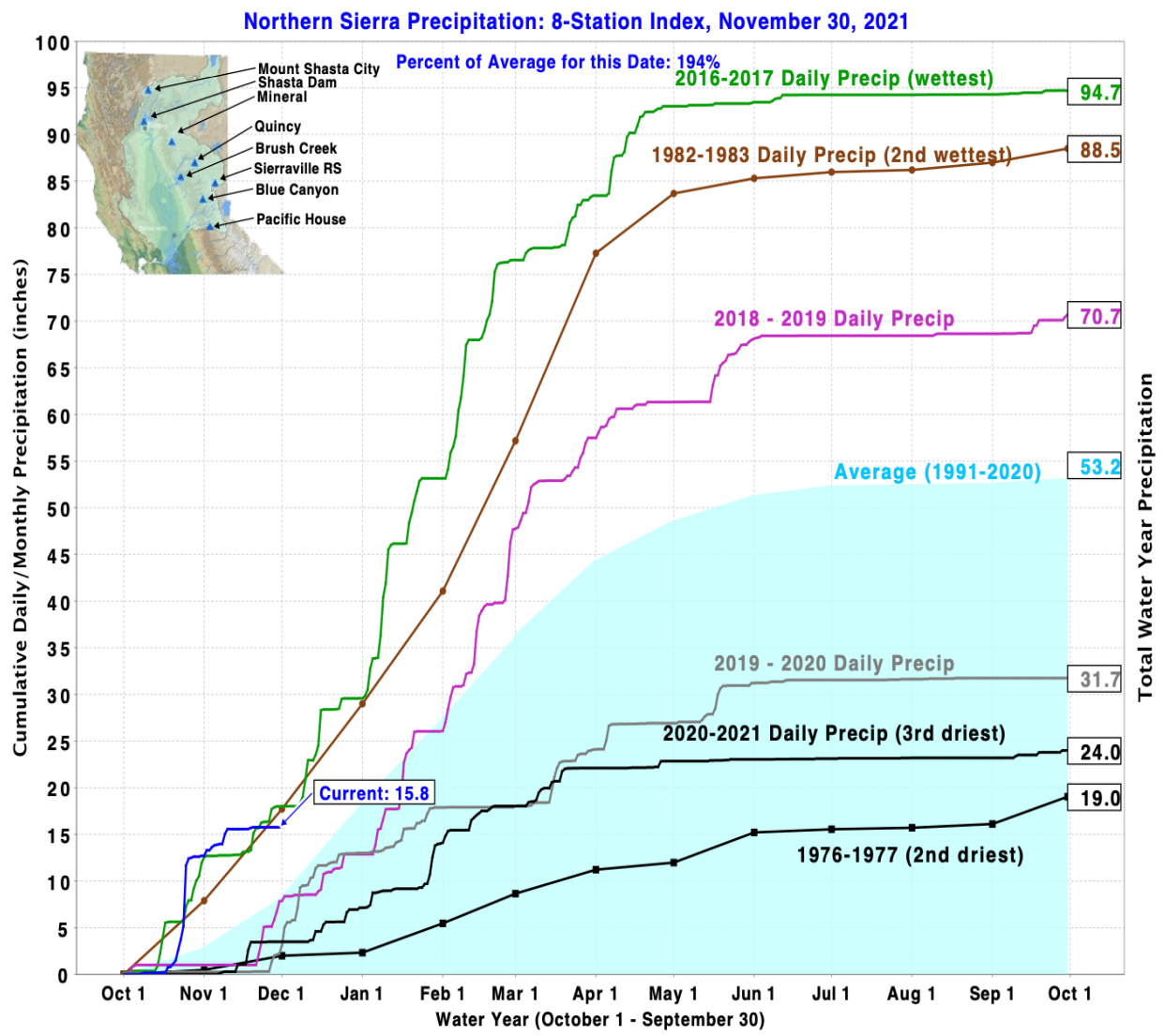


Economic Driver and Environmental Stewards

- In 2019, California's agricultural exports totaled \$21.7 billion in value
- California's top valued agricultural export commodity of more than \$4.9 billion in foreign sales in 2019
- Generates hundreds of thousands good-paying jobs across the state
- Global leader in innovation and commitment to water use efficiency with goal of 20% reduction by 2025



Current Drought + Storage Conditions



Surface Water and Groundwater

For over 100 years, surface water has been actively managed in California



Sustainable groundwater management is a new statewide effort



California's Groundwater

In an average year,
about

40%

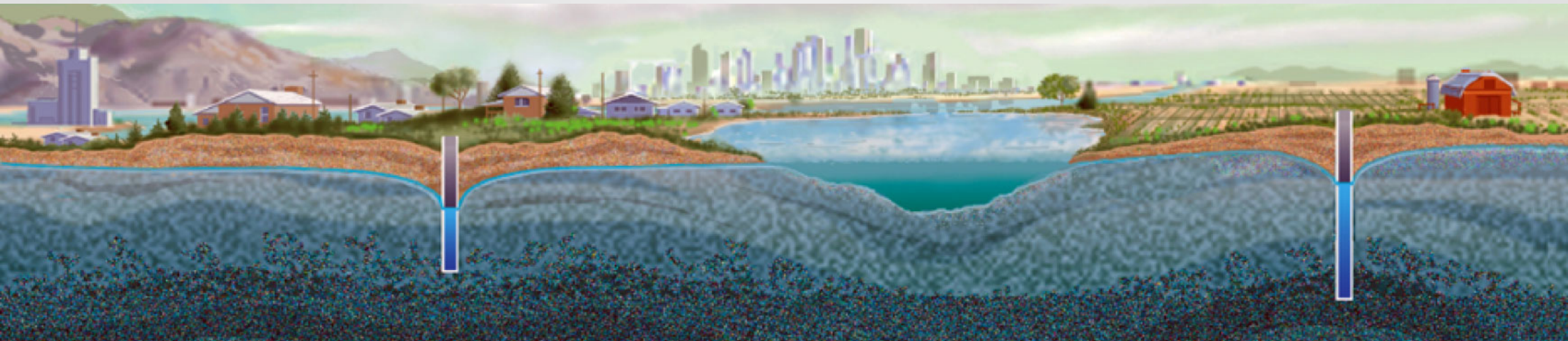
of California's water supply comes
from groundwater

