

FLOOD-MAR NETWORK WORKSHOP

2024 RECAP & 2025 VISIONING

Friday, March 28, 2025
10 AM - 12 PM



ZOOM TIPS

- Video (on/off) and audio (mute) options
- Use the Chat Panel for questions and comments
- Use 'raise hand' to to share a comment or ask a question
- Zoom poll questions & MIRO Boards



Scan me

HOW DOES A NETWORK WORK TOGETHER?

The Network's Principle of GIVE and GET:

- ✓ Be present and engaged in the conversation
- ✓ Contribute ideas that you are willing to follow up on and collaborate on with others.
- ✓ Share your knowledge and superpowers
- ✓ Seek ways to support others' work



Join the conversation: Add in the Chat - what are you putting on hold today so you can fully participate in this workshop?

THE PLAN FOR TODAY:

- Setting the Stage
- Recent Network Activities and Collaborations
- Project and Research Highlights
- Forum 2025 Update and Planning
- Closing Reflections



**FLOOD-MAR
NETWORK**

Managing Complexity Together Since 2019

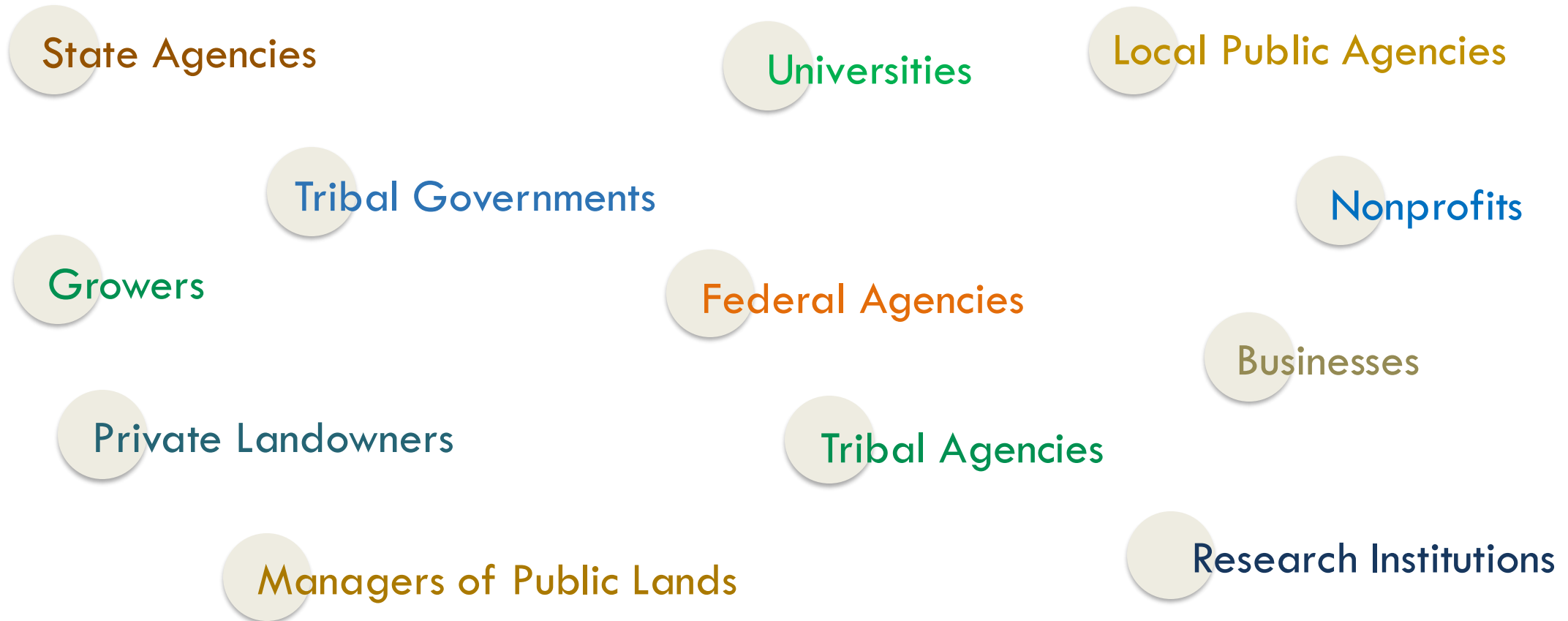


Flood-MAR is a creative climate adaptation strategy that has come a long way in a short period of time.

Nov. 2017	DWR hosts Public Forum: Managed Groundwater Recharge to Support Sustainable Water Management
2018	DWR white paper documents the need for greater use of Flood-MAR in the state and laid out a framework for what that might entail.
Early 2019	Research Advisory Committee (RAC) recommends development of a Network
Oct. 2019	First Network Forum Event : <i>Exploring Science, Socioeconomic, and Policy Considerations for using Floodwaters for MAR</i>
Oct. 2021	Second Biennial Network Forum : <i>Exploring Needs and Opportunities to Expand Flood-MAR Implementation for Multiple Benefits</i>
Nov. 2023	Third Biennial Network Forum : <i>Flood-MAR in Action!</i>
Fall 2025	Fourth Biennial Network Forum : <i>Coming Soon!</i>

And MANY other activities in between! Workshops, Lunch-MARs, Action Teams, Research Collaborations, Happy Hours, etc.

WHO WE ARE: It's all of us! A collaboration among individuals and organizations who are interested in promoting Flood-MAR implementation in California (...and beyond!)



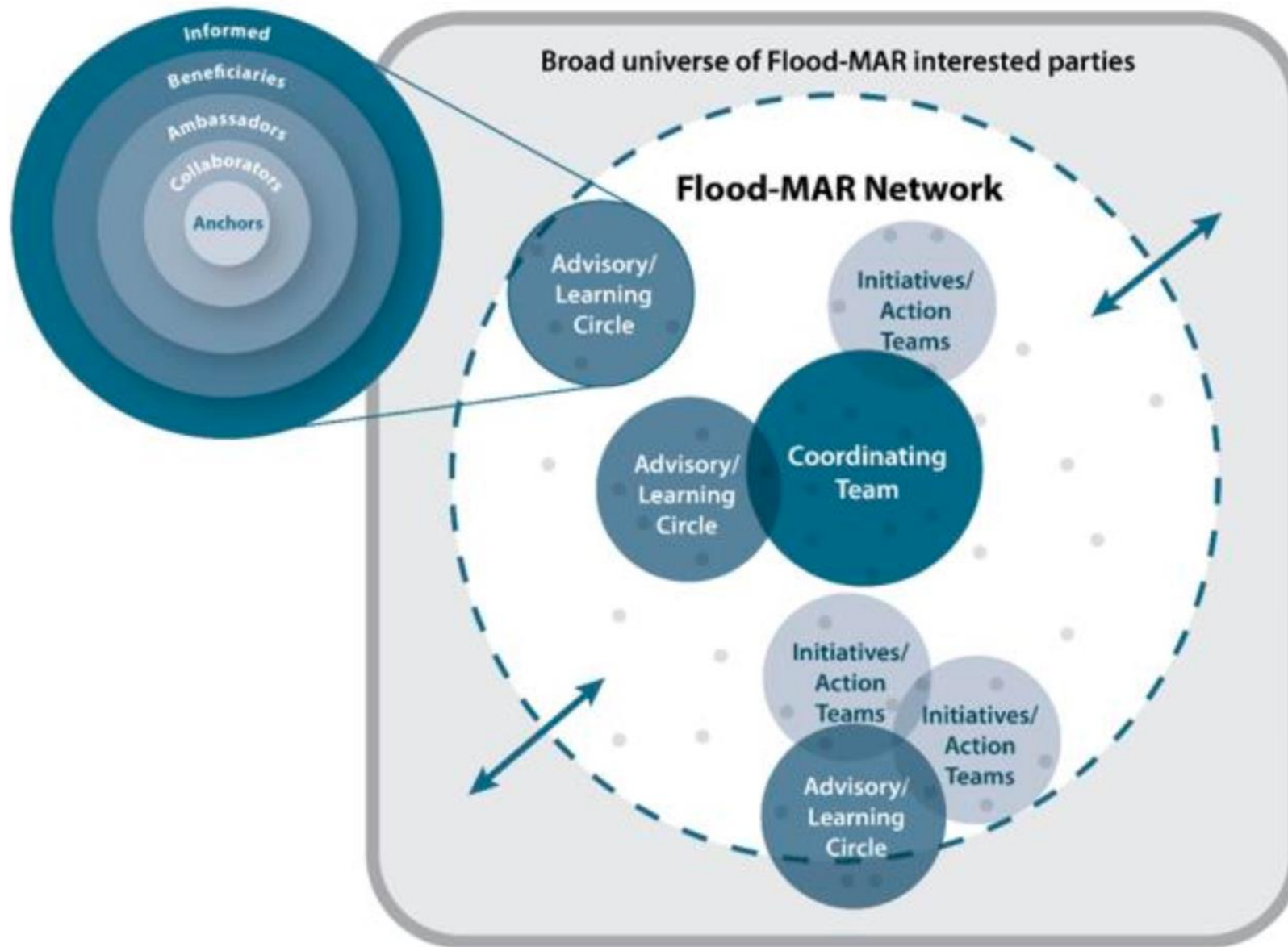


Figure 5. The Flood-MAR Network Structure adapted from Ehrlichman, 2021.

