

OROVILLE DAM CITIZENS ADVISORY COMMISSION

Hosted by the California Natural Resources Agency



ROLL CALL

- Lieutenant Collins
- Supervisor Connelly
- Supervisor Conant
- Secretary Crowfoot
- Deputy Director Curry
- Assistant Chief Dowling
- Supervisor Flores
- Supervisor Fuhrer
- Assemblyman Gallagher
- Supervisor Kimmelshue
- Deputy Licon
- Lieutenant Million
- Director Nemeth
- Senator Nielsen
- Councilmember Pittman
- Mayor Reynolds
- Superintendent Teague
- Supervisor Vasquez
- Genoa Widener

**ITEM 1:
WELCOME AND INTRODUCTIONS**

**ITEM 2:
COMMISSION UPDATES & REPORTING**

Commission Action Items Tracker

No.	Item	Meeting	Status
1	Tour of Joint Operations Center (State-Federal Flood Operations Center in Sacramento)	Mtg 2 11/2019	On hold due to Covid-19.
2	Report out how instrumentation performed and was managed during winter operations	Mtg 2 11/2019	On track. Update at Q2 meeting.
3	Invite State Water Contractors to future meeting(s)	Mtg 2 11/2019	On track. Invite for Q3 meeting.
4	Schedule regular updates from DWR on Forecast-Informed Reservoir Operations (FIRO) as well as Oroville and New Bullards Bar water control manual processes	Mtg 3 02/2020	On track. Update at Q4 meeting.
5	Coordinate with U.S. Army Corps of Engineers (USACE) about point of contact for Feather River project updates	Mtg 3 02/2020	Done. Ongoing coordination with USACE.

Commission Action Items Tracker

No.	Item	Meeting	Status
6	Follow-up on the status of the Federal Energy Regulatory Commission (FERC) relicensing	Mtg 3 02/2020	Ongoing. Anticipate early 2022 update.
7	Follow-up on the status of Federal Emergency Management Agency (FEMA) reimbursement	Mtg 3 02/2020	Ongoing. Update at Q1 meeting.
8	Discussion to help state agencies and local partners address homelessness concern around Feather River.	Mtg 3 02/2020	For future Commission consideration.
9	CalOES follow up with CalTrans on the status of their post-fire mitigation along County highways	Mtg 5 11/2020	CalOES has followed-up. Work completion expected by 4/1/21.
10	DWR updates on debris and storm inflows	Mtg 5 11/2020	DWR monitoring, will notify Commission as needed.
11	DWR follow-up re: Hyatt Power Plant	Mtg 5 11/2020	On track. Update at Q2 meeting.

2021 Public Meeting Agenda Roadmap

Q2 (May 28) Safety

Topics

Dam Safety and Downstream Public Safety

- Dam Safety Program
- Flood Management Agency Presentation

Status Updates

Wildfire Season
Commission Report

Q3 (August 27) Infrastructure

Topics

Planned Major Projects at Oroville Facilities

- Asset Management
- Annual Maintenance Plan

Status Updates

CalTrans post-fire mitigation

Q4 (December 3) Operations

Topics

Oroville Operations

- Winter Operations Plan
- U.S. Army Corp of Engineers (water control manual update)

Status Updates

Commission Report
Wildfire Season

Commission Report

Senate Bill 955 Requirements

SB 955 states the Commission will publish a report at least **once every three years** that provides the following:

- An **overview of ongoing maintenance and improvements** made at the Dam and Dam complex;
- A **register of communications** received from State Agencies and other parties to the Commission;
- **Notice of upcoming plans** made by State Agencies for the Dam and Dam Complex; and
- An **overview of flood management projects on the Feather River** affecting public safety and flood risk reduction.

**ITEM 3:
DWR FIRE MODERNIZATION PROGRAM**



SWP FIRE MODERNIZATION

Fire Protection & Life Safety Improvements

Oroville Citizens Advisory Committee

February 19, 2021

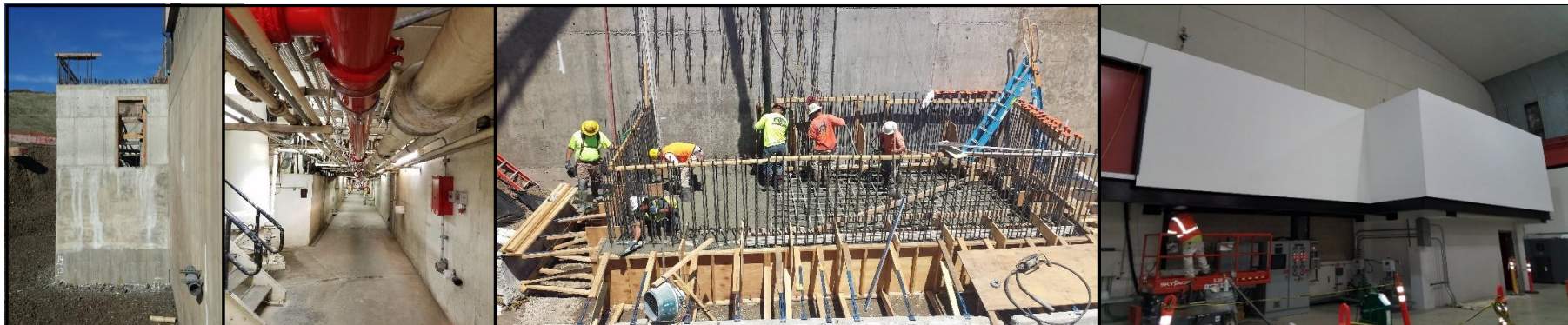
Dave Duval – DWR O&M Chief



SWP FIRE MODERNIZATION

GOALS

- ❑ LIFE SAFETY
 - ❑ DWR has established life safety as its most important F&LS goal. Life safety involves protecting plant personnel and first responders.
- ❑ PROPERTY PROTECTION
 - ❑ Focuses on containing a fire, minimizing its spread.
- ❑ BUSINESS INTERRUPTION
 - ❑ The period of time necessary to restore DWR's capacity to move water through the facility after a fire
 - ❑ Restore 25% of facility water delivery capacity within 30 days; 50% in 60 days; 100% in 180 days
- ❑ ENVIRONMENTAL IMPACT
 - ❑ Include design parameters to minimize impact or contain runoff caused by suppression



SWP FIRE MODERNIZATION

RISK ASSESSMENT

❑ SCORING METHODOLOGY

- Numerical scoring methodology to identify risk to life safety, property, and the environment for each facility
- The larger the calculated number for each finding, the greater the particular risk and need for corrective action
- Risk Score (RI) = Probability*(sum of consequences)
- Individual finding scores then summed to calculate a risk score for each of the three goals
- Business interruption findings scored independently, using institutional knowledge of operations to allow for prioritizing all SWP facility refurbishments.

❑ TOTAL FACILITY SCORE

Life Safety RI:	Sum of the life safety scores for a facility
Property Protection RI:	Sum of the property protection scores for a facility
<u>Environmental Impact RI:</u>	<u>Sum of the environmental impact scores for a facility</u>
Facility Total Score:	Sum of the three RI scores for a facility

SWP FIRE MODERNIZATION

- ❑ EDWARD HYATT POWERPLANT
 - ❑ Identified as #1 priority in SWP for fire & life safety upgrades
 - ❑ Important Dam Safety Facility
 - ❑ Includes Intake and Area Control Center
 - ❑ Total risk score for the facility was highest risk for life safety in SWP
 - ❑ Total risk score for the facility was highest risk for property protection in SWP
 - ❑ Total score for the facility was highest risk for business interruption in SWP
 - ❑ \$39 million in upgrades
- ❑ THERMALITO PUMPING-GENERATING PLANT
 - ❑ Restoration project incorporated fire & life safety upgrades consistent with SWP Fire Modernization Program Goals - \$16 million in fire & life safety upgrades completed
- ❑ OTHER FACILITIES IN OROVILLE FIELD DIVISION
 - ❑ Thermalito Diversion Dam Powerplant
 - ❑ Oroville Operations & Maintenance Center
 - ❑ Spillway Control Structure, Diversion Dam Control Structure, and Feather River Outlet Control Structure
 - ❑ \$5 million in upgrades

SWP FIRE MODERNIZATION MITIGATION STRATEGIES

□ Early Detection and Alarm Systems

- Heat, Smoke, Infrared, and Air Sampling
- Fully integrated alarms system with speakers & strobes



Warning speaker with orange air sampling detection line and fire sprinklers



Integrated Fire Alarm Control Panel and Suppression Panels

□ Fire Suppression Systems to Prevent Fire Spread



In-Cabinet suppression to protect critical electronics



Carbon Dioxide Suppression in generator and transformer housings

SWP FIRE MODERNIZATION MITIGATION STRATEGIES

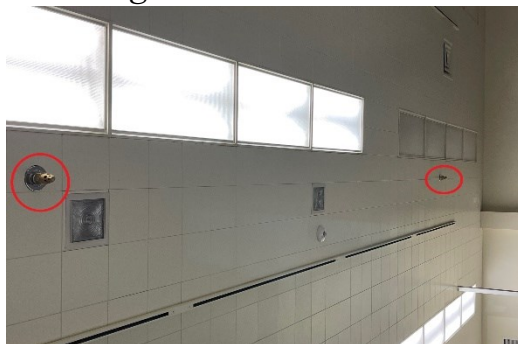
□ Fire Suppression Systems



High Pressure Water Mist systems to protect oil processing areas



Pre-Action riser system to control activation of water based sprinkler systems



Pro-inert gas suppression in critical occupied spaces and/or rooms that have critical equipment such as the Area Control Center and Spillway Control Room

QUESTIONS???



