

# San Joaquin Basin Watershed Studies

## CALAVERAS WATERSHED STUDY

APRIL 16<sup>TH</sup>, 2024





# Introduction

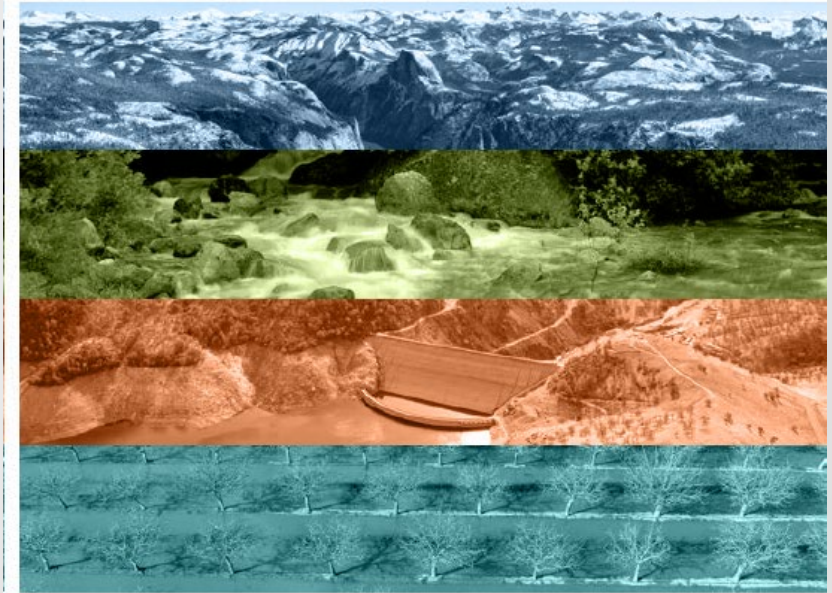
- Background
- Watershed Studies Objectives

Merced River Watershed Flood-MAR  
Reconnaissance Study

**STUDY REPORT**

March 2024

Statewide Infrastructure Investigation Branch  
CALIFORNIA DEPARTMENT OF WATER RESOURCES