WHAT WE DO:

- ✓ Connect ideas
- ✓ Coordinate with others
- ✓ Build knowledge
- ✓ Develop shared partnerships
- ✓ Identify opportunities
- ✓ Change policies and practices
- ✓ Pilot recharge projects
- ✓ Collect and analyze data
- ✓ Build models
- ✓ Construct infrastructure



*We spent a few years refining a vision and building a solid foundation for collaboration... now we're focused on **ACTION***

HOW WE CONNECT:

- ✓ Monthly Lunch-MAR presentations
- ✓ Action Teams
- ✓ Network Workshops and Forums
- ✓ Website with information and resources <https://floodmar.org/>

Recent Network Activities & Collaborations

Network Coordinating Team
Members



Monthly Lunch-MARs

- ✓ First Wednesday 12:30 – 1:30 pm **Since 2020!**
- ✓ Share and learn about research and efforts to support Flood-MAR related activities.
- ✓ Provide a venue for connection and collaboration among Flood-MAR interested parties.

😊 Zoom Poll!

Lunch-MAR Library of Recordings

www.floodmar.org/video-gallery/



FLOOD-MAR
HUB

Home ▾

Projects ▾

Resources ▾

Get Involved ▾

Search

Lunch-MAR Videos

Lunch-MAR webinars take place the first Wednesday of each month. In these webinars, network members and invited guests present on and discuss a wide range of topics relevant to Flood-MAR, ranging from water rights to geophysics.

Introducing DWR's Basin Characterization Program (Lunch-MAR | March 2025)



The Basin Characterization (BC) Program builds off of DWR's historic role of characterizing groundwater basins and publishing California's Groundwater. The BC Program will provide the latest data, tools, and information about California's groundwater aquifers, a critical component to California's natural infrastructure.

[Link to Recording](#)

Lunch-MAR | The San Joaquin Valley Flood-MAR Dashboard



This presentation provides an overview of an integrated flood forecasting and notification tool for agencies and diverters to facilitate diversion of floodwaters for groundwater recharge in the San Joaquin Valley.

[Link to Recording](#)

45 Sessions to Date!

Lunch-MAR Upcoming Sessions

www.floodmar.org/get-involved/#events

April 2 |

Expanding FIRO – Screening Corps Reservoirs Nationally for Forecast-Informed Operations Potential

May 7 |

Increasing Groundwater Recharge Capacity in Southern San Joaquin Municipal Utility District – A Case Study Highlighting Planning, Funding, Constructing and Operating Recharge Facilities Within the District

June 4 |

Removal of Suspended Solids and Water Quality Improvements from Riverbed Filtration-Eight Years of Demonstration Testing in Orange County, CA

July 2 |

Regenerative Agriculture & Flood-MAR

August 6 |

An Overview of the Groundwater Accounting Platform

MIRO Board Activity



What topics would you like to hear about during future Lunch-MARs?

Would you like to present your work at a future Lunch-MAR?

Action Team Updates

- Assessing Policy
- Estimating Recharge
- Incentives for Recharge
- Instream Flows
- Water Quality
- Flood-MAR HUB

AT | Assessing Policy

Assessing Policy – explores ways to further leverage opportunities and/or address barriers to effective State support and coordination.

Goals or Products for 2025:

- ✓ Facilitate regular information exchange on relevant policy developments.
- ✓ Keep colleagues informed and engaged on evolving Flood-MAR policy issues.

Next Meeting – Discuss advocacy process and the Budget [Mid-April]

Interested to Join? Sign up on the MIRO Board or in Chat box

AT | Estimating Recharge

Estimating Recharge – seeks to identify the best approaches for the estimation of recharge.

Goals or Products for 2025

- ✓ Produce a fact sheet (or two!) on estimating amounts of water diverted for recharge

Next Meeting – TBD, April or May

Interested to Join? Sign up on the MIRO Board or in Chat box

AT | Incentives for Recharge

Incentives for Recharge – expands information-sharing regarding existing and previous incentives programs and generates ideas for new incentives or strategies.

Goals or Products for 2025

- ✓ Compile a comprehensive inventory of available incentives and technical assistance programs supporting Flood-MAR implementation.
- ✓ Publish the inventory on floodmar.org, making it accessible and searchable for stakeholders and the public.

Next Meeting – Mid to late April

Interested to Join? Sign up on the MIRO Board or in Chat box

AT | Instream Flows

Instream Flows – considers how to balance water used for recharge and instream ecological needs during Flood-MAR project operations.

Goals or Products for 2025

- ✓ Develop a Case Study: Assessing water availability: 90/20 vs. alternative criteria

Next Meeting - Mid to late April

Interested to Join? Sign up on the MIRO Board or in Chat box

AT | Water Quality

Water Quality – identifies considerations for managing or mitigating contaminants under flooded conditions, and compiles data to support agencies in developing best practices, guidance, and models for Flood-MAR.

Goals or Products for 2025

- ✓ Consider how to complement work underway by Sustainable Conservation with a limited-term Technical Advisory Committee on water quality and geospatial decision support tools

Next Meeting – Last week of April

Interested to Join? Sign up on the MIRO Board or in Chat box

AT | The Flood-MAR Hub

Website – manages content and maintains updates to the floodmar.org website

Goals or Products for 2025

- ✓ Continue to upload Resources and Projects to the shared repository as they are submitted by Network members.
- ✓ Secure fiscal sponsor to increase server speed.

Interested to Join? Sign up on the MIRO Board or in Chat box

 Zoom Poll!

Flood-MAR Hub

Active users by Country



COUNTRY	ACTIVE USERS
United States	816
Kazakhstan	17
New Zealand	4
China	3
Germany	3
Canada	2
India	2

[View countries](#) →

- 857 Active Users
- 834 New Users
- ~2/3 Users are by Referral

MIRO Board Activity



Do you have a near-term priority action that is not represented by an action team?

- Is so, what is it?
- Are you interested in being an anchor?

- What do you look for when visiting the Flood-MAR Hub?
- Is anything missing that you'd like to see added?

Would you like to join an Action Team?