**ITEM 4:
WINTER OPERATIONS UPDATE**

Lake Oroville Operations Update

Oroville Citizen's Advisory Commission Meeting

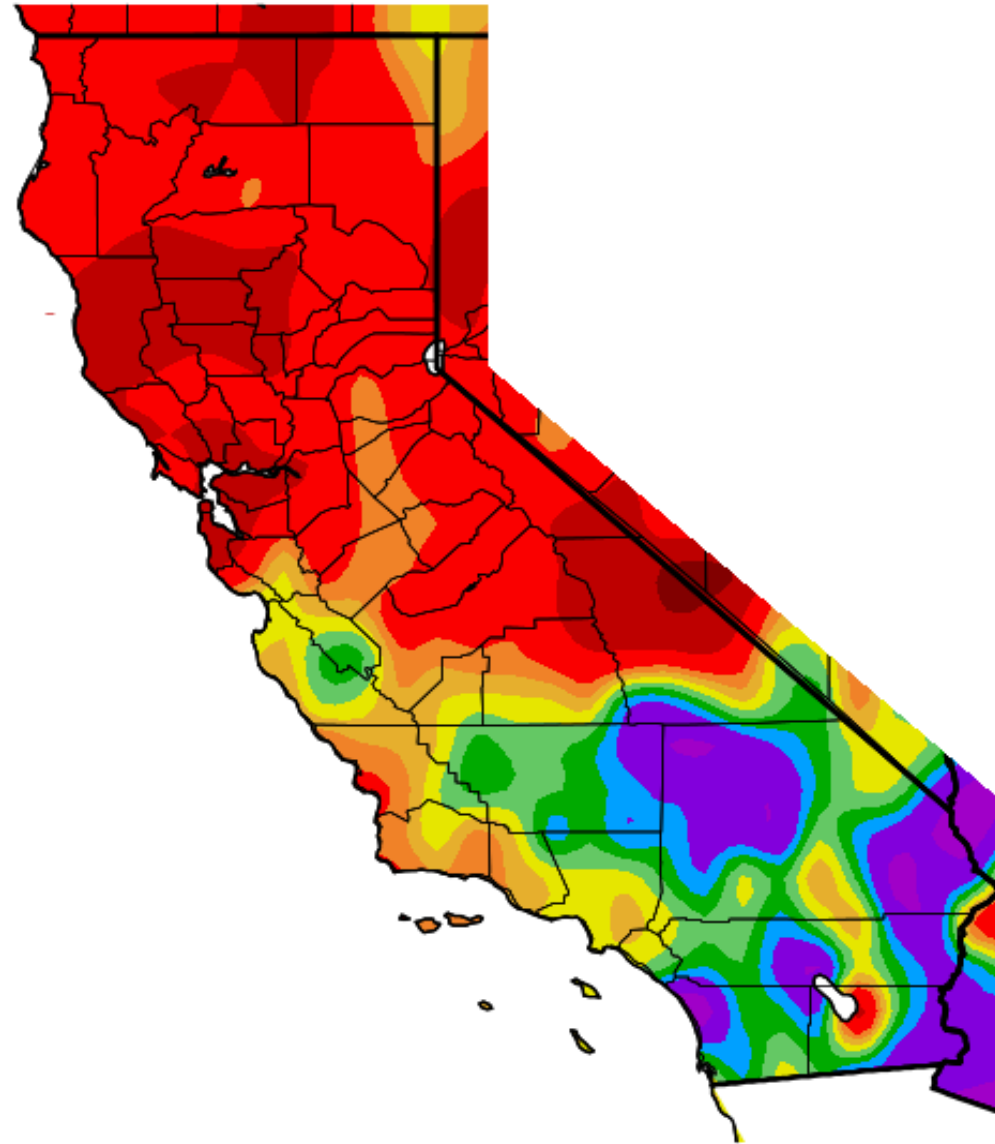
February 19, 2021



John Leahigh, SWP Water Operations Manager

Percent of Average Precipitation (%)
10/25/2019 – 10/24/2020

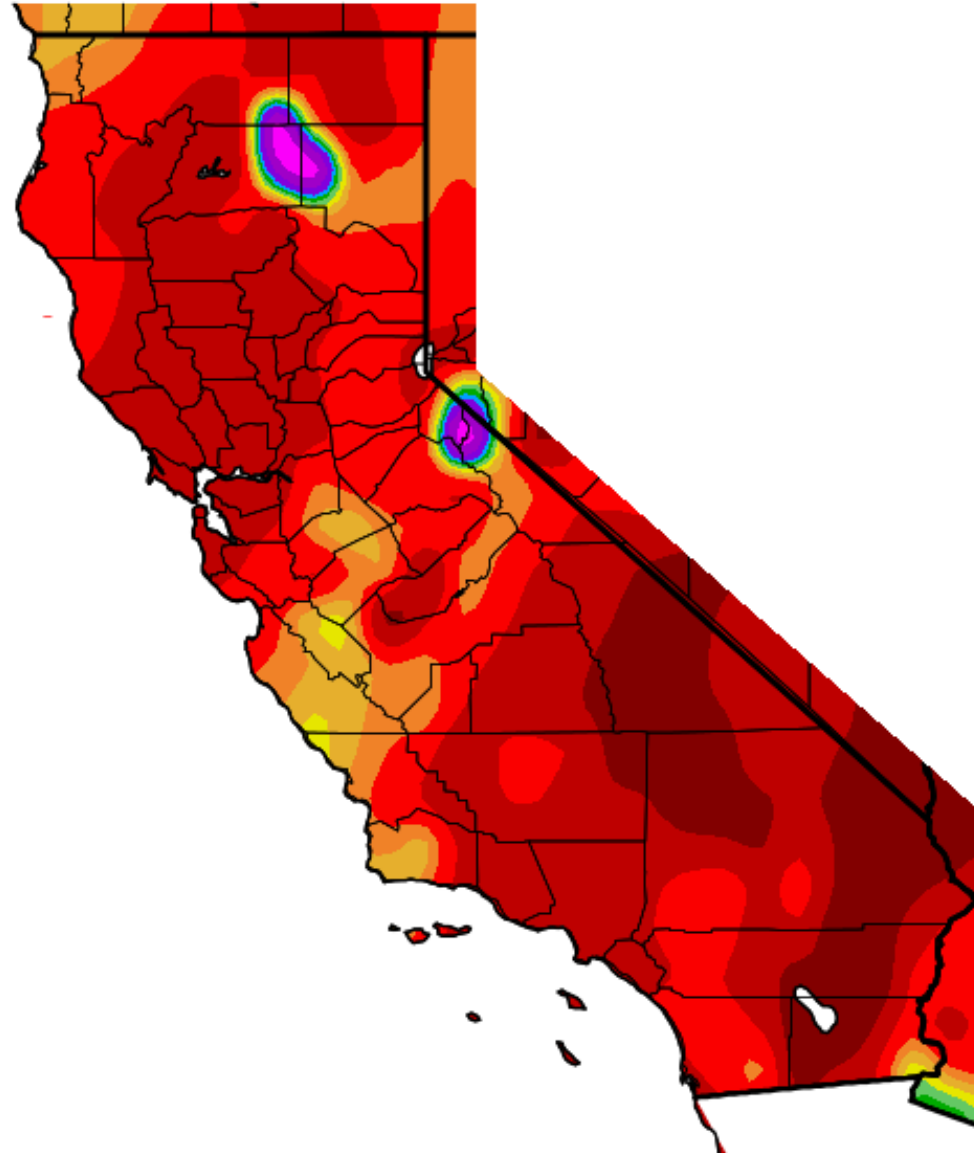
Water Year 2020



Generated 10/25/2020 at WRCC using provisional data.
NOAA Regional Climate Centers

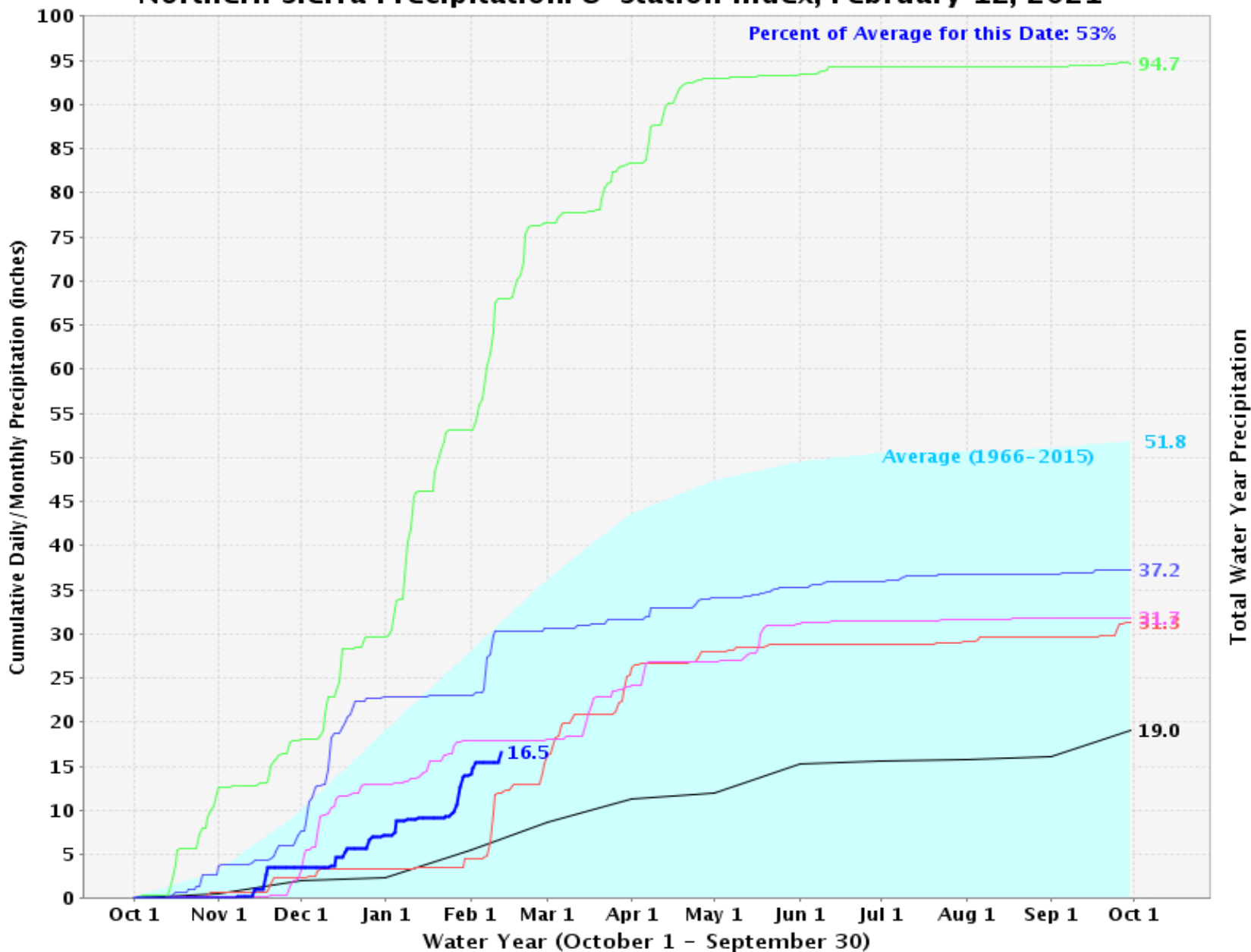
Percent of Average Precipitation (%)
10/1/2020 – 2/11/2021