**MID** MERCED  
IRRIGATION  
DISTRICT  
WATER & POWER

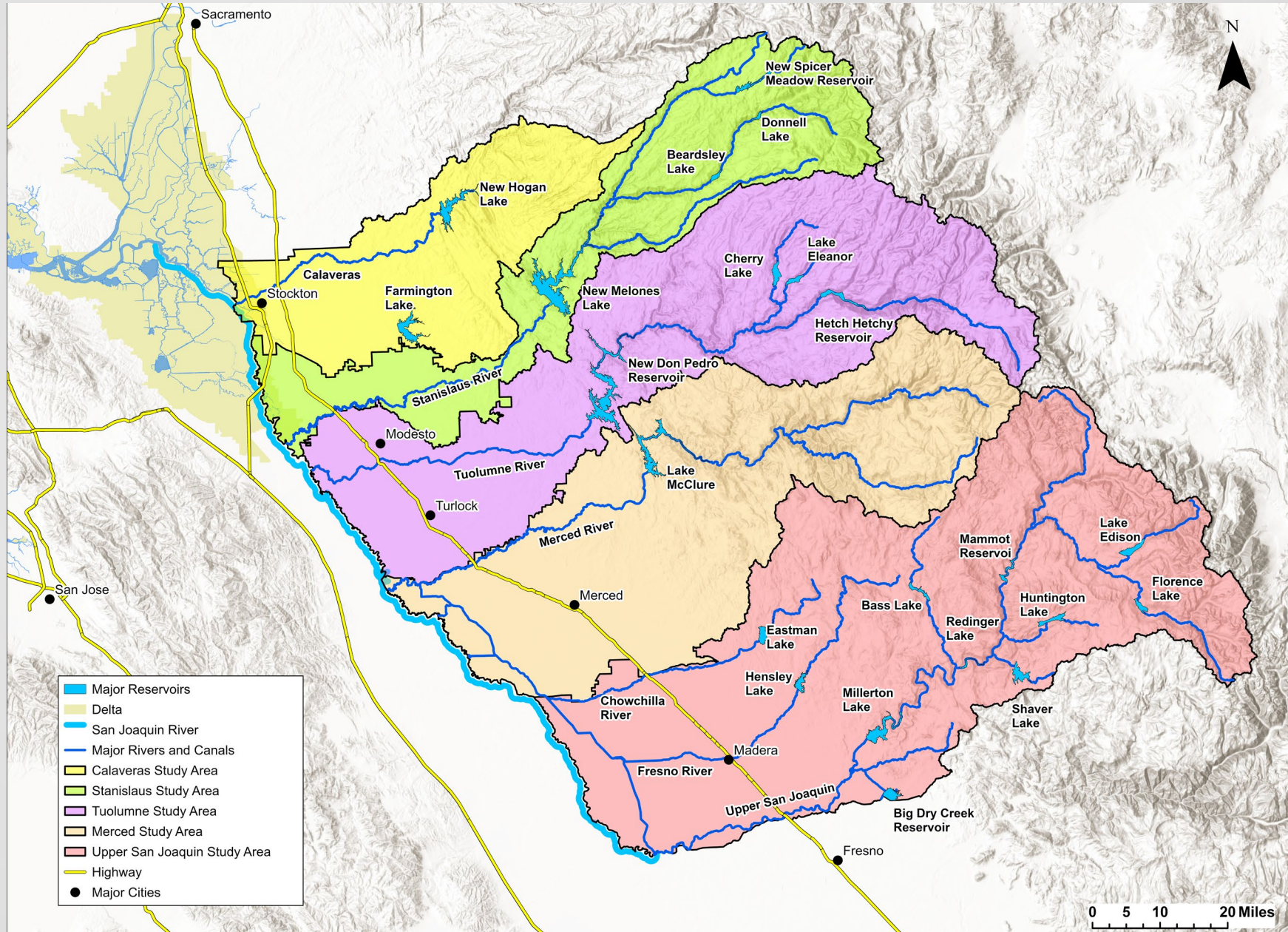


CALIFORNIA DEPARTMENT OF  
WATER RESOURCES



# San Joaquin Basin Watershed Studies

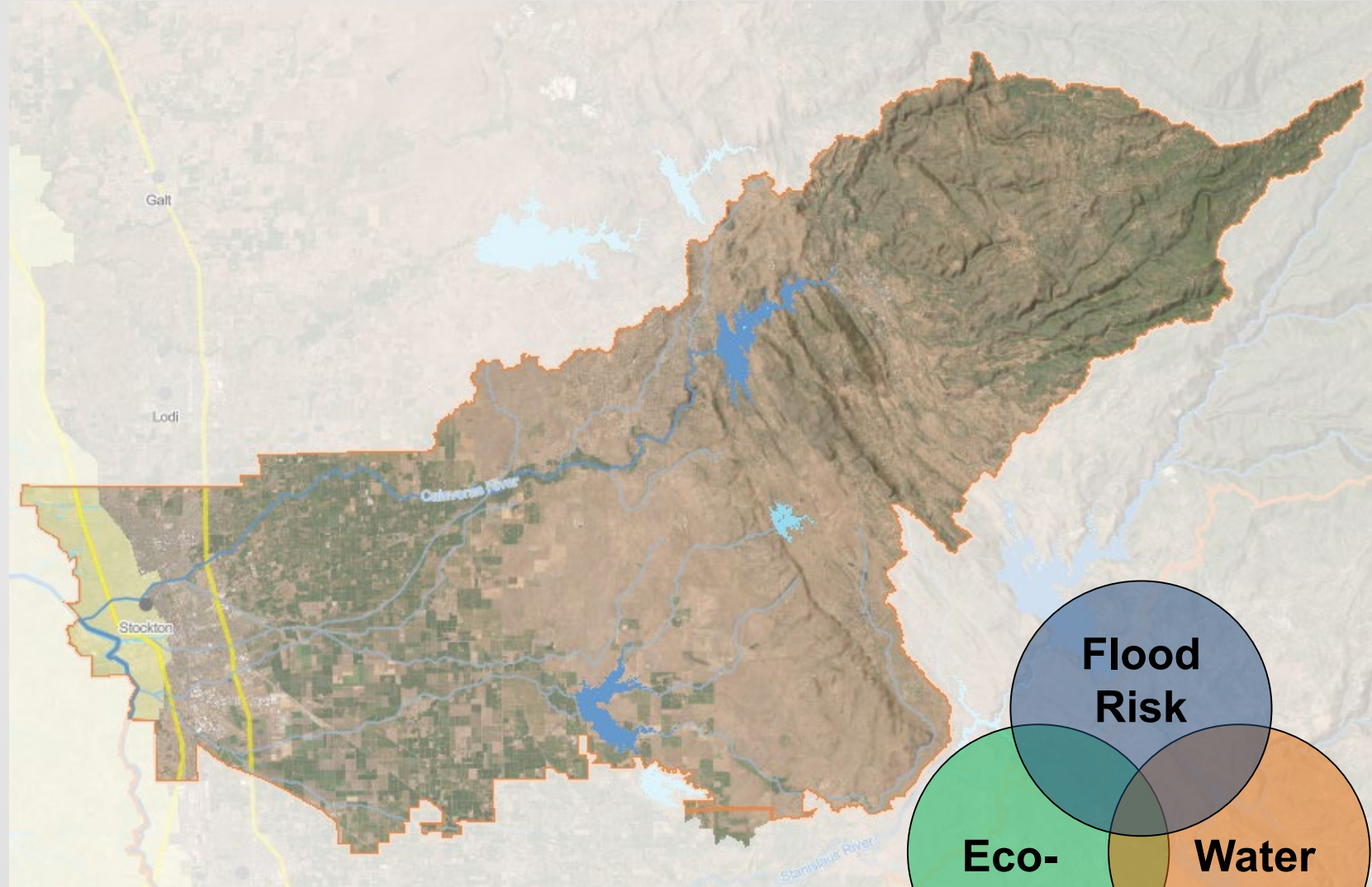
- Calaveras
- Stanislaus
- Tuolumne
- Merced
- Upper SJ
  - Chowchilla
  - Fresno
  - San Joaquin





# Calaveras Watershed

- Integrated Watershed Modeling
- Assess climate vulnerability
- Watershed Scale Flood-MAR
- Evaluate multi-sector effects