In dry years,
almost

60%

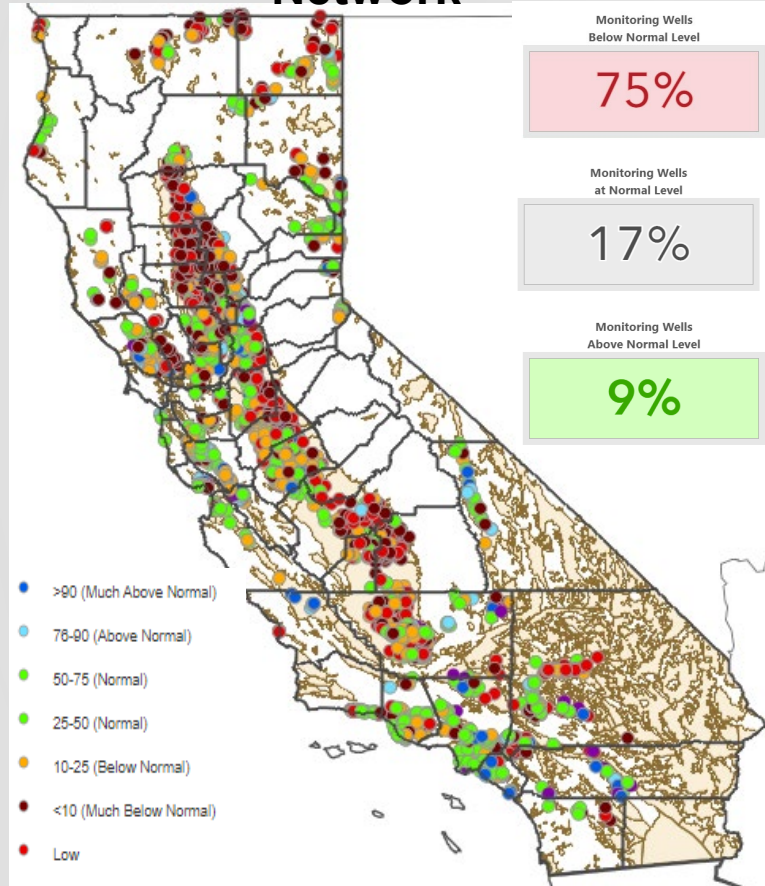
85%

of Californians
rely on groundwater

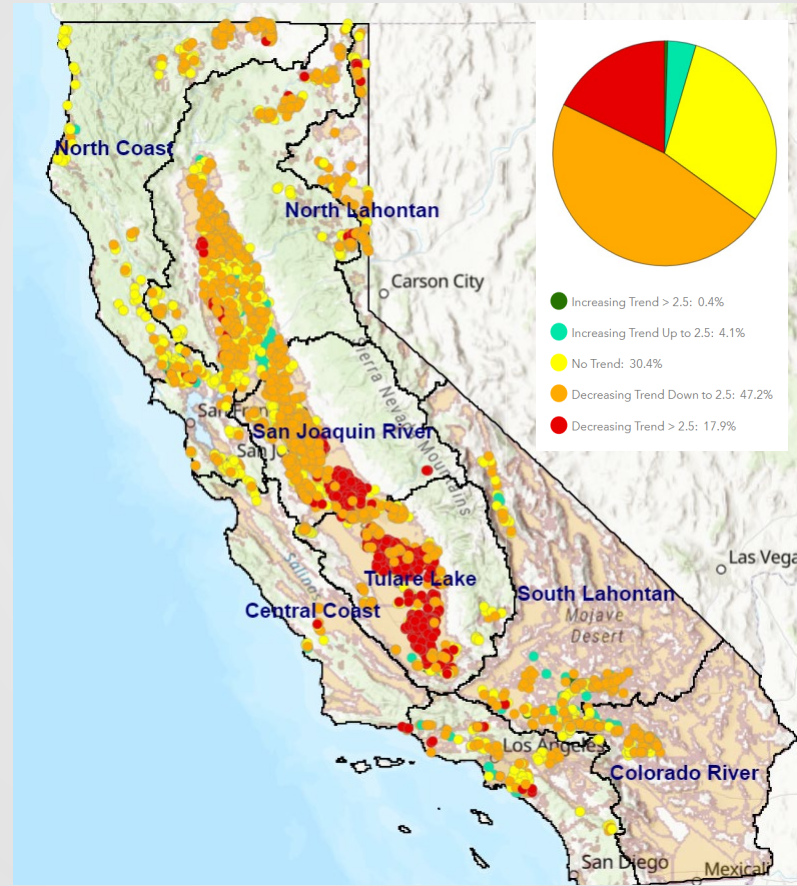


CA's Groundwater Conditions

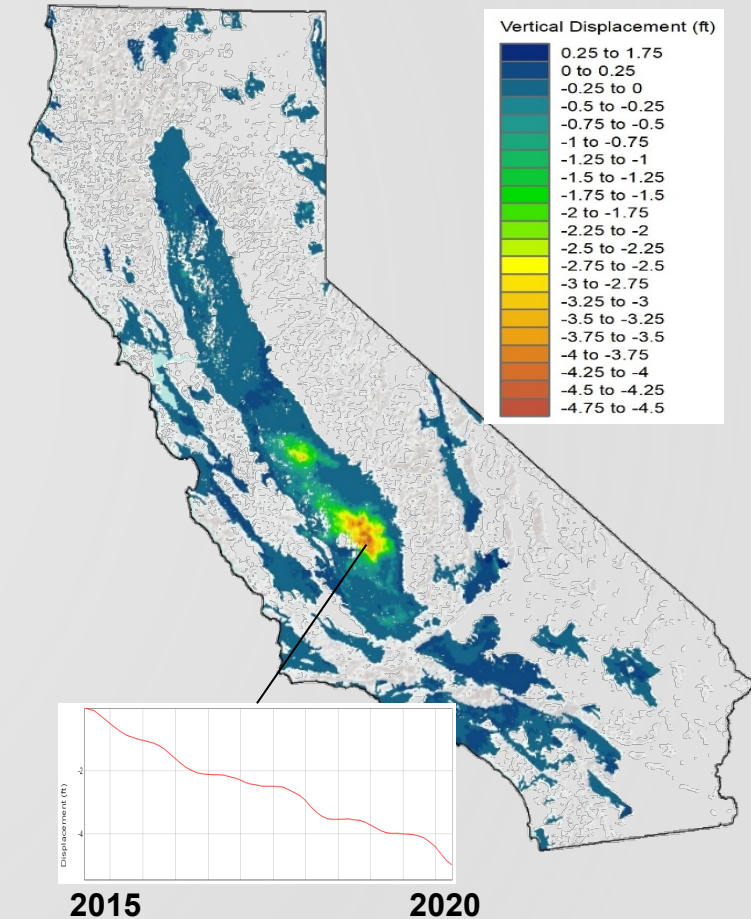
Active Groundwater Level Network



Long-term Groundwater Level Trends



Statewide Subsidence Data (June 2015 - Oct. 2020)