Water Year 2021
To Date



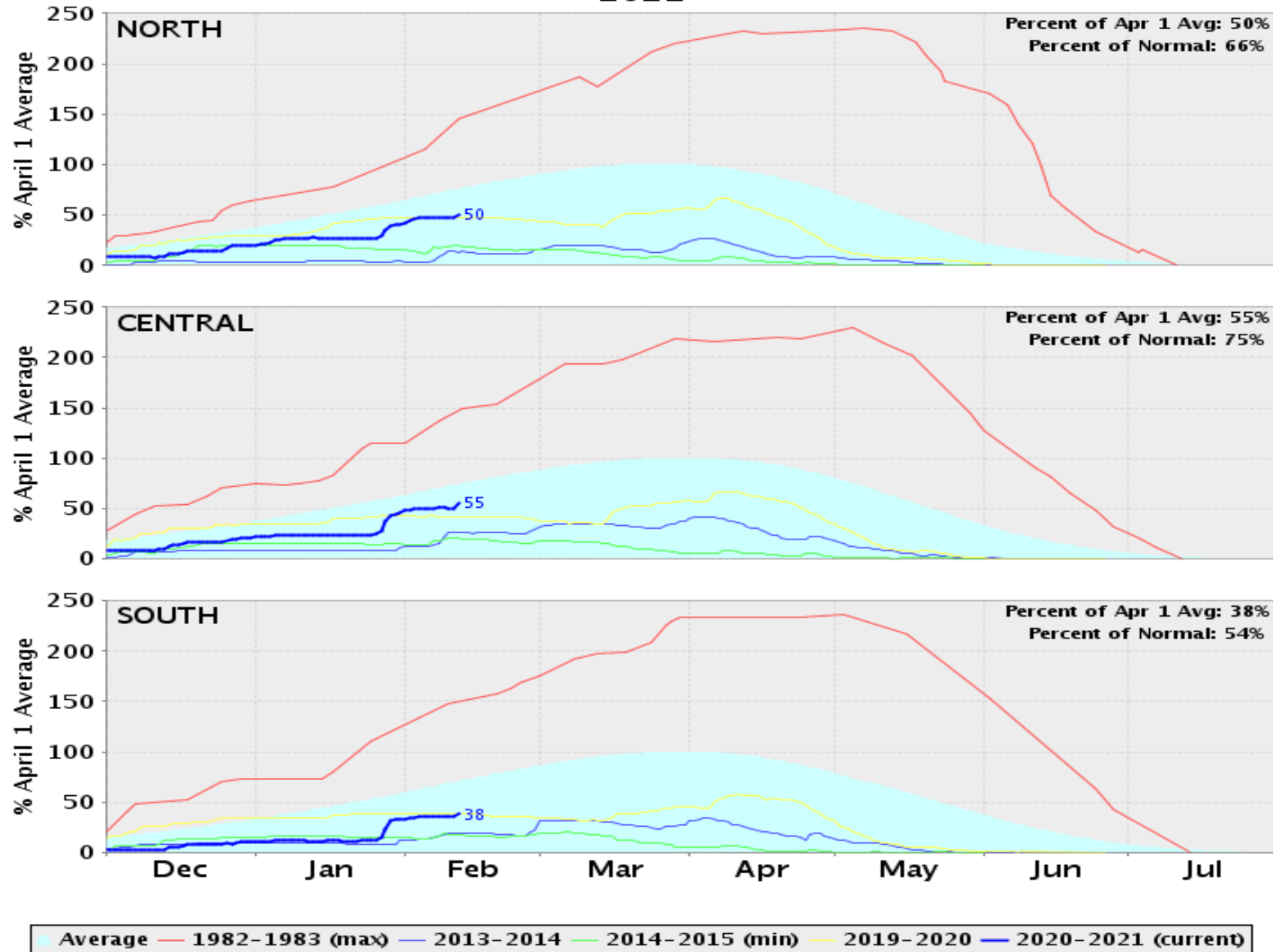
Generated 2/12/2021 at WRCC using provisional data.
NOAA Regional Climate Centers

Northern Sierra Precipitation: 8-Station Index, February 12, 2021



■ Average (1966-2015)
 — 1976-1977 (2nd Driest)
 — 2013-2014
 — 2014-2015
 — 2016-2017 (wettest)
 — 2019-2020
 — 2020-2021 (current)

California Snow Water Content - Percent of April 1 Average For: 12-Feb-2021

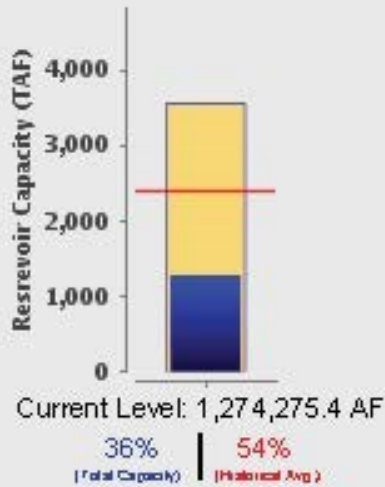




Reservoir Conditions - Lake Oroville

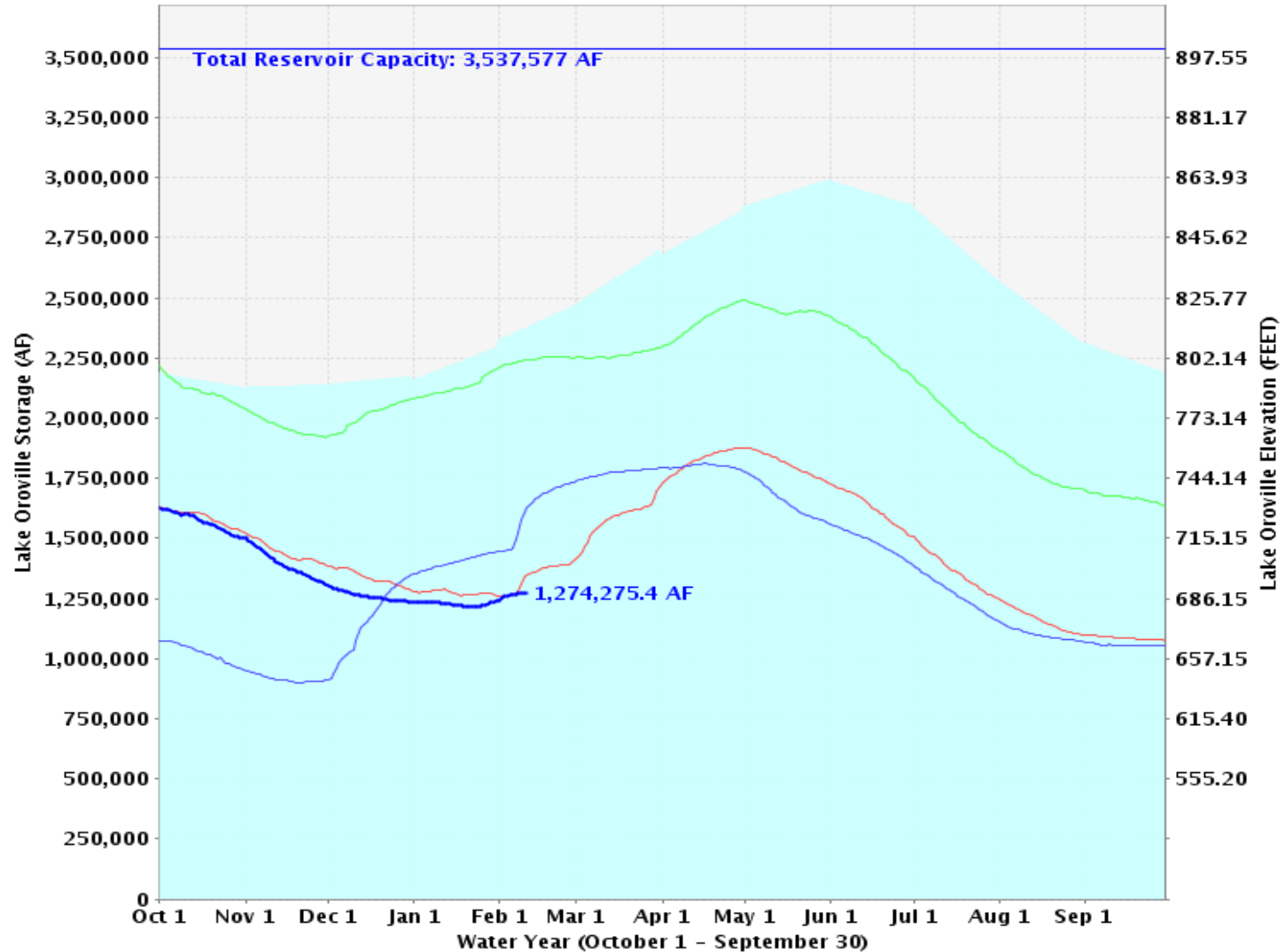


Lake Oroville Conditions (as of Midnight - February 11, 2021)