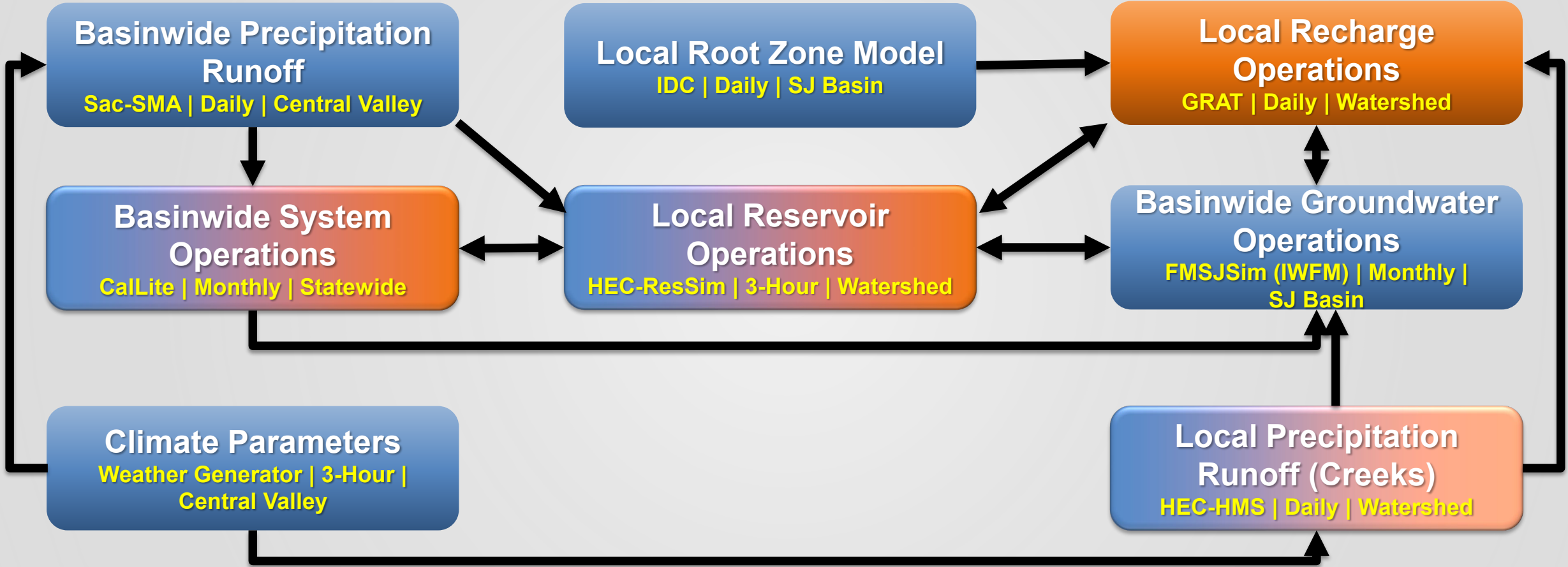


# Project Schedule Overview

- Baseline Modeling – Complete
- Baseline Metrics Processing – Complete
- Flood-MAR Adaptation Modeling – June 2024
- Flood-MAR Metrics Processing – December 2024
- Watershed Study Report – March 2025