Project & Research Highlights

Network Members



Flood-MAR Research and Data Development (R&DD) Plan Evaluation

Marisa Perez-Reyes, Stantec

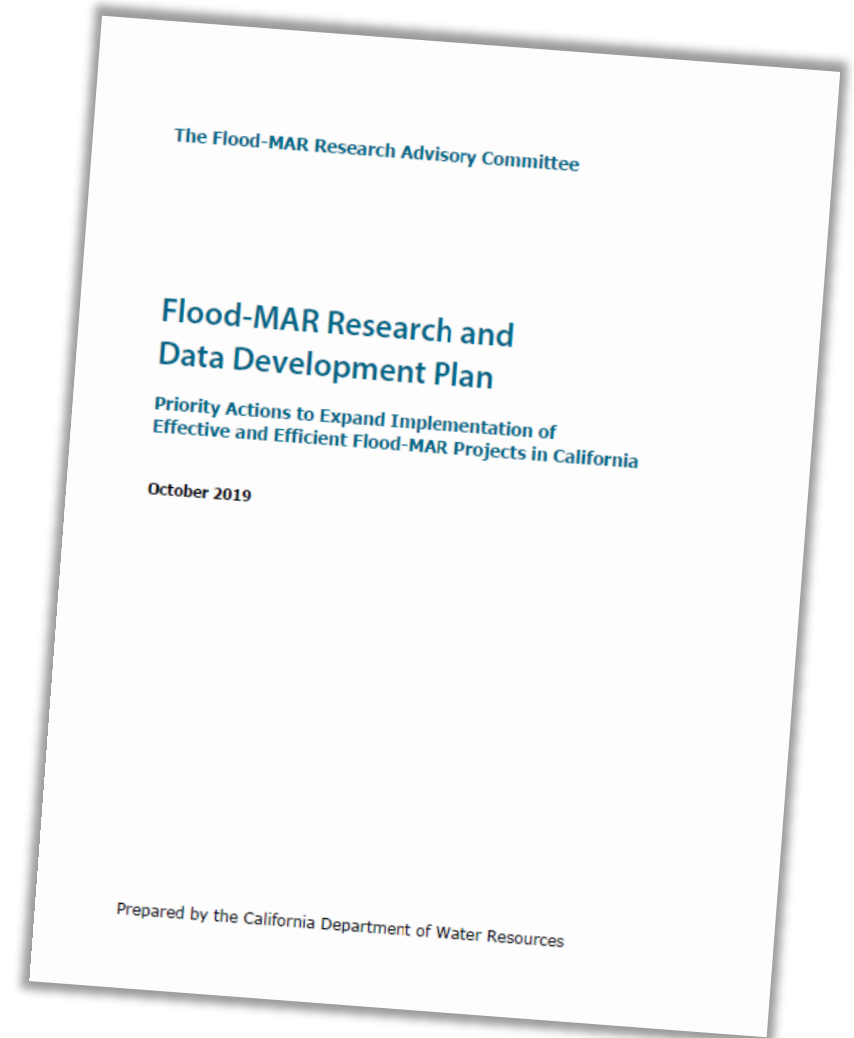
Flood-MAR R&DD Plan Evaluation: Evaluating Progress Toward the 2019 Priority Actions to Expand Implementation of Effective and Efficient Flood-MAR Activities in California

Background:

- Based on the original 2019 R&DD Plan's **39 priority actions**.
- The goal of the 2019 R&DD Plan was to identify and explore the interrelated, complex opportunities and challenges that would need to be solved for more widespread, successful Flood-MAR practices.

Process:

- Convened the former RAC Co-Chairs and DWR support staff in two Workshops to reflect on successes and continued challenges and **document the accomplishments and activities underway** toward achieving the 39 priority actions.



Contents of the R&DD Plan Evaluation

The Evaluation is organized by research area into 13 chapters. Each chapter includes:

- **Introductory** context for the research area's nexus to Flood-MAR
- **Summary of the 2019 Priority Actions**
- **Evaluation of progress**, including links to resources that have been completed/ activities in progress.

The Evaluation includes over 60 references.

FLOOD-MAR RESEARCH AND DATA DEVELOPMENT PLAN EVALUATION

Crop Systems Suitability
March 2025

5.0 Crop Systems Suitability

Flood-MAR projects may include the temporary and seasonal inundation of agricultural lands as recharge areas. Growers have increasingly expressed interest in implementing Flood-MAR projects on a variety of croplands. It is important to understand how the timing, duration, and frequency of inundation may impact crop production or agricultural management practices. Growers may implement Flood-MAR despite potential impacts on crop production or disruption to routine agricultural management practices, when they want to prioritize recharge as part of their operations.

The Crop Systems Suitability Subcommittee that developed the priority actions in the R&DD Plan consisted of two co-chairs, a coordinator, and 15 subject-matter experts, representing state agencies, growers, commodity groups, NGOs, academia, and technical consultants.

5.1 Summary of Priority Actions

The Crop Systems Suitability RAC Subcommittee identified and defined three priority actions, as follows in Table 5-1.

Table 5-1. Crop Systems Suitability Priority Actions from the R&DD Plan

Code	Priority Action	Description	Total Estimated Cost	Estimated Time to Complete	Potential Lead Entity(ies)
Crop Systems Suitability-1	Perform case studies on agricultural land-based Flood-MAR projects completed to date.	<ul style="list-style-type: none"> Conduct a summary and meta-analysis of studies that conclusively predict the suitability of a given crop or cropping system for Flood-MAR. Hydrologic conditions, soil types, crop response, lifespan, yield, and diseases/ pests should be addressed (among others) 	\$300,000	2 years	Academia, landowners, and the private sector
Crop Systems Suitability-2	Initiate and complete research on knowledge gaps of crop systems suitability for MAR in California	<ul style="list-style-type: none"> Conduct research to identify the most suitable cropping systems, identify the effects of MAR operations, and prioritize regions for MAR. Establish a scientific committee to determine which crops, regions, and other variables to prioritize first in terms of future funding for research 	\$15 million	Over 5 years	Academia, landowners, NGOs, growers associations, and the private sector
Crop Systems Suitability-3	Develop a decision support tool to determine crop suitability for Flood-MAR.	<ul style="list-style-type: none"> Develop a decision support tool that summarizes the findings of the previous two actions The tool should exist as an online application that synthesizes grower response to key questions and delivers risk and management recommendations. 	\$2 million	3 years	Land grant institutions and agricultural consultants

Source: Adapted from 2019 Flood-MAR Research and Data Development Plan
Key: Flood-MAR = flood-managed aquifer recharge

5-1

FLOOD-MAR RESEARCH AND DATA DEVELOPMENT PLAN EVALUATION

Crop Systems Suitability
March 2025

5.2 Evaluation of Progress

Crop Systems Suitability-1 Perform case studies on agricultural land-based Flood-MAR projects completed to date.

The evaluation concludes that this action is in progress. Many growers have been at the forefront of Flood-MAR implementation and are leading the way in identifying potential impacts of inundation for recharge on crops, including almonds, grapes (wine, table, and raisins), pistachios, and fallowed lands. [Case studies](#) have been performed and guidance materials have been developed, such as resources prepared by DWR and Sustainable Conservation. Case studies have been conducted on almond, wine grape, and raisin grape orchards. Case studies on pistachios are expected to be completed later in 2025.

During evaluation engagement, it was noted that growers remain particularly interested in understanding threshold amounts for applied water to ensure crop health during floodwater applications.

Crop Systems Suitability-2 Initiate and complete research on knowledge gaps of crop systems suitability for MAR in California.

The evaluation concludes that this action is in progress.

- Research, largely led by academics, has been conducted to identify the most suitable cropping systems, evaluate effects of MAR on agricultural operations, and prioritize regions for MAR, however there is still a gap in this scientific research field. This research has resulted in a list of publications that are shared on the [Flood-MAR Hub website's Research tab](#).
- The DWR Flood-MAR program, in collaboration with partners such as Sustainable Conservation, through the different Flood-MAR studies developed a crop compatibility calendar, available in the [Merced River Watershed Flood-MAR Reconnaissance Study](#), that identifies the total volume of water that can be applied to a given crop for recharge.

Although the R&DD Plan called for the establishment of a scientific committee to prioritize data gaps on crop systems suitability for MAR, a group like this has not been convened, nor is it likely to be needed at this time as growers have been willing to pilot Flood-MAR projects on a variety of crops without this research.

Crop Systems Suitability-3: Develop a decision support tool to determine crop suitability for Flood-MAR.

The evaluation concludes that this action is complete.

- DWR's [Integrated Water Flow Model Demand Calculator](#) (IDC) and Sustainable Conservation's crop compatibility calendar may be considered decision support tools, as well as [GRAT](#). The IDC is described in detail as part of the [Merced Watershed Study](#).
- A [UC Davis research lab](#), lead by [professor](#) Helen Dahike, also developed a crop compatibility worksheet.

5-2

Preview of Evaluation, to be published soon!

Results of the R&DD Plan Evaluation: Progress Toward the Priority Actions

The Evaluation concluded that of the 39 priority actions originally prioritized by the RAC in 2019:

- **7** are complete
- **22** are in progress
- **3** have not been started
- **5** contain a portion of elements that have not yet been undertaken
- **2** are of uncertain status

The full Evaluation report will be available soon!

Dunnigan Water District: CWC 1242.1 Flood Diversions

Jordon Navarrot, Dunnigan Water District

Diversion Criteria

- Executive Order N-16-25 suspended the need for a local or regional agency to determine the imminent risk of flooding based off of local planning documents.