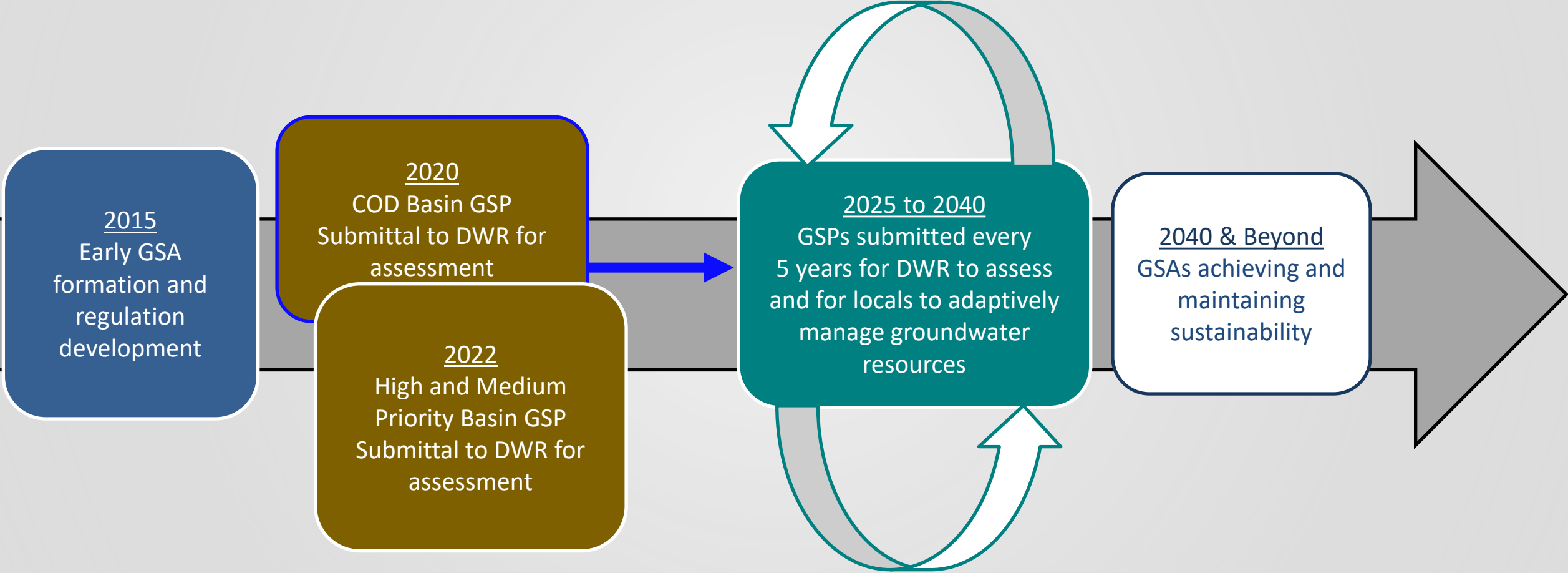


SGMA Data Viewer: <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#currentconditions>

California's Groundwater (Bulletin 118): <https://water.ca.gov/programs/groundwater-management/bulletin-118>

Data available on CNRA Open Data: <https://data.cnra.ca.gov/>

Sustainable Groundwater Management Act (SGMA) 20-Year Plan Horizon



Implementation is Underway... Engage Now with Local Agencies

- DWR already issuing basin assessments, decisions and approvals
- Local agency plan implementation is already beginning
- Participate in efforts to critically and strategically maximize available water through projects and actions

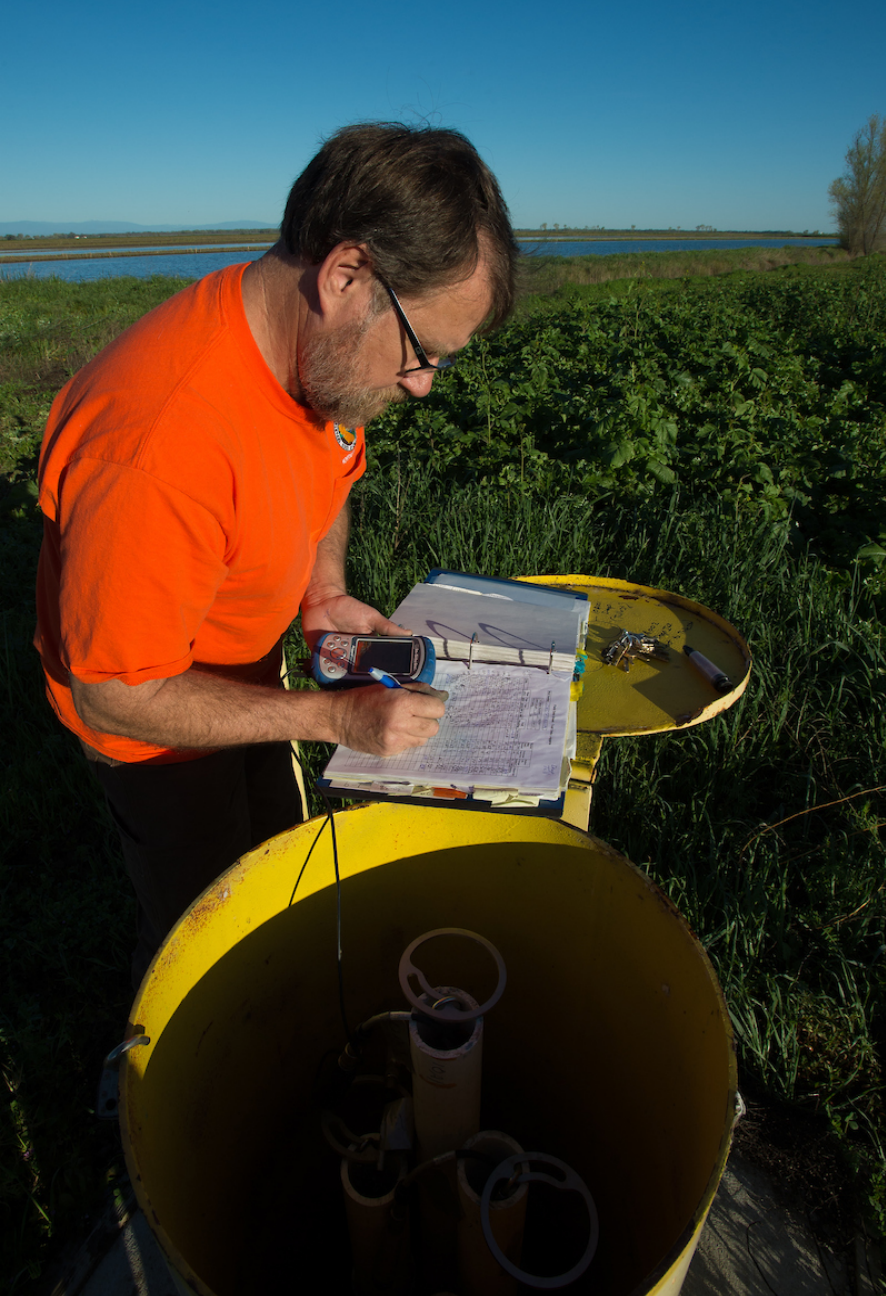




Get Ahead of Potential Changes and Drive Transitions

- SGMA is a 20-year process
- Sustainable groundwater management calls for continued sustainable agricultural industry practices
- Position operations now to advance through potential changes and transitions that may come through ag efficiencies and innovation
- Leads to greater certainty for nimble decision-making





Streamline Data and Accounting Processes

- Increase efforts to provide accurate accounting, allocations and data
- Necessary to make more accurate and informed management decisions
- DWR and partners prepared to support local agencies with these efforts





Use Reduction Should Be Done Strategically

- Local agencies, growers and farmers must find strategies to reduce groundwater use
- Impacts of all groundwater users, including the ag industry, must be considered
- Possible restriction of localized pumping in certain areas
- Transition potential to fallow ag land to new uses
- Efforts supported by \$50 million land transition program at the Department of Conservation





State Supports Accelerated Groundwater Recharge Efforts

- Full steam ahead on projects that maximize flood flows
- Locals should work with State Water Board to procure water rights for recharge projects
- Possibly accommodate streamlined and temporary permits for projects that benefit aquifers
- Airborne technology underway now will help us better understand groundwater basins and recharge functions





Manage Surface Water Infrastructure To Increase and Improve Groundwater Storage

- Water banking can store water in natural underground reservoirs
- Allows for extensive trading and resiliency
- Look to state and federal operations to capture available flow
- Cross-agency integration better utilizes water resources





Thank you.



SAN JOAQUIN VALLEY WATER - COLLABORATIVE ACTION

Scott Hamilton, Ph.D.