Data Updated 02/12/2021 11:18 AM

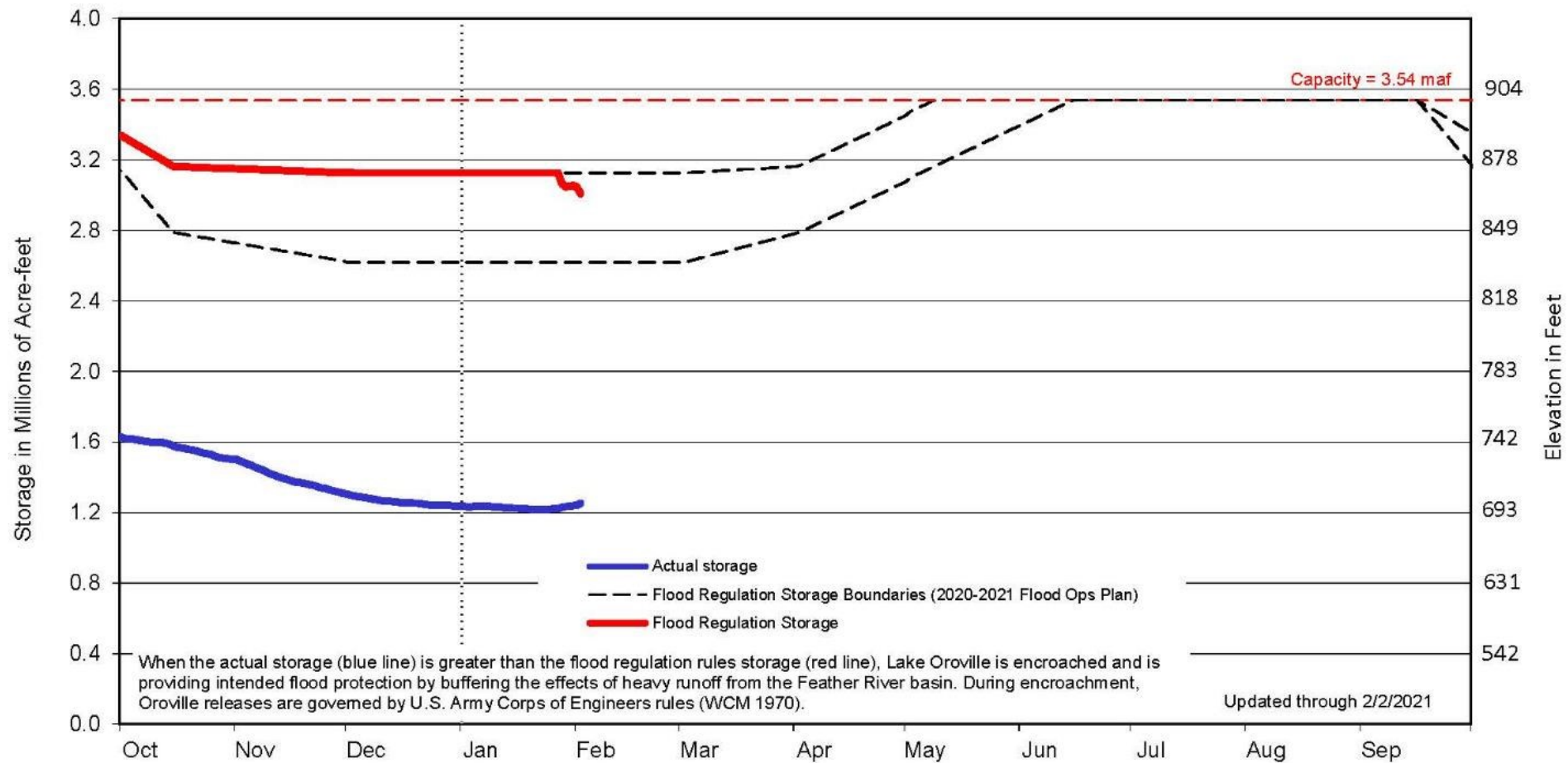
Lake Oroville Storage Levels



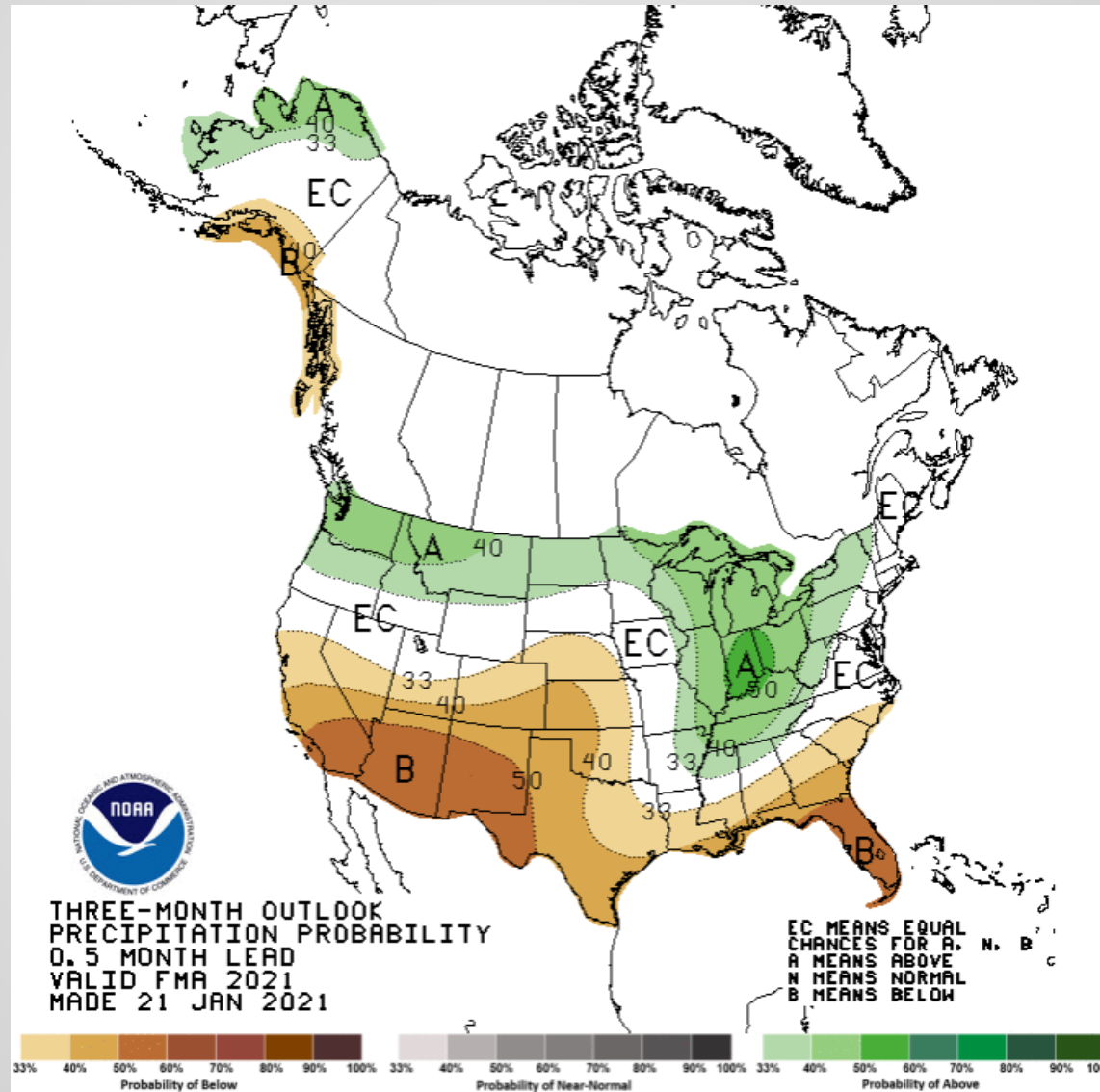
Historical Average — Total Reservoir Capacity — 2013-2014 — 2014-2015 — 2019-2020 — 2020-2021(current)

Lake Oroville Storage

October 1, 2020 to September 30, 2021



Winter Precipitation Outlook



Questions?



**ITEM 5:
DOWNSTREAM FLOOD SAFETY PARTNERSHIP**

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Overview of Feather River Flood Management

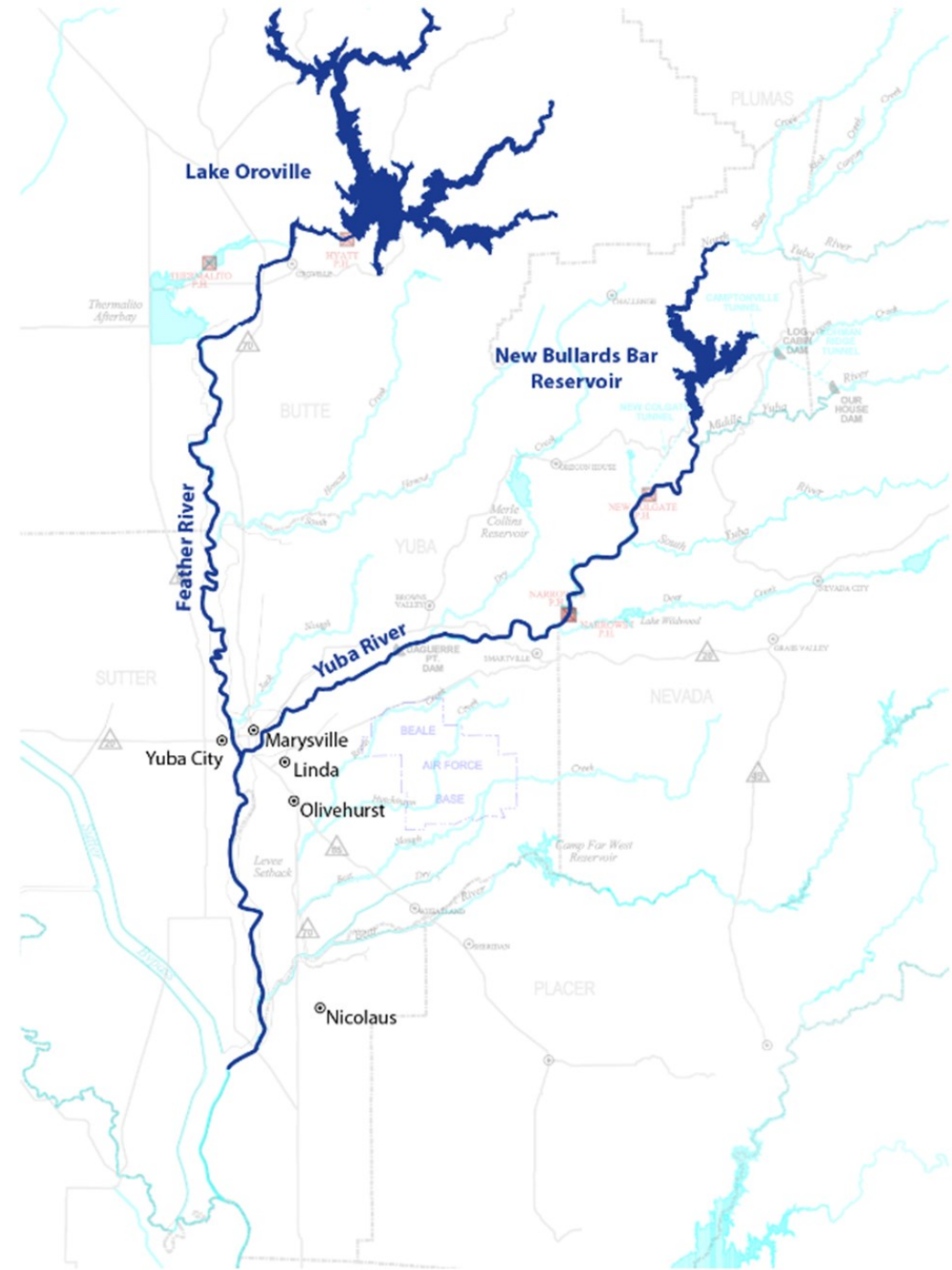
Oroville Citizen's Advisory Commission Meeting
February 19, 2021