Colusa Basin Drain Information

Trigger Elevations(at Knights Landing)

Heightened Awareness	33.0 FT
Monitor	34.5 FT
Flood	37.0 FT

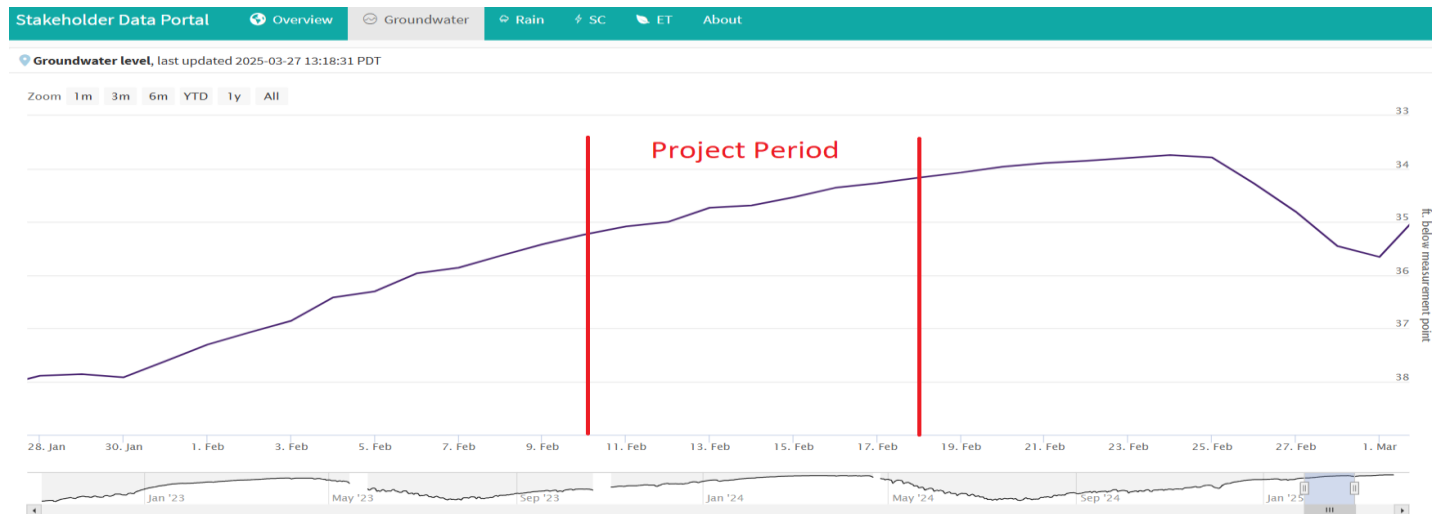
Project Map

- **Dunnigan Creek**—
Ephemeral stream, tributary to Colusa Basin Drain
- **Private Canal**—
Ability to open gate to allow inflow from Dunnigan Creek
- **Inundation Area**—
Rice fields and habitat grounds



Results

- Approximately 275 acre-feet diverted from Dunnigan Creek
- Reimbursement of pumping costs anticipated through DWR FDRE Grant
- Groundwater level increase (attributable to natural recharge and project action)



Sacramento County: CWC 1242.1 Flood Diversions

Austin Miller, Sacramento County



Diverter (Rancho Murieta CSD)

- Divert water
- Agreement w/ Landowner
- Submit Notice and Report(s)

County (Sacramento)

- Adopts Plan/identifies diversion trigger
- Gives notice of imminent flood risk

GSA (Sloughhouse RCD)

- Receives reports
- Encourages recharge

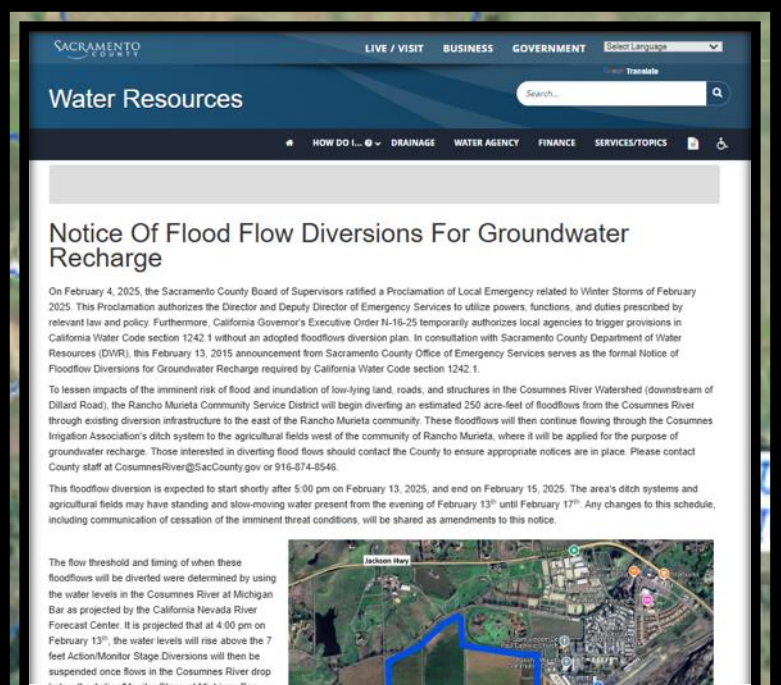


Next Steps:

- Develop Flood Diversions Plan (likely an Annex to County's Emergency Operations Plan) – Summer 2025.
- Identify Additional sites that flood flows can be diverted to.



Austin Miller
Environmental Specialist
MillerAu@SacCounty.gov
916-639-3157



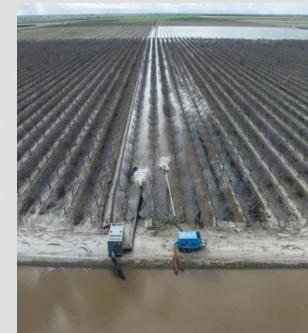
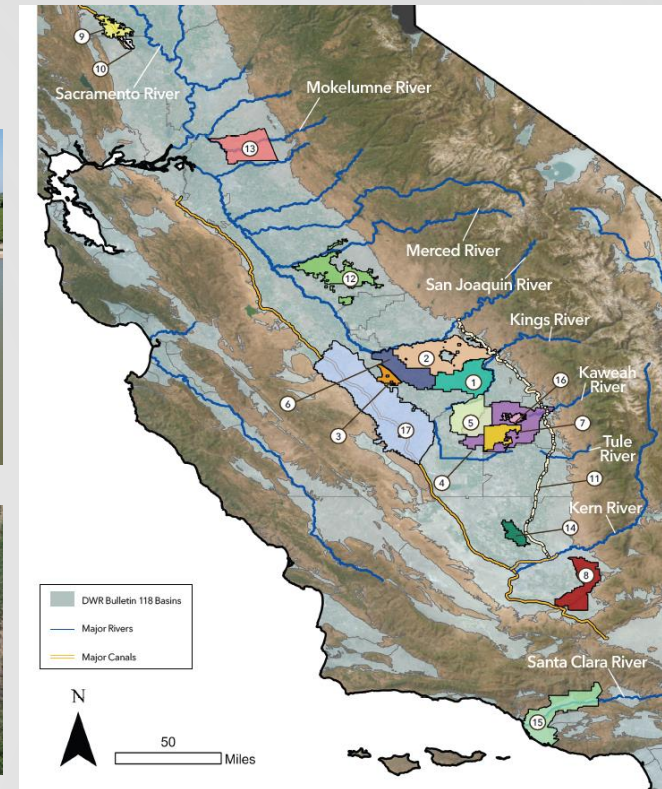
DWR Flood Diversion and Recharge Enhancement Initiative (FDRE) Update

Erica Haight, DWR

DWR Flood Diversion and Recharge Enhancement Initiative (FDRE)

- 2023 Tulare Lake emergency response effort – Temporary Flood Diversion Equipment and Recharge Enhancement
 - Emergency contracts with 6 districts
 - Supported 30 temporary pump rentals and land clearing services
 - Over 11,000 AF diverted and recharged, and 291 acres were cleared
- 2024 Flood Diversion and Recharge Enhancement Initiative
 - 14 participating local agencies for the following activities:
 - Temporary flood/recharge basins
 - Temporary flood diversion equipment
 - Temporary conveyance improvements
 - Land clearing

- 7,500+ AF diverted so far
- 623 acres cleared
- 6 temporary pumps purchased
- 2 temporary flood/recharge basins operational
- 1 protective screen purchased
- 2 temporary flood/recharge basins in progress
- 6 temporary pumps rented
- 9000+ linear ft temporary conveyance installed



FDRE Next Steps and Resources

- Though funding for FDRE assistance is currently exhausted, DWR is continuing to gather interest and need for this assistance in the future
- Outreach to local and regional groups to:
 - provide relevant information and tools, encourage collaboration
 - understand local challenges, opportunities, and needs for recharge implementation

Recommendations to Local Agencies for Future Projects
For local agencies interested in pursuing similar projects, a key lesson learned, and recommendation emerged from the 2023 Emergency Effort and FDRE initiative early planning is crucial.