Chairman, Technical Committee

Water Blueprint for the San Joaquin Valley

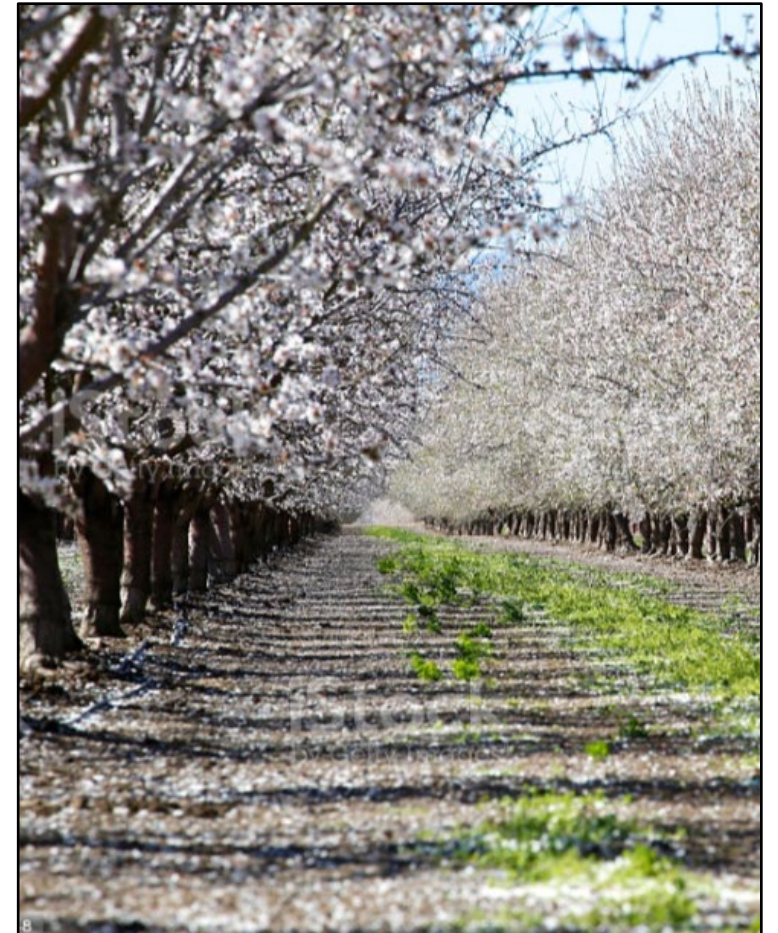
Cell: (661) 303 1540

Email: Scott@ResourceEconomics.net

The Challenges We Face

- The Valley is facing an unprecedented water crisis
- Impacts to long-term economic, social, and environmental health of the region.
- SGMA Implementation without projects:
 - retirement of over 1 million acres of productive farmland
 - Lost jobs: 42,000 in ag, 65,000 in the Valley
 - Loss of \$7 billion/year in revenues
 - Lost property tax revenue
- Adversity for a large number of disadvantaged communities

What can be done?



Elements of a CAP/Blueprint Solution

- ❑ More Groundwater Recharge
 - better use of flood water
 - more recharge capacity
 - new and repaired conveyance
 - better methods for diverting water from the Delta
- ❑ Strategic Land Retirement
- ❑ A Big Picture Plan for the Valley
- ❑ Water for the environment
- ❑ Water for disadvantaged communities



The Numbers

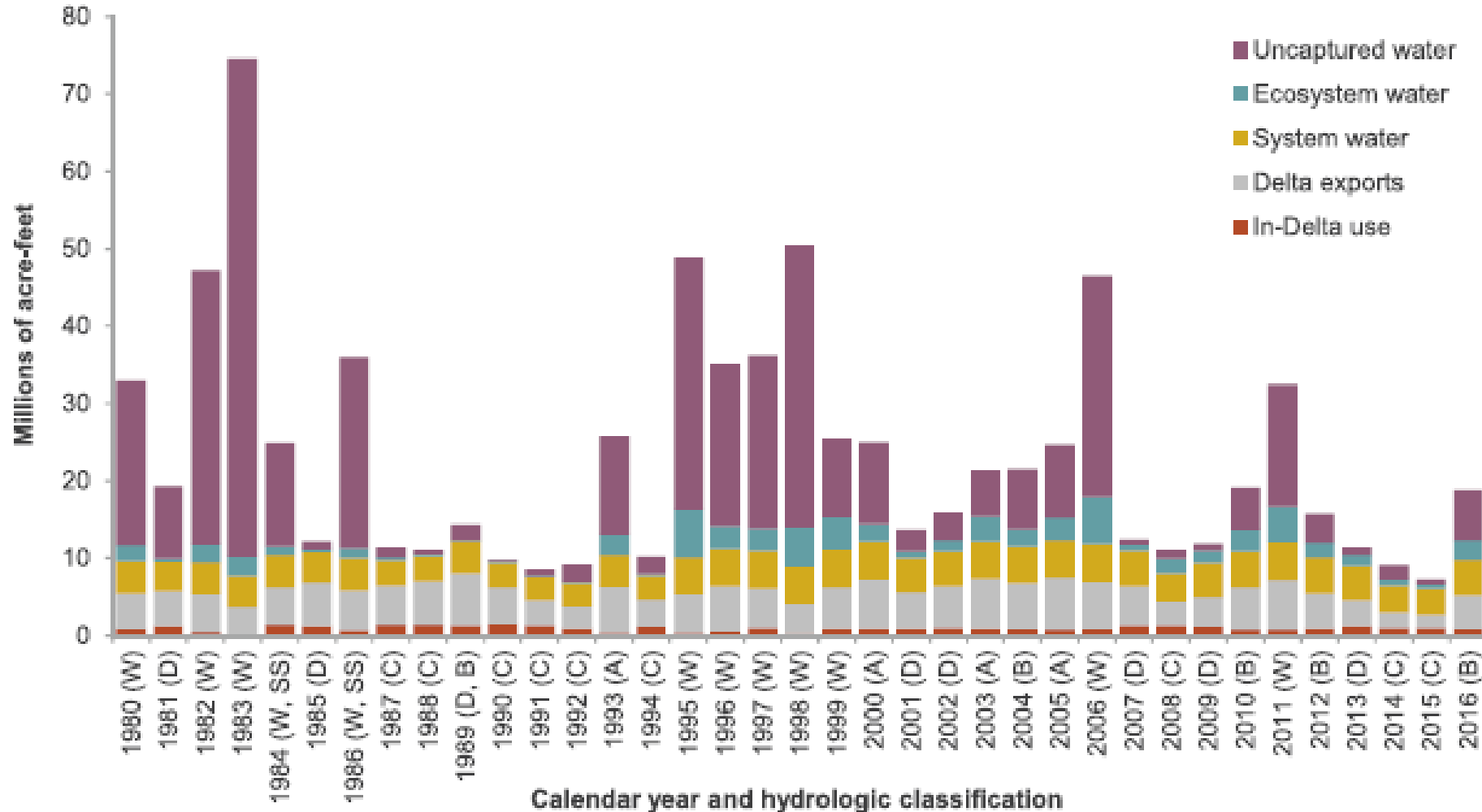
Demands	Total (af)
Change in Historical Groundwater Storage	1,633,200
Changes in Exports due to Climate Change	375,000
Subtotal	2,008,200
<i>Additional Environmental Demands</i>	
Riparian forests and shrublands	52,950
Floodplains and corridors	240,000
Wetlands	230,800
CVPIA Refuge Wetlands	122,700
San Joaquin River Restoration Program	321,000
SJ Basin Tributary Flows	293,000
Sub-Total Environmental	1,260,450
Total New Demand	3,268,650