Gary Lippner, Deputy Director

Today's Presentation

- Introduction
 - Yuba Water Agency
- Flood Partnerships
- Flood Preparedness
- System Improvements
 - Grants
 - Projects

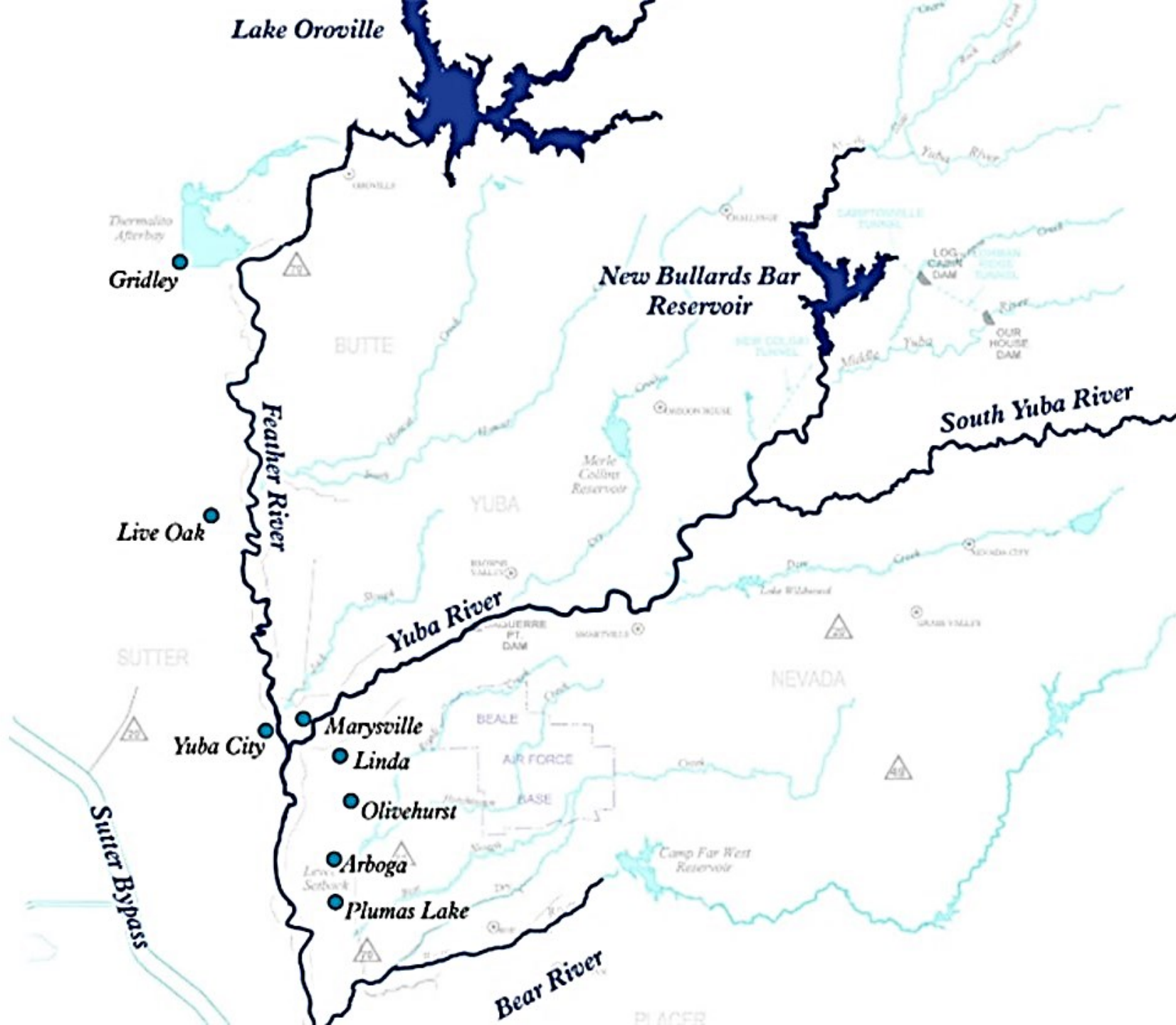




Enhancing Public Safety and Climate Resilience through Forecast-Informed Reservoir Operations (FIRO) in the Yuba-Feather Region

John James, Water Operations Project Manager

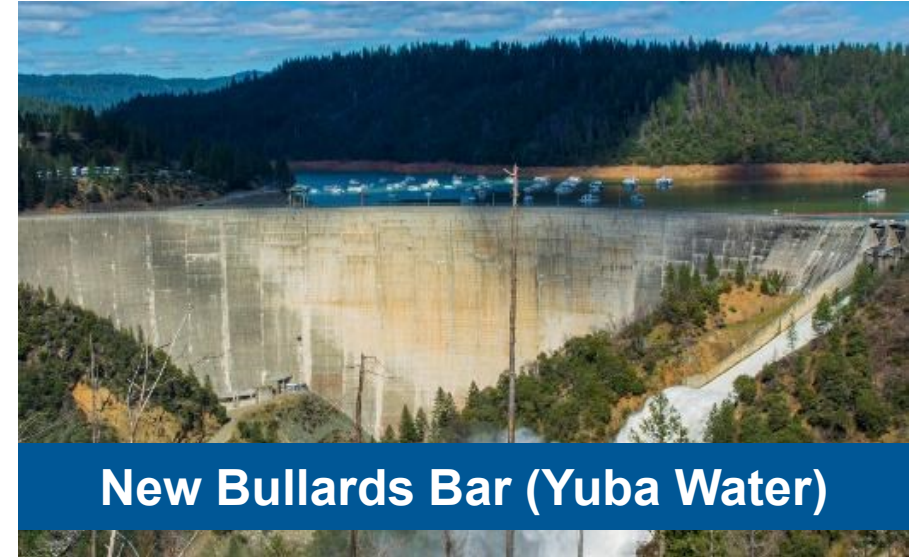
Yuba Water Agency | February 19, 2021



Yuba Feather River Systems



Yuba-Feather River Forecast-Coordinated Operations (F-CO)

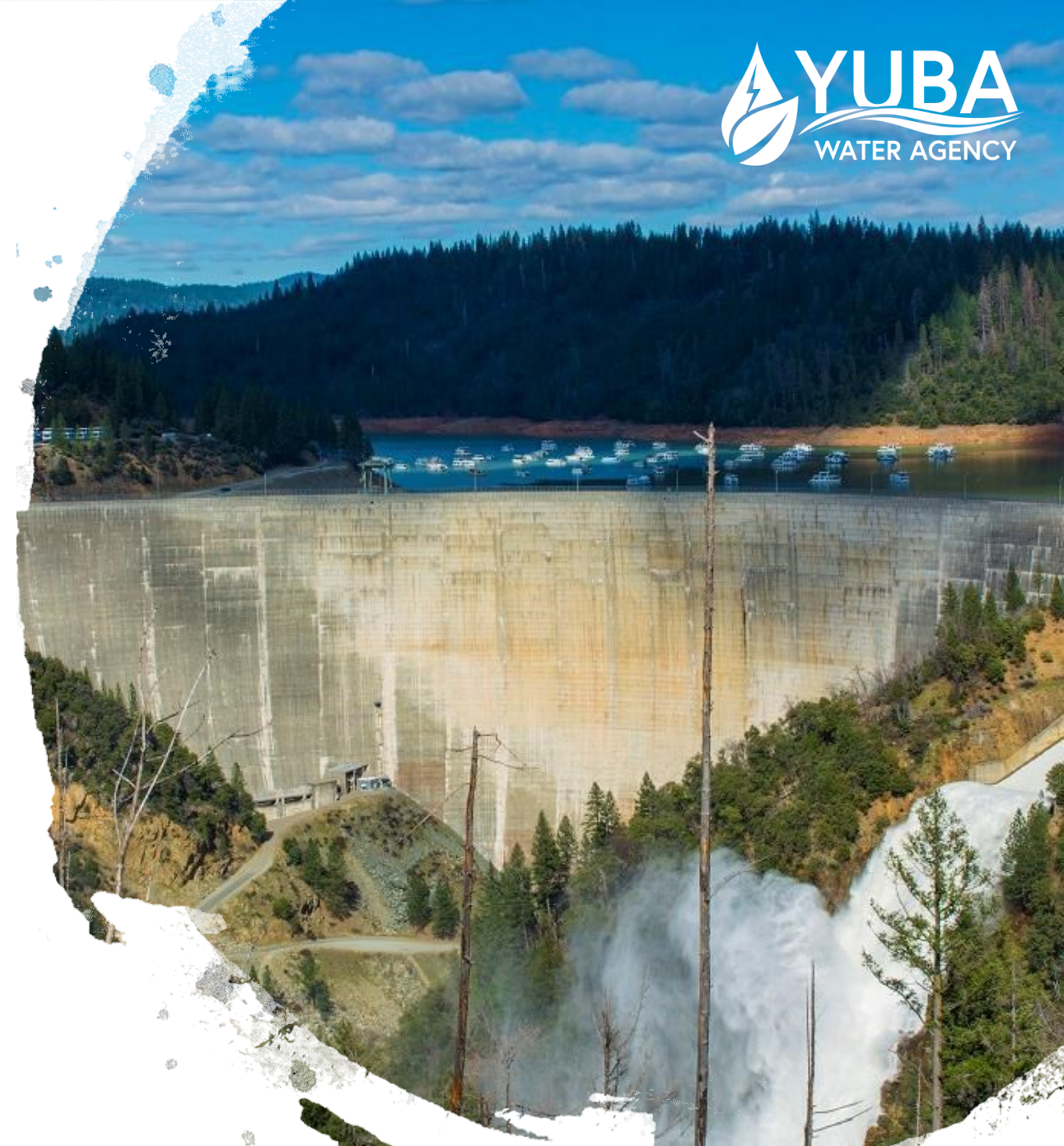


- Current forecast coordinated operations program is supported by a strong partnership among federal, state and local agencies
- Reservoir releases regulated by U.S. Army Corps of Engineers Water Control Manuals