- Early coordination with vendors can help avoid increased costs during an emergency as well as establish a spot in a "seasonal, first-come, first-served" market.
- Protective screen designs can take several weeks and is very site-specific.
- Local agencies should be prepared to comply with CEQA requirements ahead of the anticipated project start time. To be ready to work with DWR when funding becomes available.
- Similarly, where applications for permits can be anticipated, early coordination with respective State agencies (California State Water Resources Control Board, California Department of Fish and Wildlife) can help with initiation, preparation, and can expedite assistance.
- Express interest and need for future assistance. Future FDRE funding will likely be prioritized by expressed interest and shovel-ready projects.

Additional Resources and Information
Additional resources and information can be obtained from the following sources:

- **Groundwater Recharge and Related Activities:**
 - Flood Emergencies and DWR Response, 2023
 - DWR Sustainable Groundwater Management, CDWR

Local Agencies Included in the 2023 Emergency Effort and 2024 FDRE Initiative include:

Alameda County WPD	www.alameda.ca.gov
Colusa County WPD	www.colusa.ca.gov
Contra Costa WPD	www.contracosta.ca.gov
Diablo Valley WPD	www.dvwpd.com
Fresno ID	www.fresno.ca.gov
Kern County WPD	www.kerncounty.com
King County WPD	www.kingcounty.com
Mendocino Area WPD	www.mendocinowpd.com
North San Joaquin WPD	www.nsjwpd.com
Shasta Water ID	www.shastawater.com
Tulare ID	www.tulareid.com
Yuba WPD	www.yubawpd.com
City of Yuba	www.cityofyuba.com
Yuba County WPD	www.yubacounty.com

What's Next?
Participating local agencies in the FDRE initiative are currently implementing projects to prepare for flood diversion and recharge in upcoming waters. All available funding for this initiative has been exhausted, however, DWR is gathering interest and need from local agencies for the assistance for future funding opportunities. Local agencies are encouraged to inform their local elected officials of the importance of these projects to help ensure continued support.

Proactive projects and collaborative efforts like those between the state and local agencies, help to reduce flood risk to local communities by increasing local response capacity, (2) prepare for faster, drier years and increasing water supply uncertainty, and (3) support sustainable groundwater management in accordance with the Sustainable Groundwater Management Act of 2014.

Interested in participating in the FDRE Initiative in the future? Fill out the interest form.

Page 4

- See [FDRE brochure](#) for additional information at DWR's [Groundwater Recharge](#) website
- Follow the QR code to fill out a **future interest survey**
- For questions, **email:** recharge@water.ca.gov



GROUNDWATER RECHARGE

Groundwater recharge is a key strategy throughout California to manage water through climate-driven weather extremes, including prolonged drought and periodic intense storm events, as identified in the Newsom Administration's California's Water Supply Strategy: Adapting to a Hotter, Drier Future.

During drier years, when there is less snowpack and precipitation, groundwater accounts for up to 60 percent of the State's total water supply.

During wet years, groundwater recharge – where water moves down (infiltrates) from the ground surface or the bottom of a waterway into an underlying aquifer – helps balance and replenish groundwater basins for use during future dry and drought years. California's groundwater basins can hold a massive amount of water – at least 850 million acre-feet, compared to the 50 million acre-feet that all the major above-ground reservoirs can hold combined.

Groundwater Recharge in California – A Key Water Resilience Strategy

Groundwater Recharge in California - A Key Water Resilience Str...

DWR Watershed Studies

Jim Wieking, DWR

San Joaquin Flood-MAR Watershed Studies

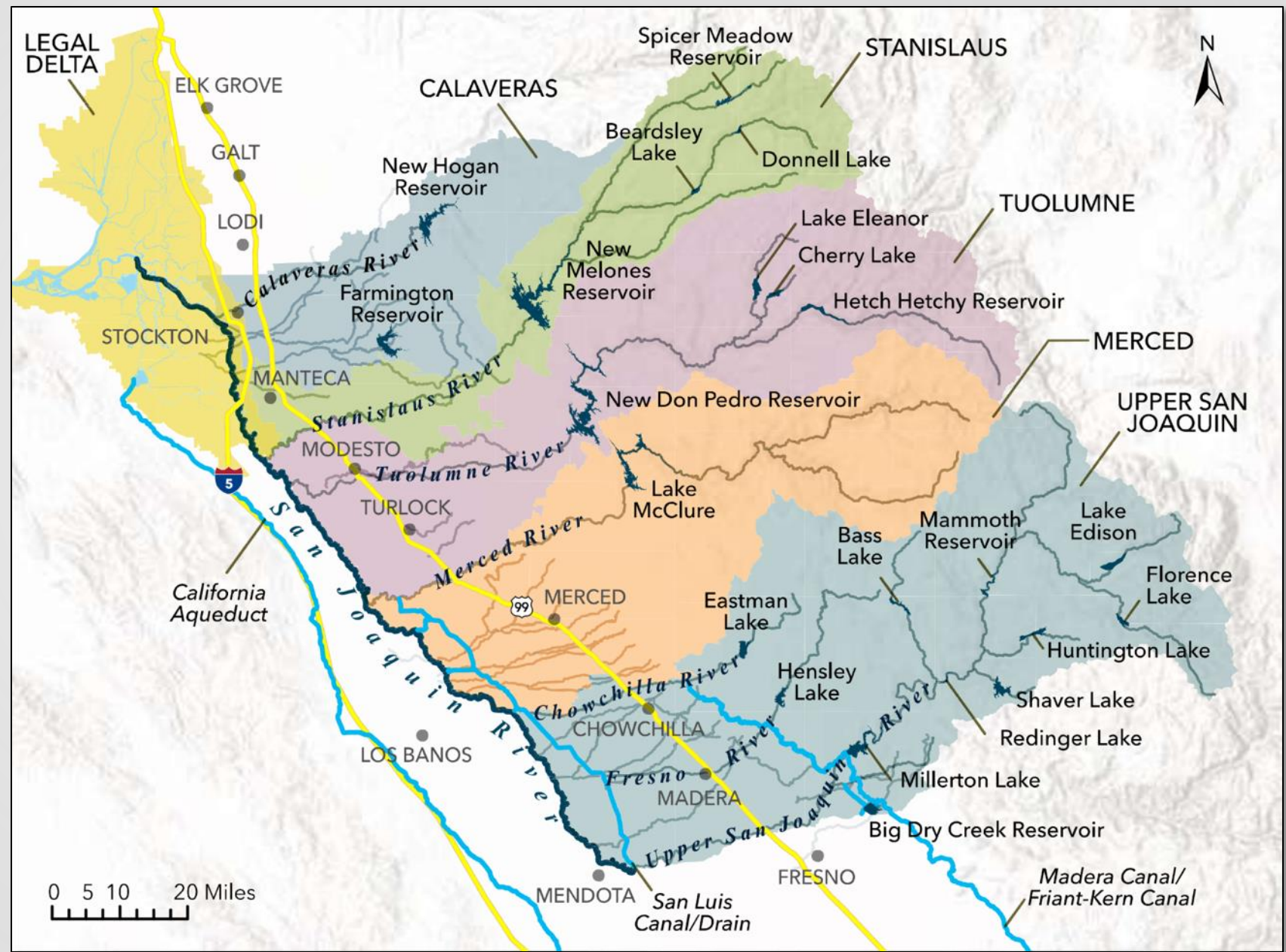
Flood-MAR Network Workshop

March 28, 2025



San Joaquin Flood-MAR Watershed Studies

- Calaveras
- Stanislaus
- Tuolumne
- Merced
- Upper SJ
 - Chowchilla
 - Fresno
 - San Joaquin