Potential Supplies	Total (af)
High Flow Local Water Available for Recharge	773,700
Resuse of SJR Restoration Flows	321,000
Land conversion for riparian and floodplains	232,950
Land fallowing for Wetlands	138,500
High Flow Delta Water	1,680,250
Total Potential Supply	3,146,400

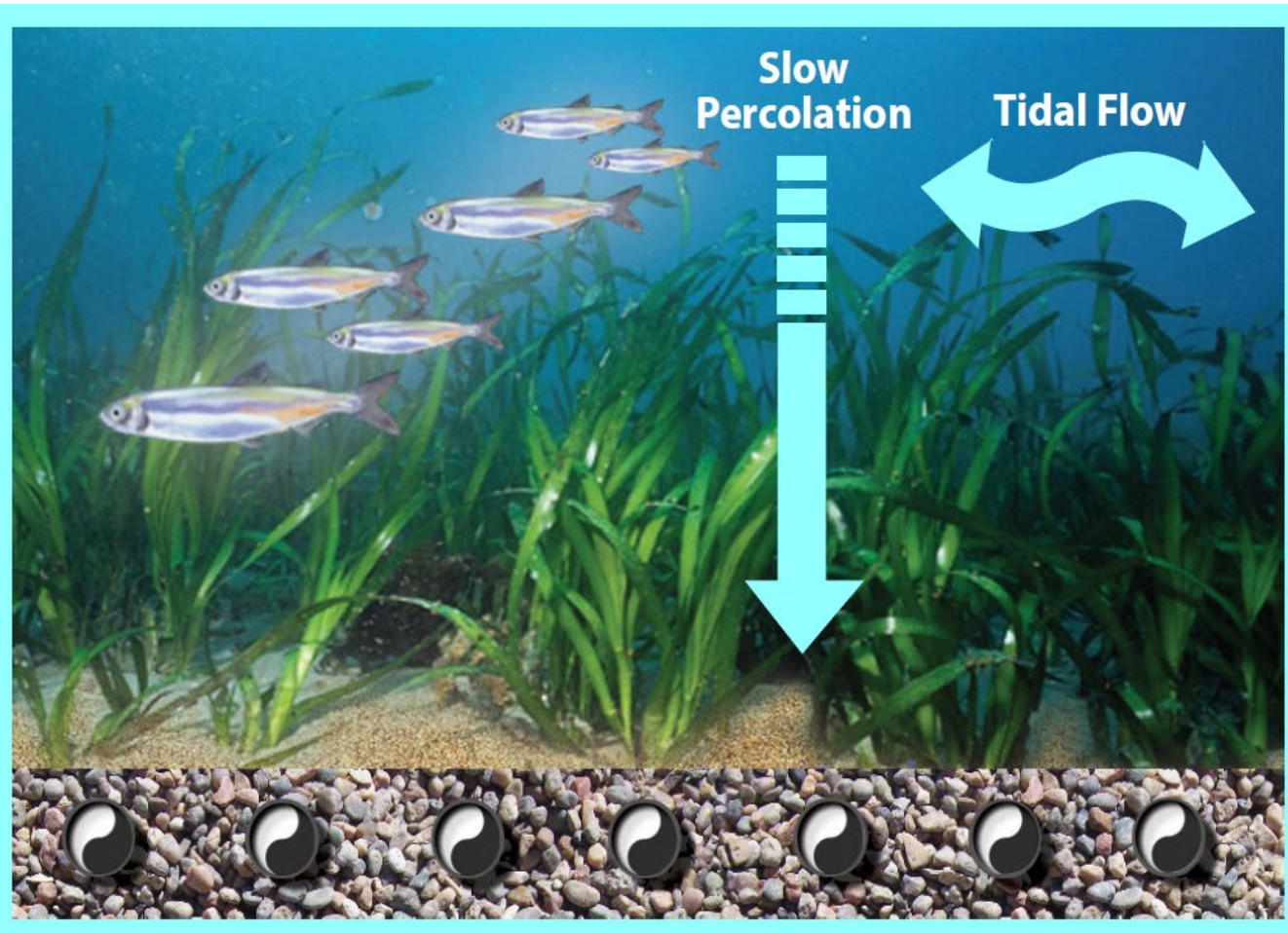
Delta Water Uses

FIGURE 3
Where Delta water went, 1980–2016

On average, uncaptured water exceeds 10 maf/year



Fish Friendly Diversions offer an innovative approach for diverting water without harming fish