# Model Integration Flowchart

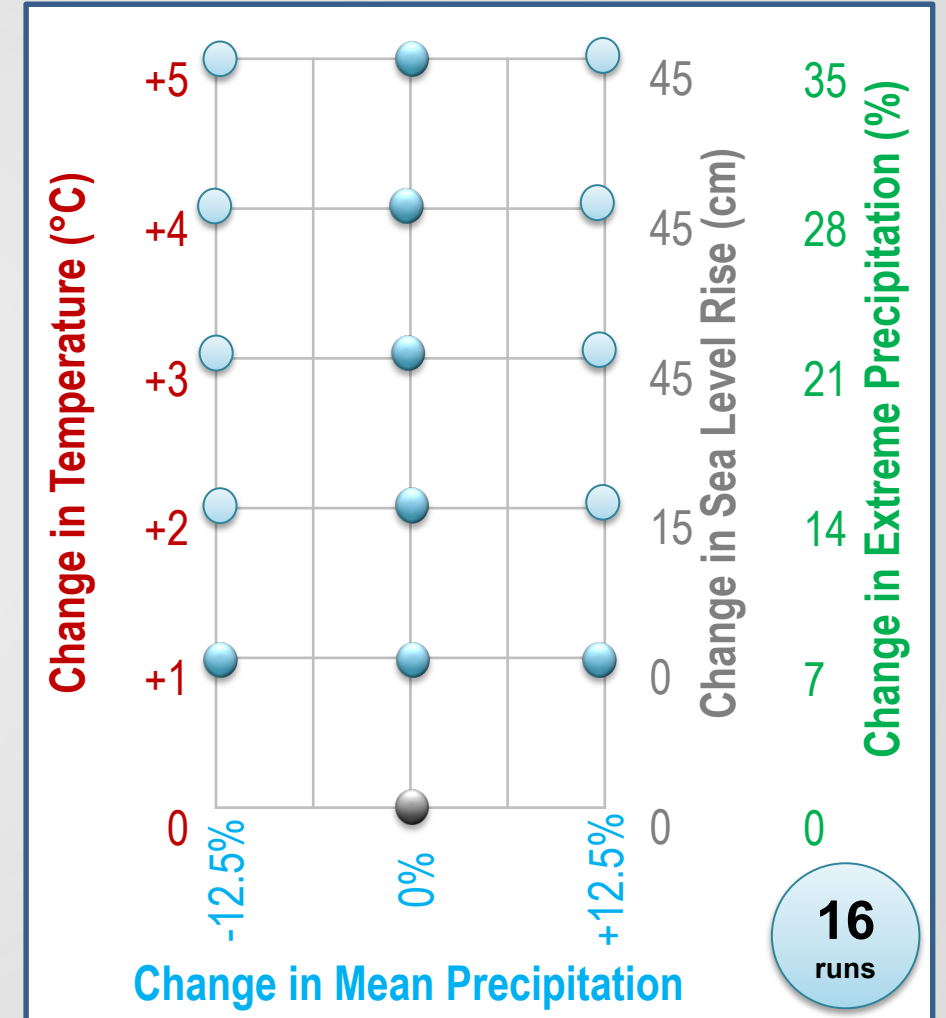




# Climate Change Conditions

## Climate Change Future is Uncertain

- 100 Years Continuous Hydrology: 1918 - 2018
- Temp Perturbations: 0 - 5°C
- Mean Precip Perturbations: -12.5% to +12.5%
- Extreme Precip Scaling: 7% per degree C
- 16 Climate Scenarios



# Climate Vulnerability Takeaways

- Decrease in average annual reservoir inflow
- Increase in average annual agricultural demands
- Decrease in average annual surface water deliveries
- Increase in average annual GW pumping
- No change in maximum peak flood release







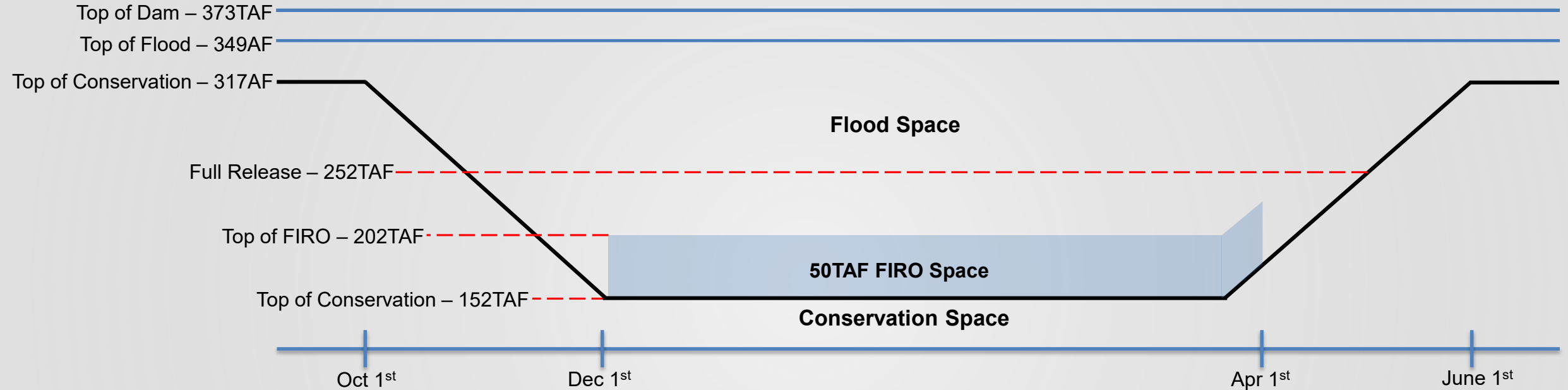
# Flood-MAR Adaptive Strategies

	Short-term Action (STA)	Long-term Action (LTA)
Project elements included	<ul style="list-style-type: none"><li>(1) High Flow Diversion - Streamlined Permitting Guidelines (90<sup>th</sup>/20%)</li><li>(2) Narrow Time Window (Dec-Mar)</li><li>(3) Targeted Recharge</li></ul>	<ul style="list-style-type: none"><li>(1) High Flow Diversion (90<sup>th</sup>)</li><li>(2) Expanded Time Window (Nov-June)</li><li>(3) Reservoir Reoperation (FIRO-MAR)</li><li>(4) Targeted Recharge</li><li>(5) Expanded Recharge Area</li><li>(6) Infrastructure Improvements</li></ul>