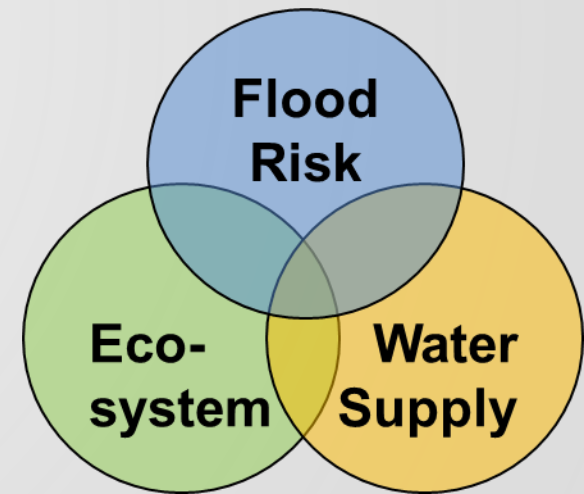


San Joaquin Flood-MAR Watershed Studies Partners

Watershed	Groundwater Sub-basin	Local Partners	Regional Partners
Calaveras River	Eastern San Joaquin	<ul style="list-style-type: none"> • San Joaquin County Flood Control and Water Conservation District • Stockton East Water District • Central San Joaquin Water Conservation District • Calaveras County Water District • City of Stockton • San Joaquin Area Flood Control Agency 	<ul style="list-style-type: none"> • US Bureau of Reclamation (USBR) • United States Army Corps of Engineers (USACE) • Center for Western Weather and Water Extremes (CW3E)
Stanislaus River	Eastern San Joaquin & Modesto	<ul style="list-style-type: none"> • Oakdale Irrigation District • South San Joaquin Irrigation District • Stockton East Water District • Central San Joaquin Water Conservation District 	
Tuolumne River	Modesto & Turlock	<ul style="list-style-type: none"> • Turlock Irrigation District • Modesto Irrigation District 	
Merced River	Merced	<ul style="list-style-type: none"> • Merced Irrigation District 	
Upper San Joaquin River	Madera & Chowchilla	<ul style="list-style-type: none"> • Madera Irrigation District • Chowchilla Water District • Friant Water Authority • Pacific Gas and Electric • Southern California Edison 	

Core Objectives of the Watershed Studies

- Report at the Watershed-scale
- Assess and Quantify Vulnerability to Climate Change
- Assess and Quantify Flood-MAR Adaptation Performance
- Provide a Foundation to Support Flood-MAR Implementation



Flood-MAR Adaptation Strategy Overview

- **Streamlined Flood-MAR (“MAR 90/20”)**
 - The Streamlined Flood-MAR (MAR-90/20) strategy is derived from the diversion criteria under the State’s streamlined permitting process for temporary and standard water rights for diversion of high flows to underground storage and using current infrastructure.
- **Integrated Forecast-Informed Resources Management (“I-FIRM”)**
 - The Integrated Forecast-Informed Resources Management (I-FIRM) adaptation strategy reflects a watershed-scale, multi-sector resource management approach to integrating managed aquifer recharge (MAR) with forecast-informed reservoir re-operation (FIRO) and expanded infrastructure towards sustainability and climate change resilience.

Multi-Sector Performance Metrics Overview

182 Metrics

- Watershed Conditions – 13
- Flood Risk – 18
- Groundwater – 32
- Surface Water – 29
- Ecosystem – 67
- Flood-MAR – 23

174 Reporting Units

- GW Sub-basin – 6
- SW Watershed – 5
- District – 38
- Reservoir – 8
- Control Point – 17
- Stream Reach (GW) – 8
- ResSim Diversion – 59
- WAFR Source – 33



**1632
Metrics**



**3
Strategies**



**16
Climate
Conditions**



**100-year
Continuous
Timeseries**



**7.8
Million**
data points at
annual timestep

Next Steps

- Workshops for Study Partners
- Documentation
 - Watershed Report Review Draft to Partners: April 2025
 - Study Partner Review and Comments: Due May 2025
 - Publish Fall 2025
- Models and Data Handoff
 - Models and outputs will be made available to study partners and then public
 - Data visualization tool in development

Sustainable Conservation: Various Project

Richael Young, Sustainable Conservation



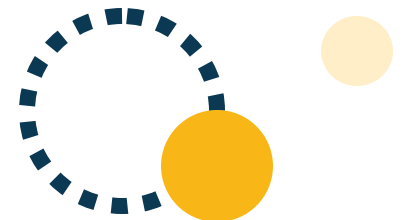
Sustainable Conservation

RECHARGING CALIFORNIA

Richael Young

Senior Director, Water for the Future

Sustainable Conservation



TODAY'S AGENDA

01 Where we've been

02 What we're up to

03 Where we're going

WHERE WE'VE BEEN

Evidence from PPIC's recent study



01

On-farm recharge went from an "experimental" to "mainstream" practice.

Since Sustainable Conservation first worked with Don Cameron in 2011, on-farm recharge exploded to 260K acre-feet in 2017, and nearly doubled to 493K acre-feet in 2023.

02

Preparation at all levels made the difference for when the water came.

Development of policy, incentives, funding programs, and grower awareness at local, state, and federal levels were key to making 2023 such a successful year for recharge.

03

2023 was a great year for recharge—and we can do better.

While we've made enormous progress, there remains an enormous opportunity to capture and store additional water in wet years.

SOME CURRENT PROJECTS



Finishing the **DWR Watershed Studies**, which show the effect of climate change on the Upper SJV's watersheds, and strategizing on their implementation



Applying for an MLRP project for **multi-benefit recharge for the community of Fairmead**, with corporate donors



Updating our **incentives survey**, in partnership with the Almond Board of California, Department of Water Resources, and Flood-MAR Network



Promoting **subbasin-wide collaboration for recharge**, including evaluating opportunities using GRAT in Merced and Turlock



Developing **water quality guidance for recharge** with a Technical Advisory Committee and the Department of Water Resources



Studying the **effects of cover cropping on recharge outcomes**, in partnership with the American Pistachio Growers, funded by USDA via a CDFA Specialty Crop Block Grant



WHERE WE'RE GOING

Strategies to scale recharge



Xavier Mascareñas & CA DWR

01

Double down on key partnerships

Given the success the past 12+ years, we will continue to leverage key partnerships with and across agencies, industry associations, and others to scale on-farm recharge.

02

Encourage the adoption of incentives

Given the rapid development of incentive programs, and their importance to scaling on-farm recharge, we will work to promote incentives in recharge programs. We will also promote measurement and monitoring practices.

03

Advance multi-benefit recharge

We are exploring funding and policy opportunities that would particularly scale recharge with drinking water or ecosystem benefits.