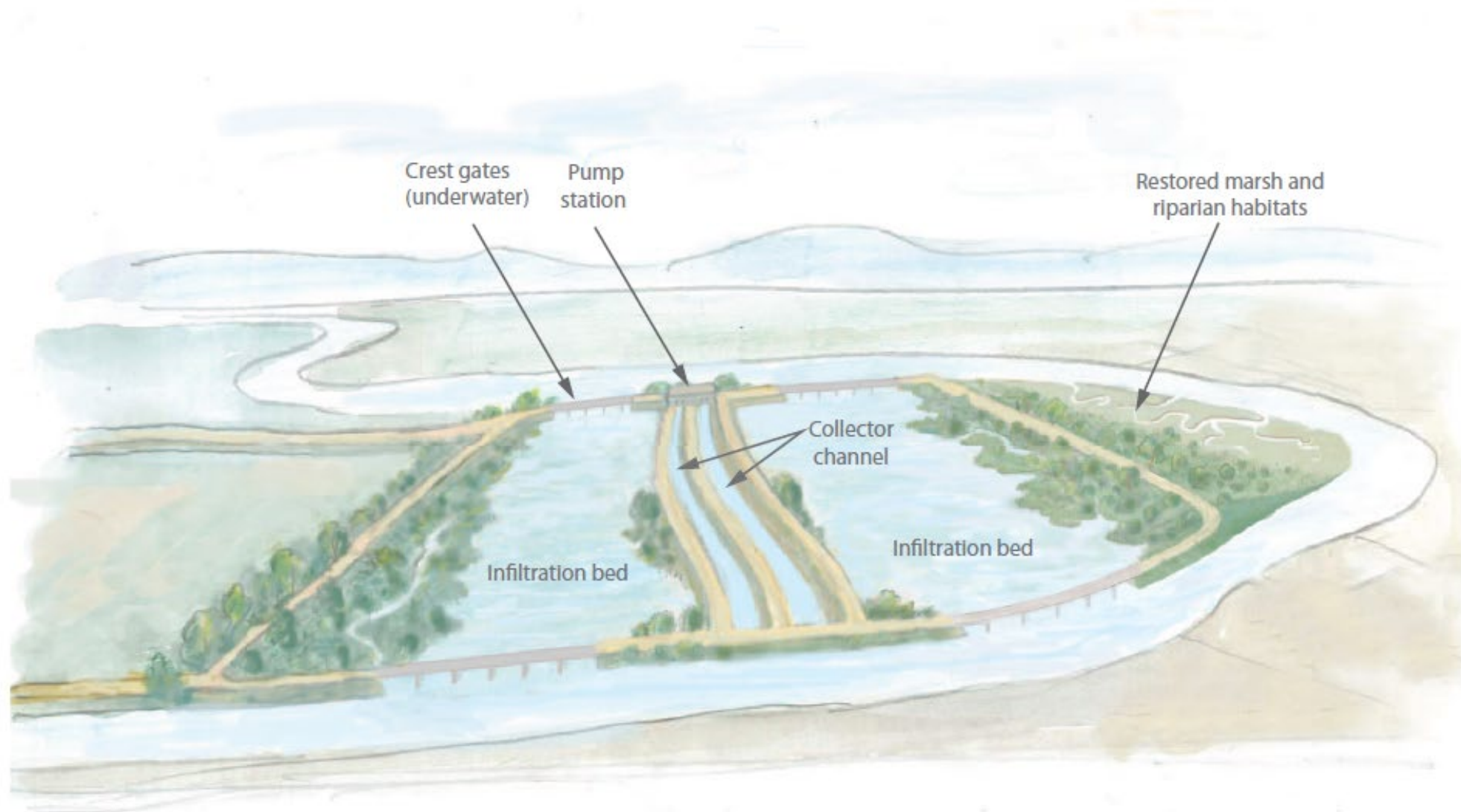


Fish friendly diversions work because of natural buoyancy and slow velocities



Perforated collector pipes

Fish Friendly Diversions - Implementation



SJVWCAP CAUCUSES AT THE TABLE



Safe Drinking Water & DACs



Local Government



Farmers and the Ag Industry



Environmental NGOs



Water Agencies

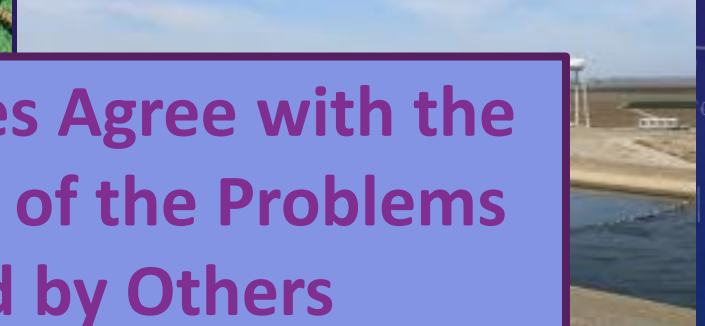
CAP COMMON PROBLEM STATEMENT

San Joaquin Valley Water Challenges

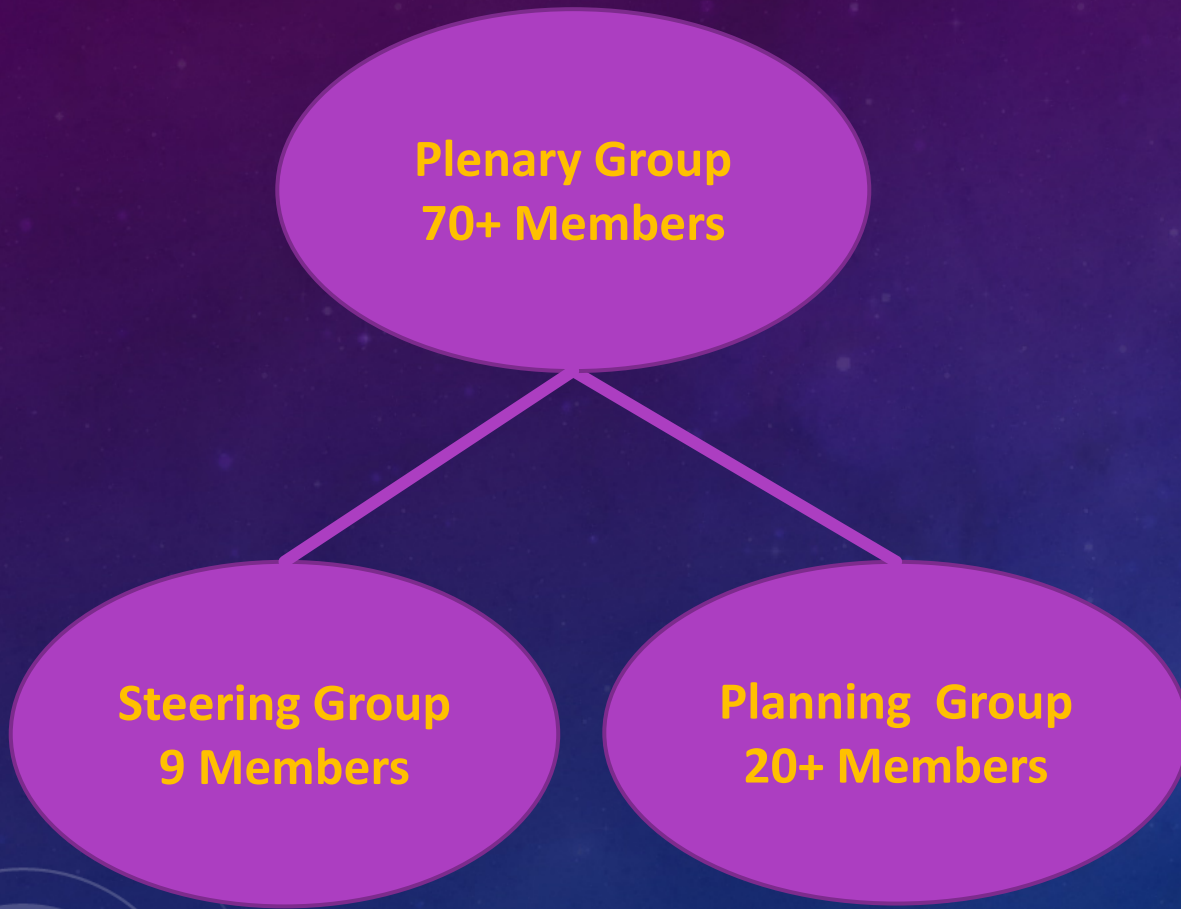
- 1) The Demand-Supply Gap is Daunting
- 2) Lack of Access to Safe, Reliable and Affordable Drinking Water
- 3) 95% Loss of Historical Ecosystem Habitat
- 4) Inadequate Physical and Natural Infrastructure
- 5) Inconsistent Local, State, and Federal Policies



All Caucuses Agree with the Legitimacy of the Problems Faced by Others



CAP GOVERNANCE



CAP DECISION-MAKING RULES

Approved by Plenary Group, June 22, 2021

GOAL: As Close to Unanimous Consent as Possible With Room for Individual Dissent

Decisions by Caucus Vote:

1. Active Support
2. Qualified Active Support
3. Non-Opposition
4. Opposition

**Consensus = No Caucus in Category 4
Some Caucuses in Categories 1-2**



Introduction to Groundwater Recharge Guide

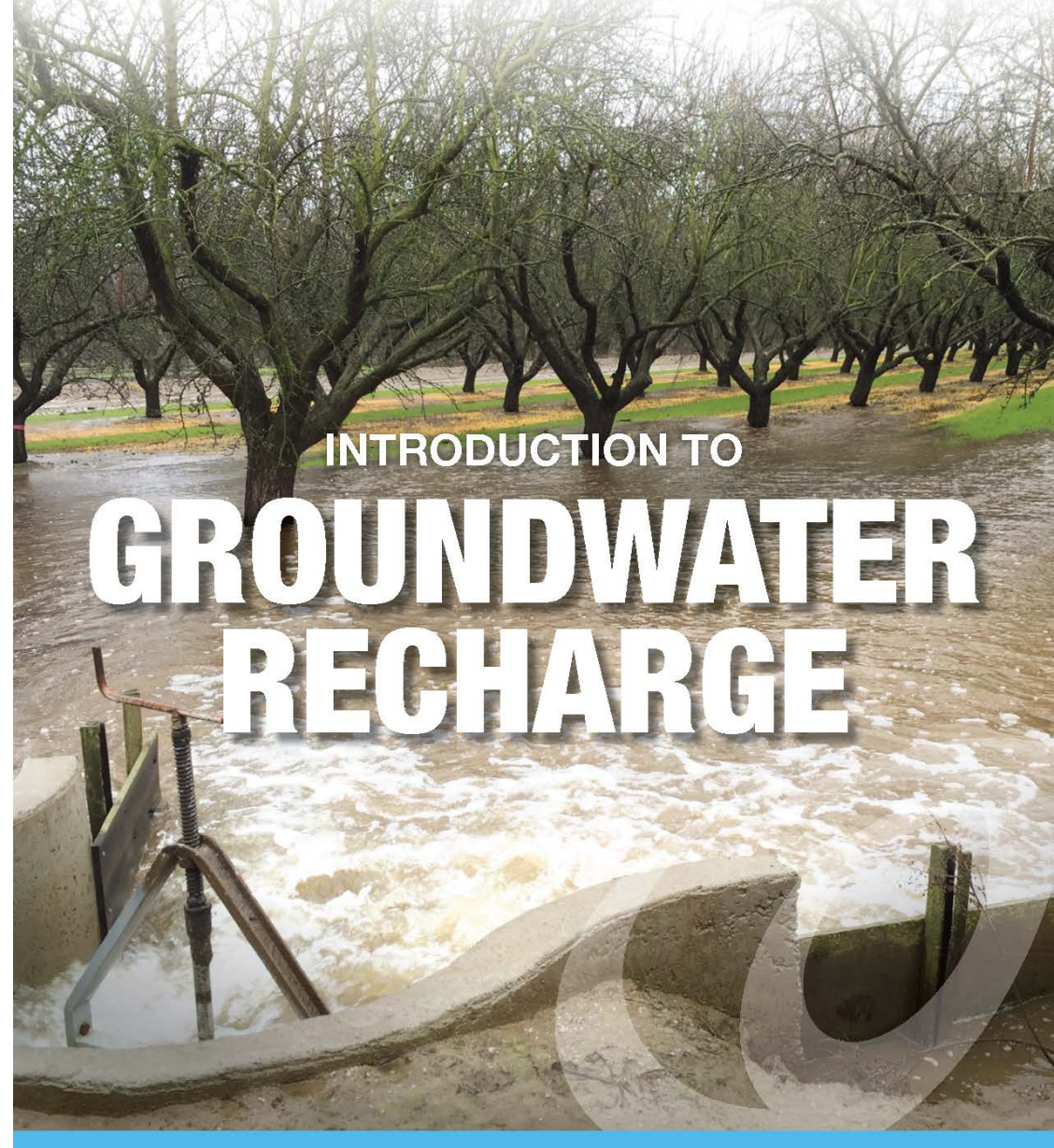


Jesse Roseman,
Principal Analyst
Almond Board of
California

⋮ Topics covered

- **What is Groundwater Recharge?**
- **Supporting Research**
- **Key questions- is Recharge a Fit?**
- **Recharge Methods**
- **Grower examples**

Why Recharge: Address a future of declining groundwater quality, quantity, and availability... improve overdrafted aquifers...increase storage...decrease pumping costs, improve salt management, and mitigate subsidence...SGMA compliance...secure reliable, sufficient, and drought resilient groundwater supplies.

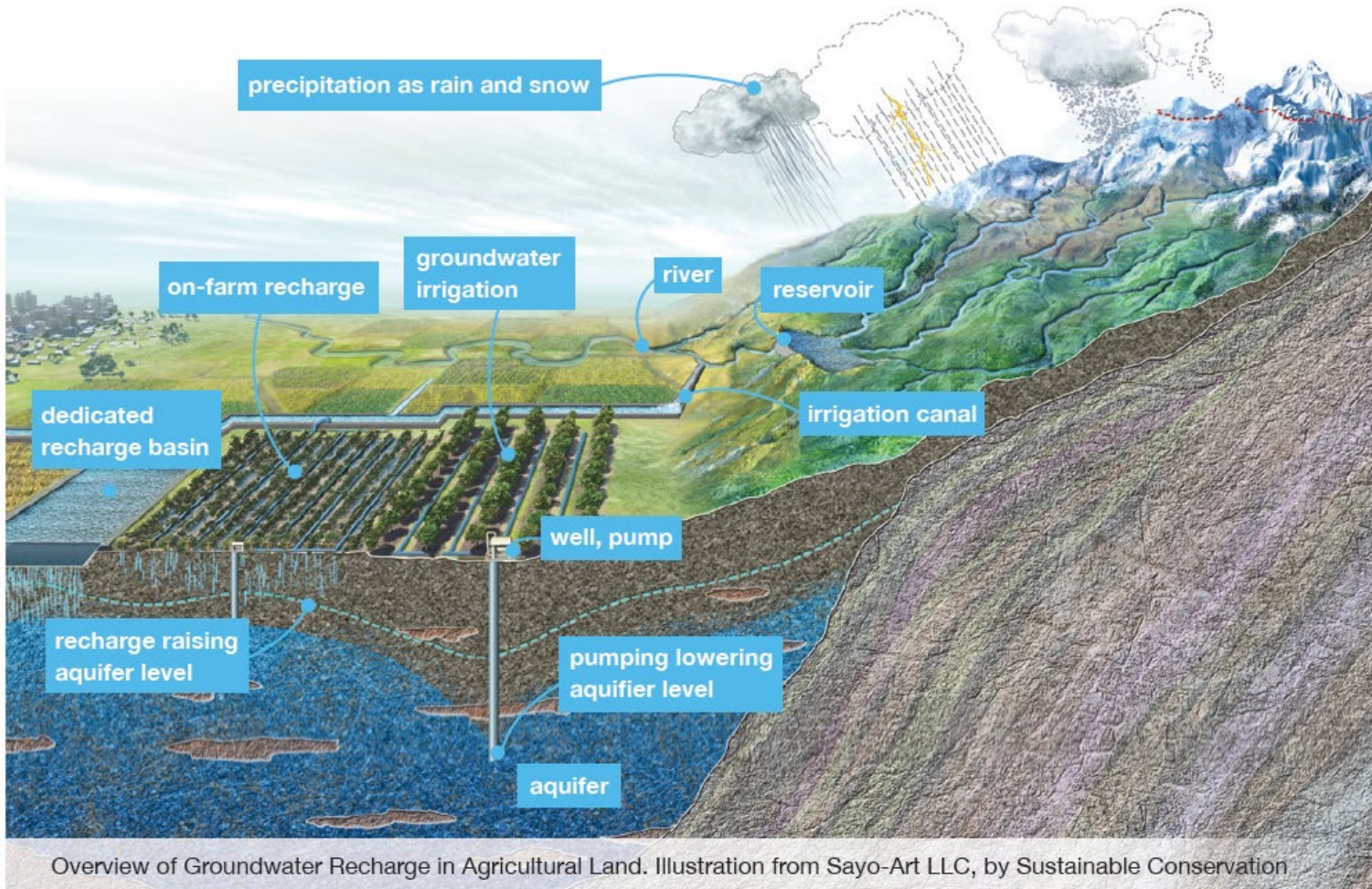


DETERMINING WHETHER RECHARGE IS AN OPTION

What is Groundwater Recharge?