# Reservoir Reoperation

Use 1 to 7-day Forecast



- FIRO Space Release
  1. Forecasted to stay in FIRO Space = Release up to **Daily Recharge Capacity** to maximize Flood-MAR
  2. Forecasted to go above FIRO Space = Release up to **7,000cfs + Daily Recharge Capacity** to bring storage back into FIRO Space
- Flood Space Full Release: Storage > 252TAF = Full Flood Control Release up to **12,500cfs**
- Banked FIRO storage used for Ecosystem Actions





# Flood-MAR Results

DRAFT Results – Average Annual Applied Recharge (Ac-Ft/Yr)

Diversion	STA	LTA
SEWD - Bellota	2,034	14,000
CCWD – Jenny Lind	63	574
Littlejohn’s Creek	528	2,417
Duck Creek	53	725
<b>Calaveras Watershed Total</b>	<b>2,679</b>	<b>17,716</b>





# Watershed Studies Coordination

- California Water Plan
- Central Valley Flood Protection Plan
- Sustainable Groundwater Management
- Water Control Manual Updates + FIRO
- Calaveras River Watershed Resilience Study





# Study Partners

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

# Questions?





Weekly Water Report	As of: Apr 9, 2024	As of: Apr 16, 2024	
<b>New Hogan (NHG) TOC</b>	<b>245,831</b>	<b>263,074*</b>	<b>AF</b>
Storage:	232,774	237,391*	AF
Net Storage Change:	+7,126	+4,617	AF
Inflow:	496	350*	CFS
Release:	28	25*	CFS
<b>New Melones (NML) Allocation</b>	<b>75,000</b>	<b>75,000</b>	<b>AF</b>
Storage:	2,021,773	2,032,257*	AF
Net Storage change:	-29,477	+10,484	AF
Inflow:	1,905	2,041**	CFS
Release:	1,236	855**	CFS
<b>Source: CDEC Daily Reports</b>			

<b>Goodwin Diversion (GDW)</b>			
Inflow (Tulloch Dam):	1,501	1,506	CFS
Release to Stanislaus River (S-98):	477	500	CFS
Release to OID (JT Main):	663	414	CFS
Release to SSJID (SO Main):	100	22	CFS
Release to SEWD:	<u>50</u>	<u>45</u>	CFS
Total Release	1,290	981	CFS
<b>Source: Tri-Dam Operations Daily Report</b>			
<b>Farmington Dam (FRM)</b>			
Diverted to SEWD:	55	50	CFS
Diverted to CSJWCD:	0	0	CFS

<b>Surface Water Used</b>			
Irrigators on New Hogan:	0	0	
Irrigators on New Melones:	0	0	
Out-Of-District Irrigators:	0	0	
DJWWTP Production:	30	26	MGD
North Stockton:	5	4	MGD
South Stockton:	5	4	MGD
Cal Water:	18	10	MGD
City of Stockton DWSP Production:	11	11	MGD

<b>District Ground Water Extraction</b>			
74-01	0	0	GPM
74-02	0	0	GPM
North	0	0	GPM
South	0	0	GPM
Extraction Well # 1	<u>0</u>	<u>0</u>	GPM
Total Well Water Extraction	0	0	GPM
Total Ground Water Production	0	0	MGD

**Note: \*\*The data reported here is available as of 04/14/24**

**\*The data reported here is available as of 04/15/24**

**All other flow data reported here is preliminary, as of 9:00 a.m. on 04/16/24**