Forecast-Informed Reservoir Operations (FIRO)



- Existing partnership projects:
 - Russian River, Lake Mendocino (2014)
 - Santa Ana River, Prado Dam (2017)
 - Yuba-Feather Rivers, Oroville and New Bullards Bar (2019)
- Uses improved forecasting to increase flexibility to store or release water
- Benefits include **reduced flood risk**, potential **water storage improvements**, **climate resilience**



Atmospheric Rivers and Forecast-Informed Reservoir Operations (FIRO)

- **Why do they matter?**
 - Too many atmospheric river storms cause flooding
 - Too few lead to drought
- Need to accurately predict precipitation and flood risk to successfully implement Forecast Informed Reservoir Operations



Atmospheric Rivers (Video)



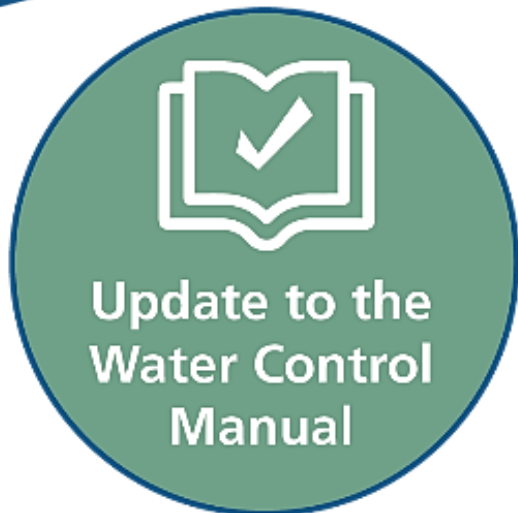
youtu.be/NULrvr8pTBg

Integrating Improved Forecasts into Reservoir Operations

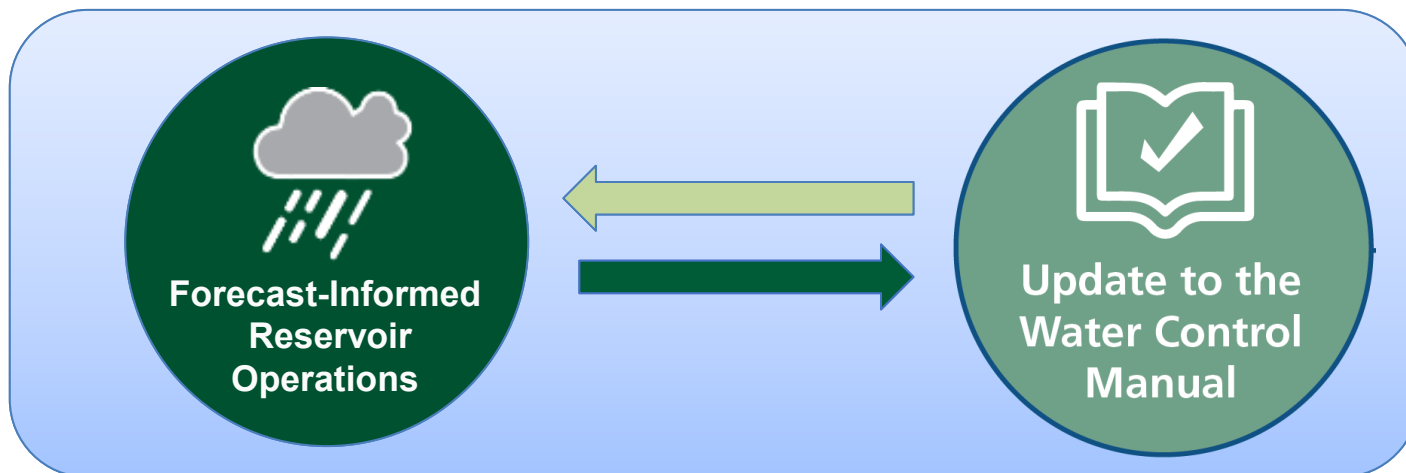


- Land and ocean-based observation data go into global computer weather forecast models used by researchers and water managers to optimize operations.
- Understanding snow level variability in the foothills and mountains and how it impacts runoff into rivers and reservoirs during atmospheric rivers is especially critical in the Yuba and Feather watersheds.

U.S. Army Corps Water Control Manual Update



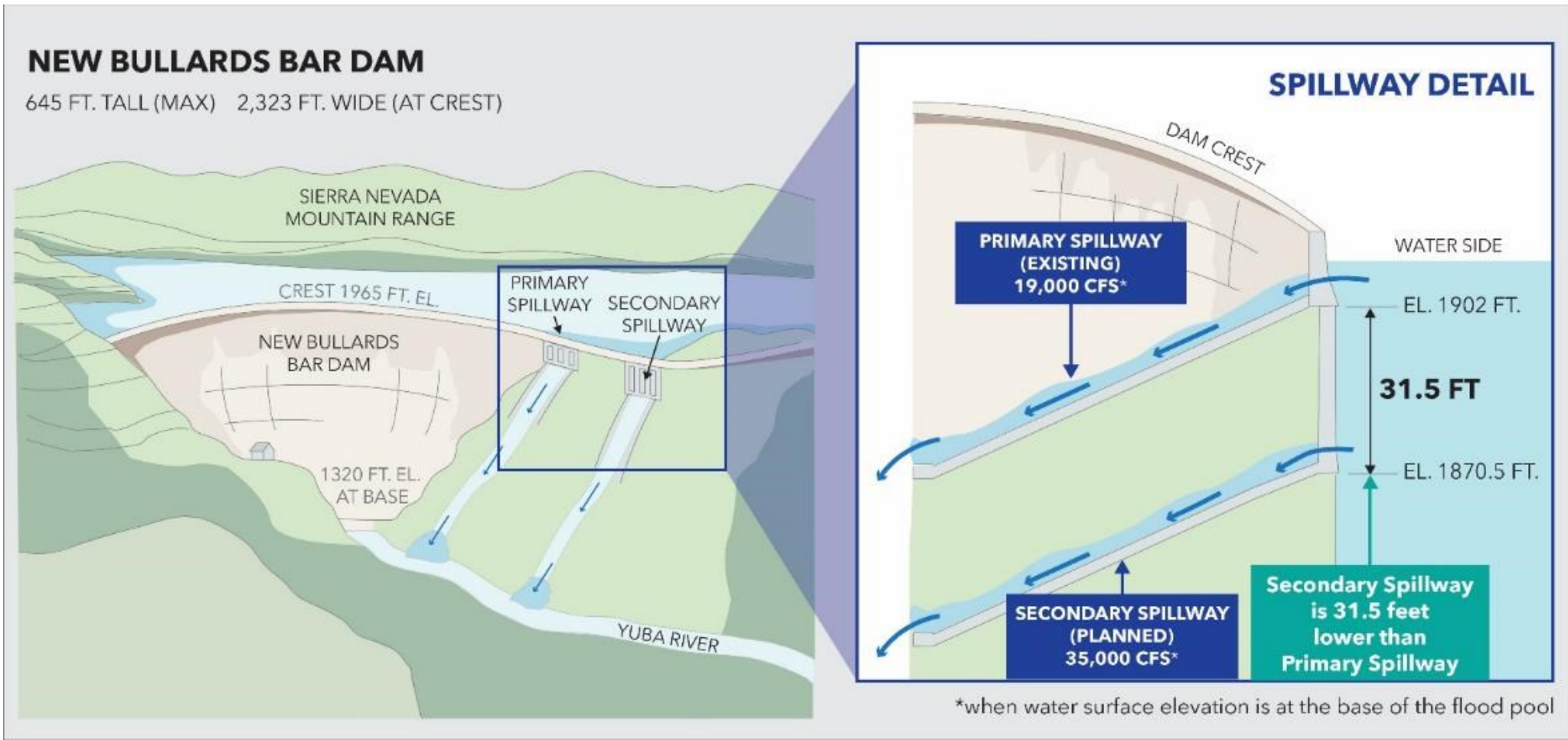
Yuba Water is working with the **U.S. Army Corps of Engineers** to develop new operational procedures for managing flood flows, and the new procedures will be informed by the FIRO research.