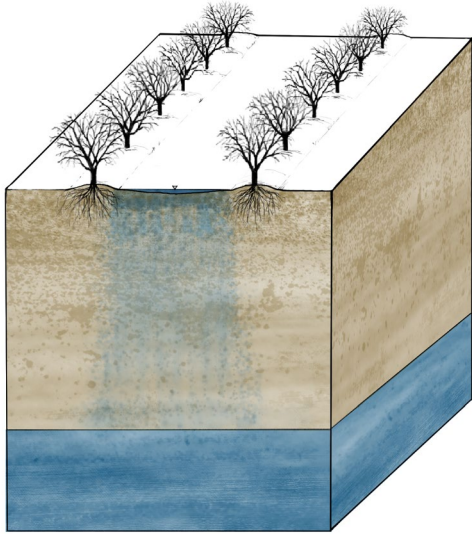
Key questions to ask when considering whether your orchard is suitable for groundwater recharge

- 1. Do I have access to surface water for recharge?**
- 2. Is my orchard soil suitable for recharge?**
- 3. What recharge methods are available?**
- 4. What orchard management changes are necessary to perform recharge?**



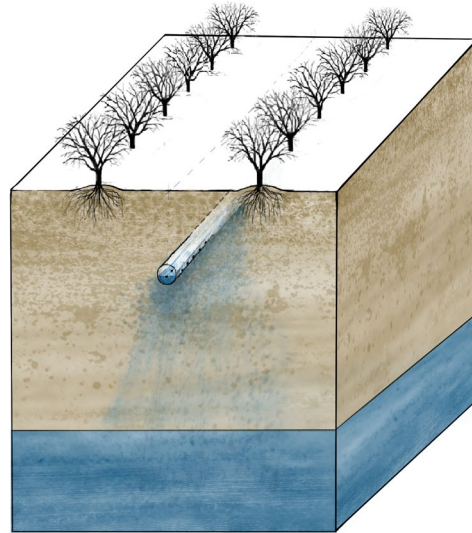
TYPES OF GROUNDWATER RECHARGE

Surface application to orchards



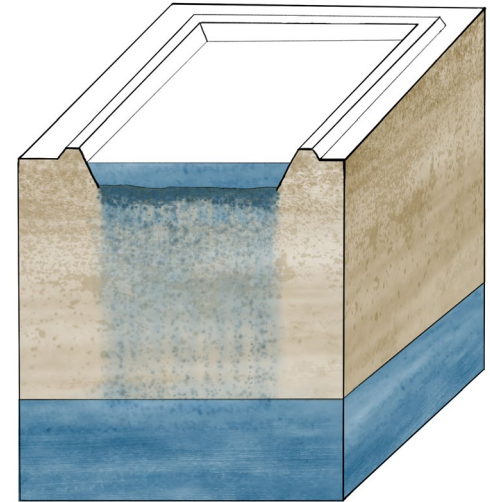
- Can use existing orchard, with management changes

Below the surface of agricultural fields



- Installed prior to planting, with no orchard management considerations

Basins or water conveyance structures



- Can be part of land repurposing, with limited orchard management considerations

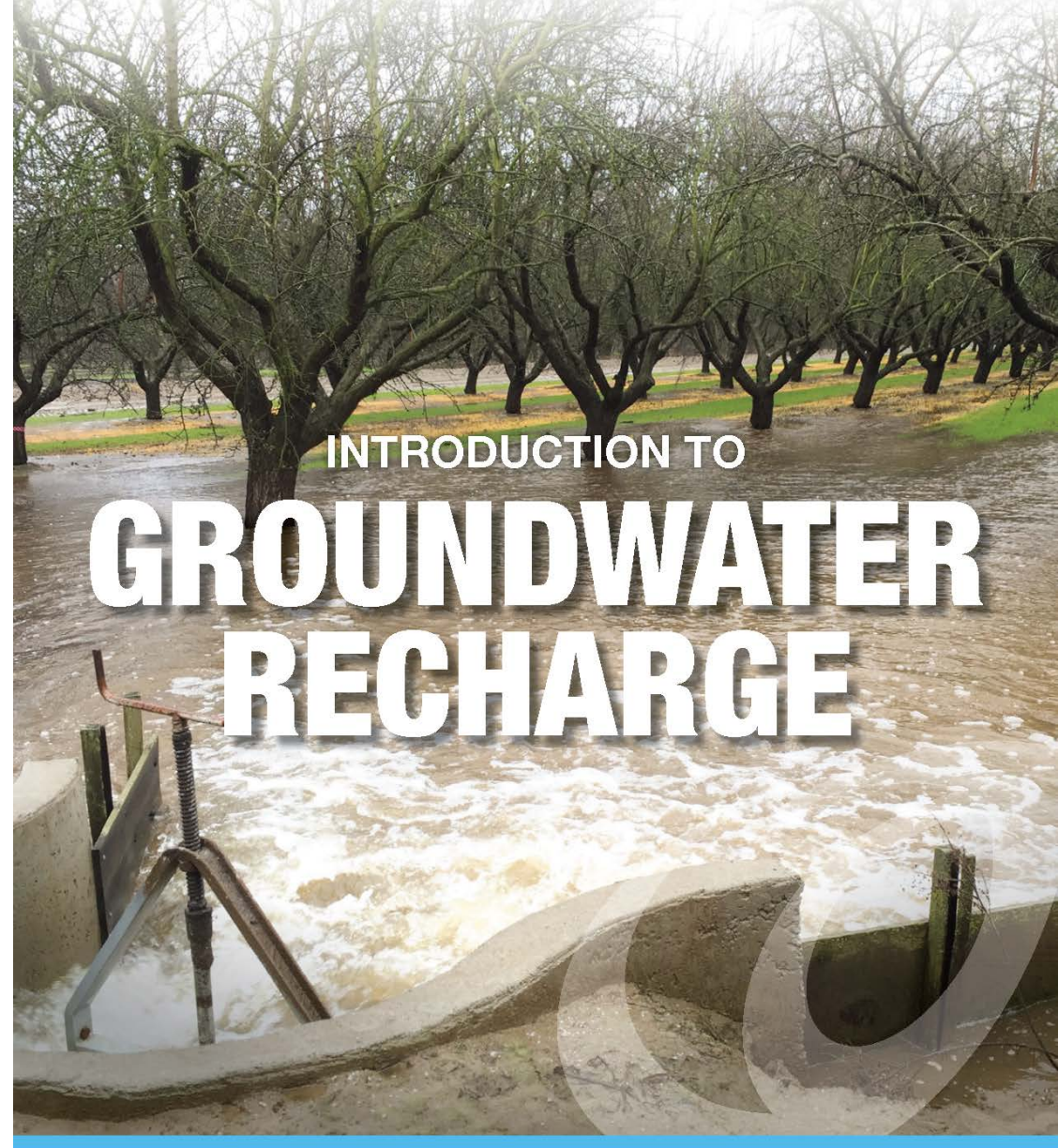
∴ Want to Connect?

- Join the ABC grower groundwater recharge practitioner network
- Share your experiences with recharge as a DWR case study
- Become an NRCS pilot for grower recharge incentives
- Host a recharge field day

Jesse Roseman, Principal Analyst

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Thank You

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