Sustainable Conservation

THANK YOU

Richael Young

ryoung@suscon.org



Telephone

(415) 977-0380

Address

98 Battery St,
San Francisco, CA 94111

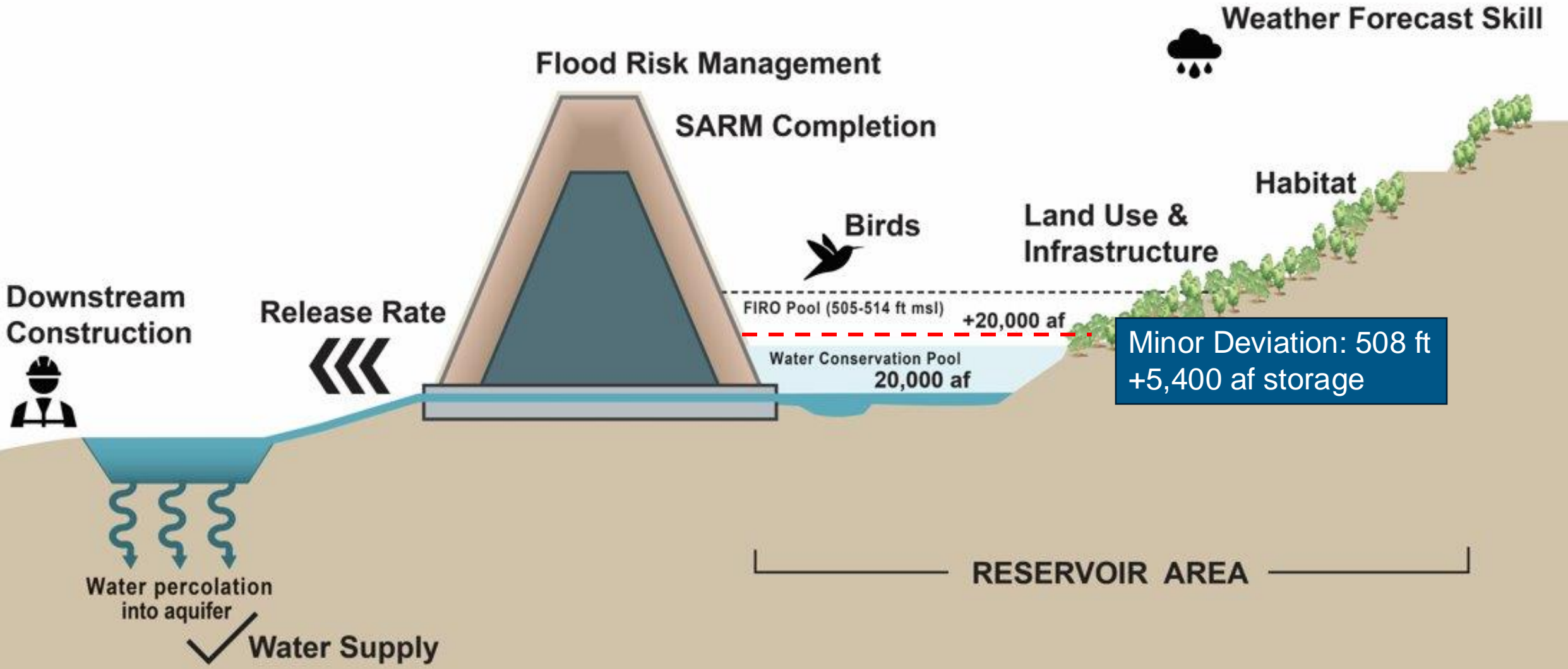
Website

www.suscon.org

Forecast Informed Reservoir Operations (FIRO) at Prado Dam

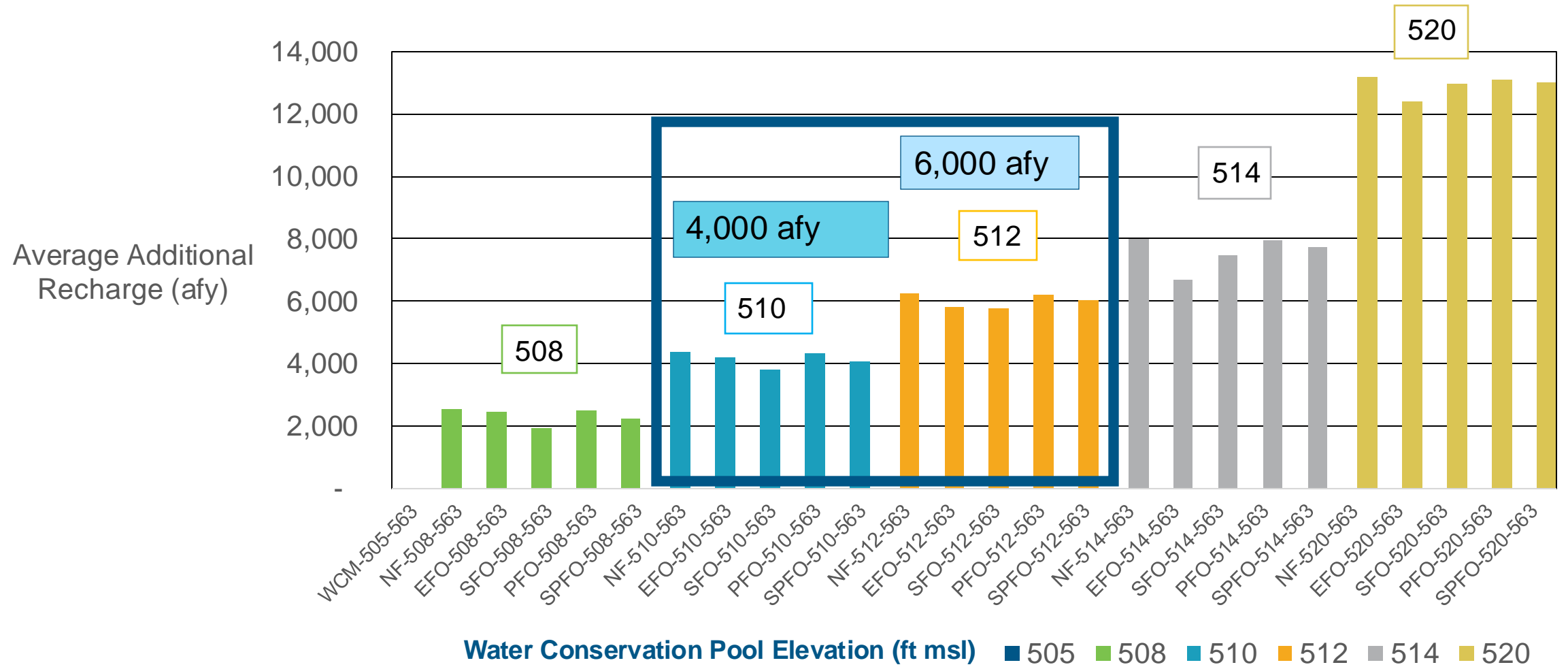
Adam Hutchinson, Orange County Water District

Applying Forecast Informed Reservoir Operations at Prado Dam



OCWD has a long history of water conservation at Prado Dam. Multiple factors must be considered in applying FIRO at Prado Dam.

Work now begins on Water Control Manual Update to make FIRO a permanent feature. Targeting elevation 510-512 ft.

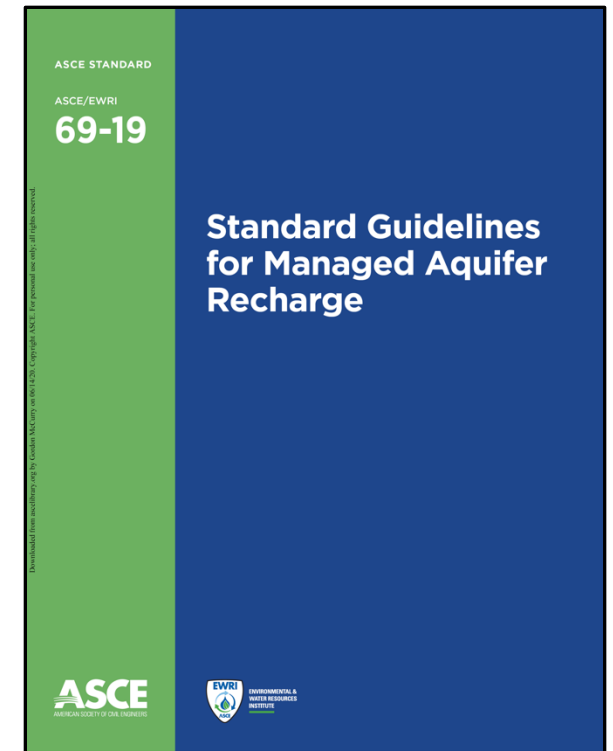


American Society of Civil Engineers (ASCE) MAR Standards

Adam Hutchinson, Orange County Water District

Updated ASCE Standard Guidelines Published in 2020

- The MAR Standard Guidelines developed by practitioners using a rigorous peer review process
- The MAR Standard Guidelines describes all aspects of a MAR project, geared towards those familiar groundwater investigations
- Includes case studies illustrating key steps in MAR development
- The goal is to facilitate increased use of this water resource management technique
- Effort underway to refresh these standards over the next two years.
 - Would like input on new techniques, such as Flood-MAR, reverse tile drains, etc.



ASCE/EWRI Standard Guideline 69-19

- Google 'ASCE Standard Guideline 69-19'

MIRO Board Activity



Share your latest Flood-MAR project updates, accomplishments, and lessons learned

Reflect on the presentations:

- Do you see any connections between the projects shared and your own work?
- How can these insights help advance Flood-MAR implementation?

**2025 Forum
Update +
Planning**



Biennial Forums are the Network's Marquee Event.



Flood-MAR practitioners gather to **share success stories** and **lessons learned** from wet years and dry years, and to **identify areas for further preparation** needed to implement projects that use floodwaters for managed aquifer recharge in future wet years, for the benefit of communities, ecosystems, and agriculture.