[8]



Secondary Spillway – Public Safety and Climate Change Resilience



New Bullards Bar Secondary Spillway Benefits



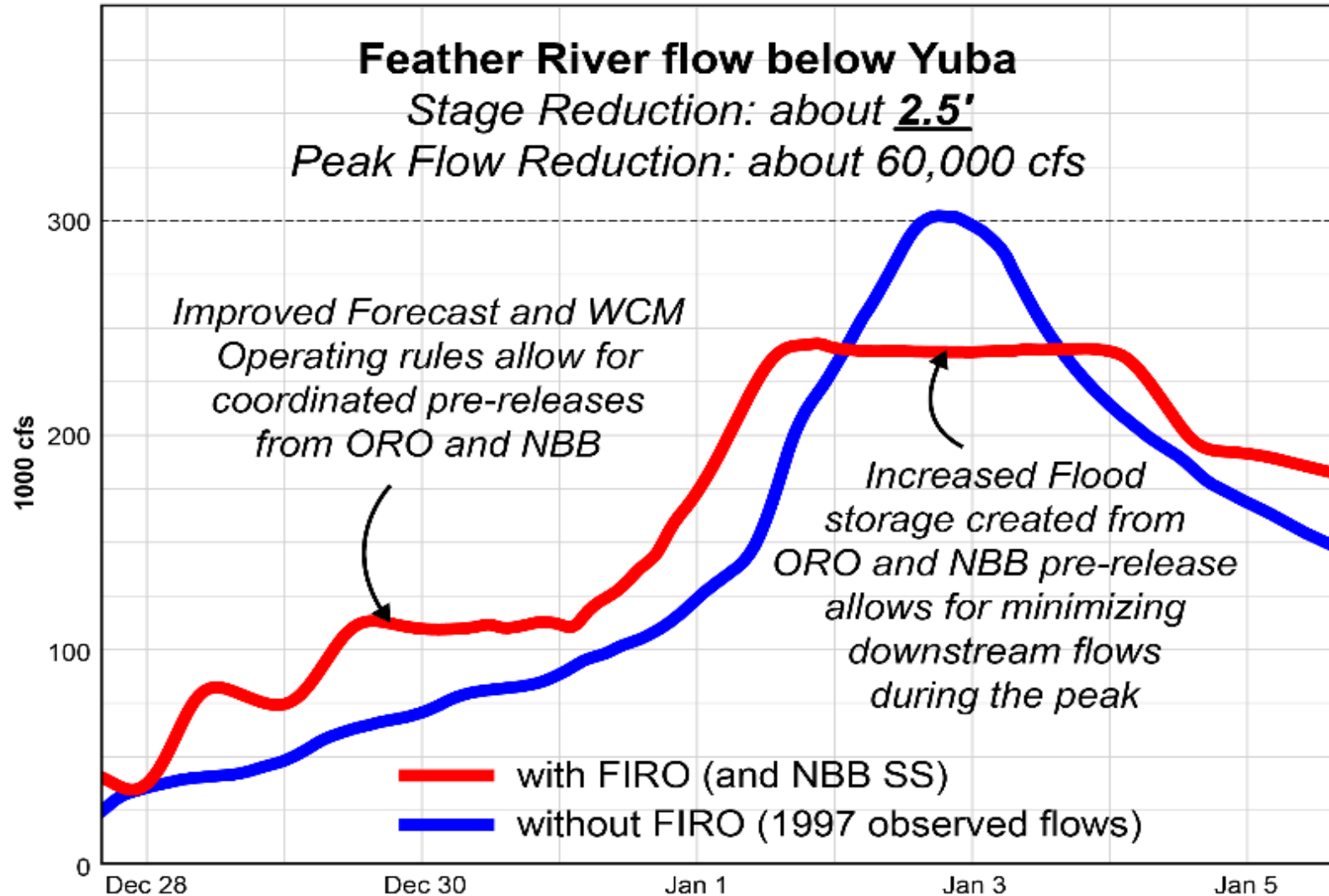
- Additional outlet with the ability to pre-release water ahead of storms
- Downstream water level reduction of 2-3 feet in Yuba-Sutter region
- Increases level of protection by 100- to 300-year level*



Rendering
of proposed
secondary
spillway

**The term "100-year flood" is used to simplify the definition of a flood that statistically has a 1-percent chance of occurring in any given year.*

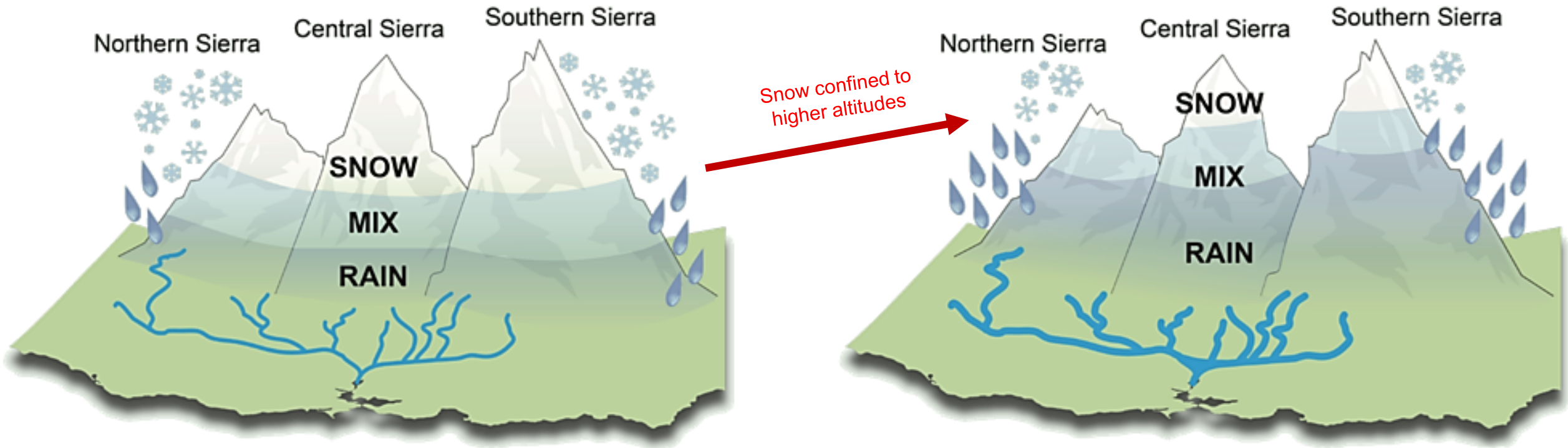
Reducing Peak Flows During Flood Events



Building Climate Change Resiliency

TODAY

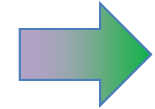
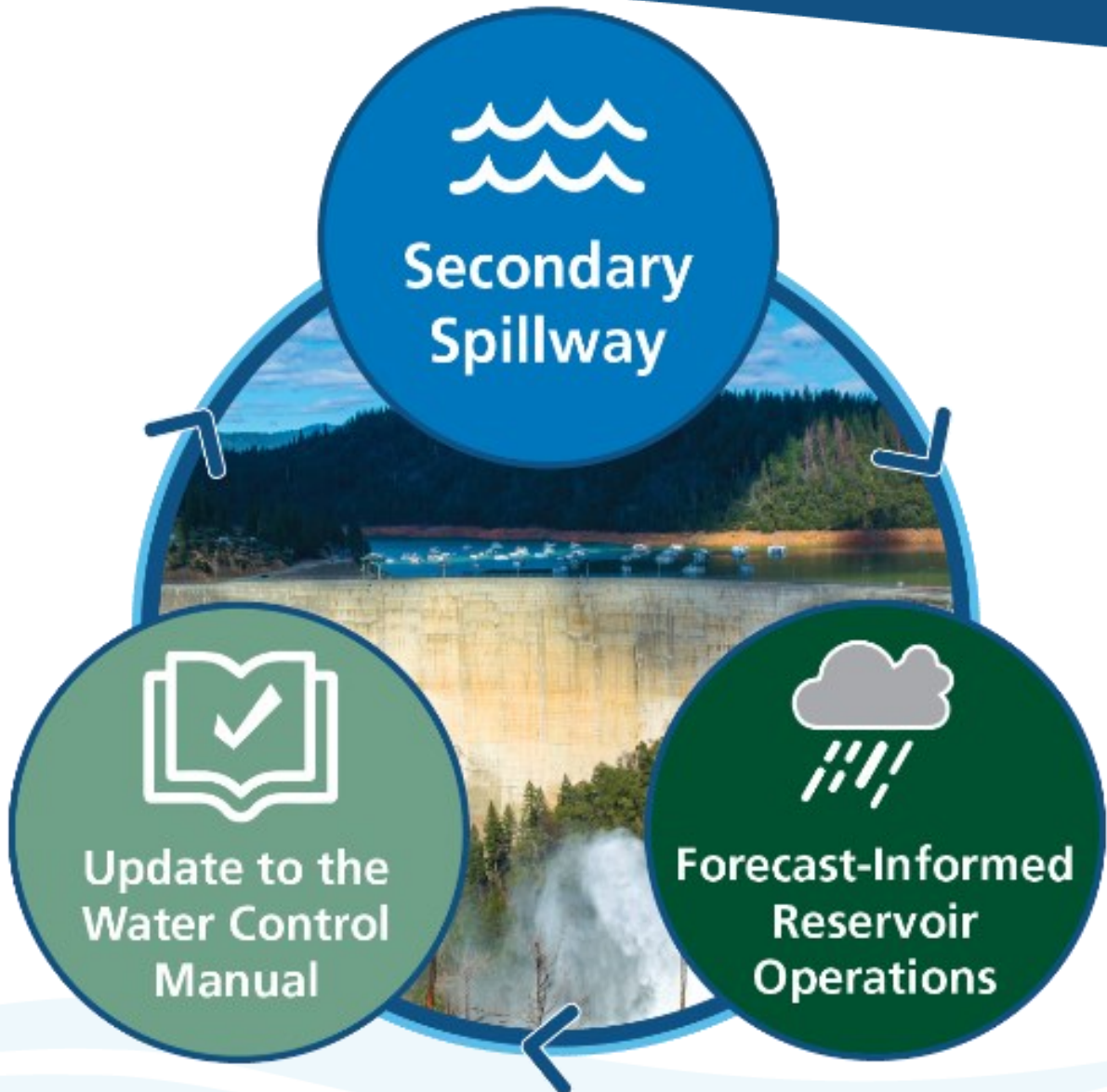
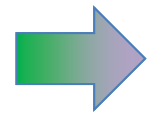
FUTURE



CVFPP 2017

Combining Projects and Partnerships to Maximize Benefits

F-CO



F-CO
(FIRO enhanced)



Yuba-Feather Forecast Informed Reservoir Operations

Forecast improvements and atmospheric river research inform operational decision-making.