2023 Forum Five Main Takeaways:

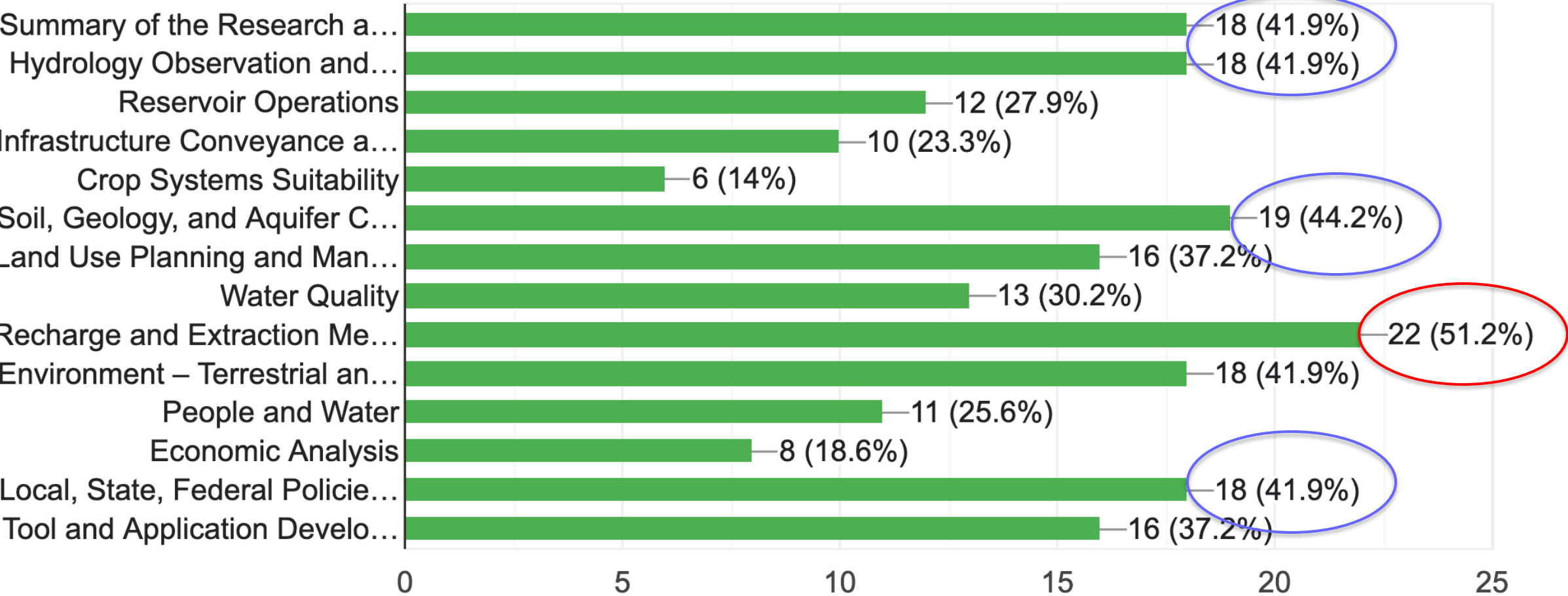
1. California is poised to scale up Flood-MAR as a significant strategy for addressing groundwater overdraft, but more work is needed.
2. **Partnerships and collaboration** among growers and water managers have been key to successful Flood-MAR.
3. Flood-MAR lends itself to **multiple benefits** beyond groundwater recharge and flood protection.
4. State support and coordination **across agencies** helps streamline and activate Flood-MAR.
5. Flood-MAR projects are a **good investment** for California.

So how shall we
spend our time
together this fall
2025?

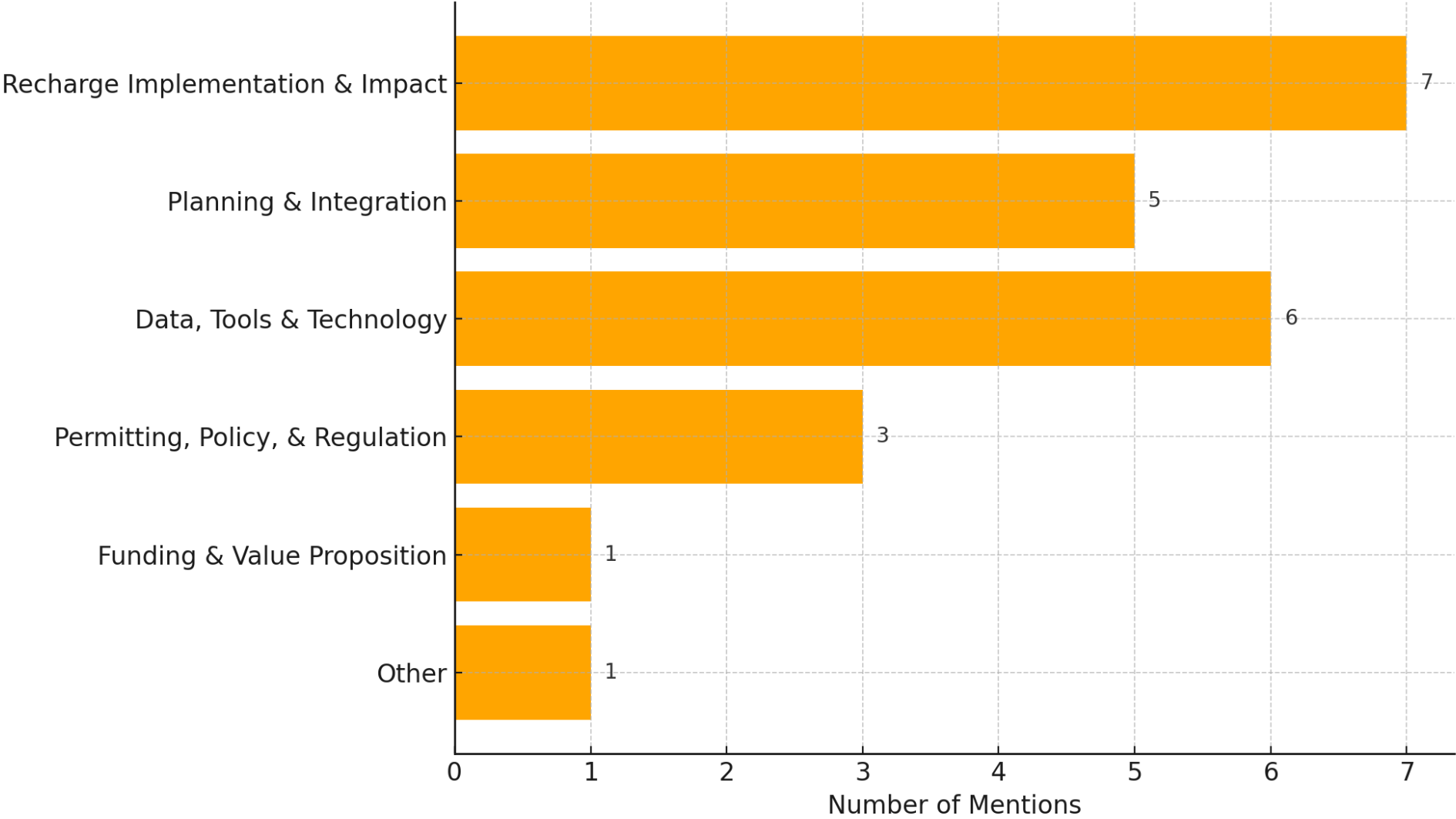
😊 Zoom Poll!

Forum Content: Which of the 13 Research Advisory Committee (RAC) priority area topics are you most interested in learning about? [select up to 4]

43 responses



Top Themes from Forum Topic Survey Responses



Top Interest Areas (based on frequency of responses)

Recharge Implementation & Impact (7 responses)

- ✓ Most common theme.
- ✓ Many responses asked about **case studies, barriers, impacts on crops, and technical/project examples.**
- ✓ There's a demand for *real-world examples* and *lessons learned* to inform future efforts.

Planning & Integration (5 responses)

- ✓ Multiple comments emphasized the need to better embed Flood-MAR into **local, regional, and institutional planning** frameworks.
- ✓ Also interest in **building on momentum** and **sharing successes.**

Data, Tools & Technology (6 responses)

- ✓ Interest in tracking recharge, data methods, tool training, and NASA/remote sensing use.
- ✓ Several responses point to a need for shared methodologies and hands-on learning.

Permitting, Policy, & Regulation (3 responses)

- ✓ Comments reflected frustration with **permits** and **regulatory complexity**.
- ✓ Specific asks included crediting recharge in GSPs and aligning across agencies.

Funding & Value Proposition (1 response)

- ✓ Only one direct mention, but an important angle: how to quantify broader benefits to unlock new funding.

General Takeaways:

- ✓ There's demand for **practical information** (tools, case studies, lessons learned).
- ✓ Participants are seeking **alignment**—across planning, permitting, and measurement.
- ✓ The community is ready to **scale up**—but wants support in navigating the complexity.

Let's Talk! + MIRO



In your view, what would make the Forum a valuable and worthwhile experience?

What topics or themes are you most interested to explore during the Forum?

Would you like to join the Forum Planning Team and/or help with Sponsorship outreach?

Are you interested to present your work at the Forum? If so, what would you like to share?

Closing Reflections



“For me, [Flood-MAR] is the solution that provides the hope. That proves the solutions are on our land, if we work together, and are willing to take an integrated resource management approach and think about all the multi-benefits.”

– Karen Ross, CA Department of Food and Agriculture Secretary