Forecast improvements inform updates to Corps Water Control Manuals and future system operations for **improved flood protection** and **climate change resilience**.

Forecast-Informed Reservoir Operations builds upon existing **collaboration, institutional trust** and support systems between partners at **Yuba Water, DWR**, and our other state, federal and academic partners.

IMPROVED FORECASTING OF
ATMOSPHERIC RIVERS FOR A
CLIMATE RESILIENT FUTURE



Center for Western Weather
and Water Extremes
SCRIPPS INSTITUTION OF OCEANOGRAPHY
AT UC SAN DIEGO



Yuba-Feather Working Group

Purpose

Improve agency coordination and enhance operational capacity to respond to flood events in the region

Participating agencies

- **Local:** Levee District 1 (Sutter), Maintenance Areas 3, 7, 16, Reclamation Districts 784, 817, 1001, 2103, Yuba Water Agency
- **County:** Butte Co. OES, Sutter Co. OES, Yuba Co. OES
- **State:** DWR, Cal OES
- **Federal:** National Weather Service, U.S. Army Corps of Engineers



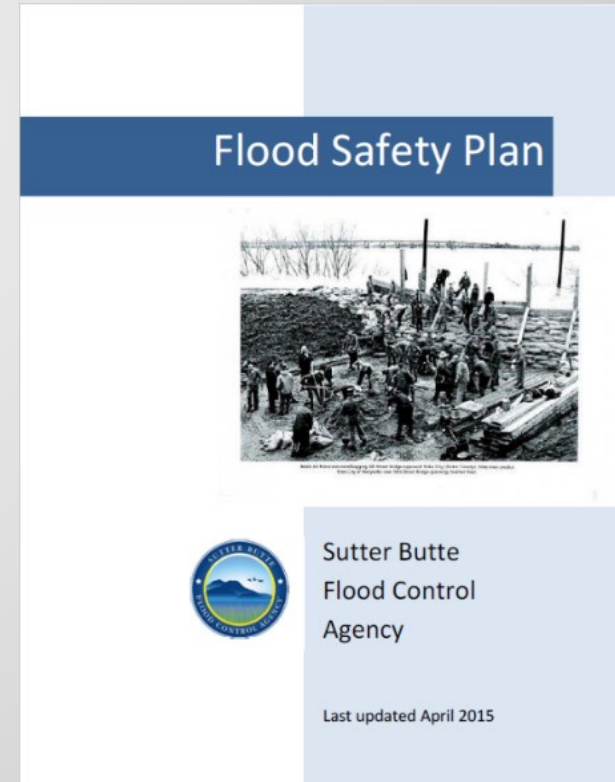
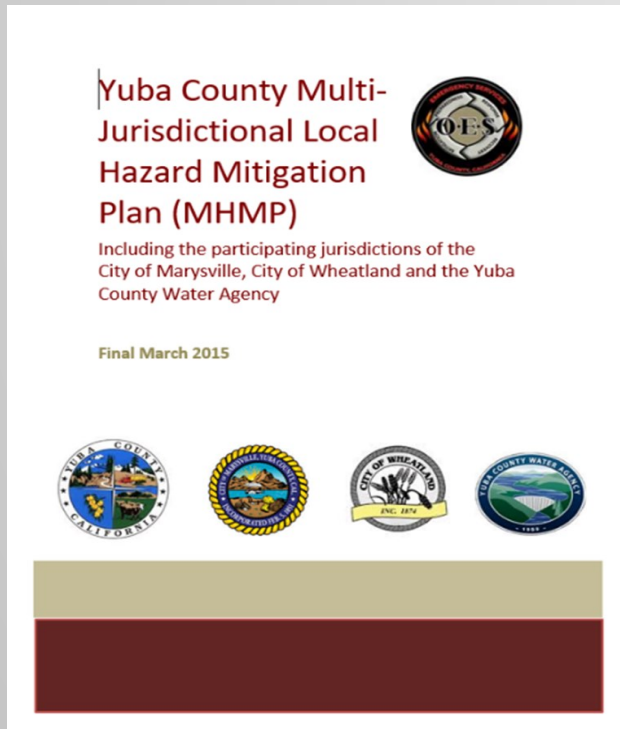
Flood Emergency Response Statewide Grants

Purpose

There is a one-to-many relationship where agencies work together to apply for State funds for a single project or program.

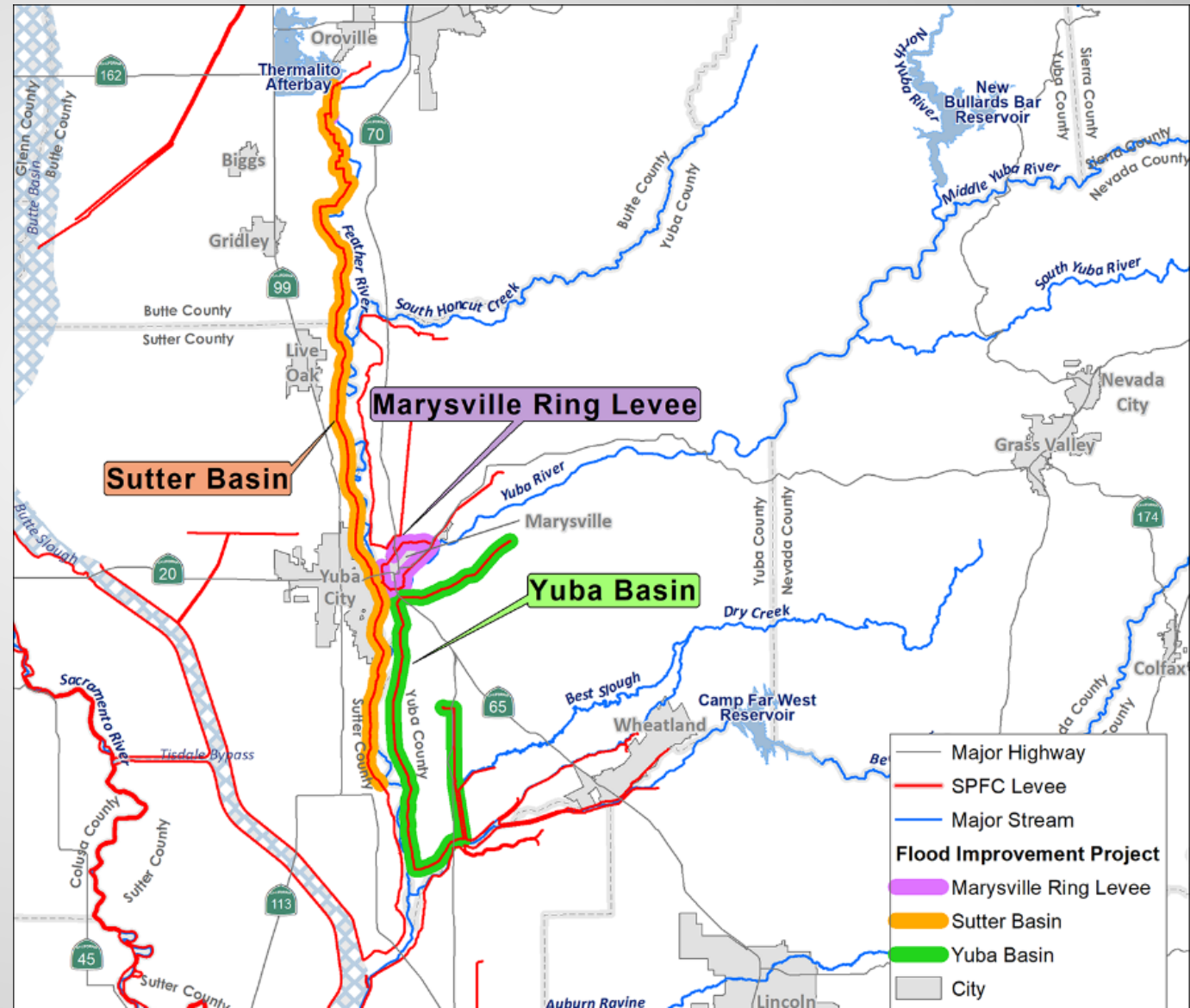
Yuba County OES –

\$123,500; Hazard Mitigation Plan updates, communication equipment, exercise; completed March 2016



Recent Flood Improvement Projects

- Marysville Ring Levee
- Sutter Basin
 - Sutter Basin Project
 - Feather River West Levee Project
- Yuba Basin
 - TRLIA Feather River project (EIP/UFRR)
 - TRLIA Yuba project (EIP/UFRR)
 - Goldfields (UFRR)



Integrated Feather River Safety: Examples of Partners

- City / County
 - Emergency Managers
 - Public Works / Project Implementation Groups
 - Floodplain Managers
- State Partners
 - Cal OES, CA Dept. of Conservation, SWRCB, CA Water Commission, CVFPB, CA Highway Patrol, CA Dept. Parks & Rec.
- Federal Partners
 - NWS, USACE, FEMA, FERC
- Water Agencies (multi-jurisdictional authorities)
 - YCWA, TRLIA, SBFCA, local levee agencies
- Tribal Representatives



Integrated Feather River Safety Program Activities

- USACE Levee Repairs
- Emergency Levee Repairs Grant Program
- Small Communities Flood Risk Reduction Program
- Cal OES Dam Emergency & Hazard Mitigation Planning
- FEMA NFIP Communities assistance Program
- State and Federal Levee Discussions
- And more.....



Final Thoughts

- Continue our partnerships to improve and maintain the flood management system and its operations along the Yuba-Feather Watershed.
- Constantly update our flood emergency preparedness and response plans; and continue to educate the public about the flood risk in the region.
- Assess the skill of our forecast and operating abilities to address climate change within the Yuba-Feather River Basin; and sharing the results with others such as the FIRO Program



Questions?



ITEM 6: PUBLIC COMMENT

**The Oroville Dam Citizens Advisory
Commission will now take public comment.**

We appreciate your input.

ITEM 7: ADJOURN

Thank you all for joining us today, our next Oroville Dam Citizens Advisory Commission meeting will be on May 28, 2021.

