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

<table>
<thead>
<tr>
<th>Item</th>
<th>Meeting</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Report out how instrumentation performed and was managed during winter operations</td>
<td>Mtg 2 11/2019</td>
</tr>
<tr>
<td>3</td>
<td>Invite State Water Contractors to future meeting(s)</td>
<td>Mtg 2 11/2019</td>
</tr>
<tr>
<td>4</td>
<td>Schedule regular updates from DWR on Forecast-Informed Reservoir Operations (FIRO) as well as Oroville and New Bullards Bar water control manual processes</td>
<td>Mtg 3 02/2020</td>
</tr>
<tr>
<td>5</td>
<td>Coordinate with U.S. Army Corps of Engineers (USACE) about point of contact for Feather River project updates</td>
<td>Mtg 3 02/2020</td>
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</table>
## Commission Action Items Tracker

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<td>7</td>
<td>Mtg 3 02/2020</td>
<td>Ongoing. Update at Q1 meeting.</td>
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<tr>
<td>8</td>
<td>Mtg 3 02/2020</td>
<td>For future Commission consideration.</td>
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<tr>
<td>10</td>
<td>Mtg 5 11/2020</td>
<td>DWR monitoring, will notify Commission as needed.</td>
</tr>
<tr>
<td>11</td>
<td>Mtg 5 11/2020</td>
<td>On track. Update at Q2 meeting.</td>
</tr>
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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
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
  Environmental Impact RI: Sum of the environmental impact scores for a facility
  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

- 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
ITEM 4:
WINTER OPERATIONS UPDATE
Lake Oroville Operations Update

Oroville Citizen’s Advisory Commission Meeting

February 19, 2021

John Leahigh, SWP Water Operations Manager
Water Year 2021
To Date
Lake Oroville Conditions
(April 1, 2021 - February 11, 2021)

Current Level: 1,274,275.4 AF (36% of Total Capacity, 54% of Historical Avg.)

Lake Oroville Storage
October 1, 2020 to September 30, 2021

- Capacity = 3.54 maf

When the actual storage (blue line) is greater than the flood regulation rules storage (red line), Lake Oroville is encroached and is providing intended flood protection by buffering the effects of heavy runoff from the Feather River basin. During encroachment, Oroville releases are governed by U.S. Army Corps of Engineers rules (WCM 1970).

Updated through 2/2/2021
Winter Precipitation Outlook
Questions?
ITEM 5: DOWNSTREAM FLOOD SAFETY PARTNERSHIP
Overview of Feather River Flood Management

Oroville Citizen’s Advisory Commission Meeting

February 19, 2021
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
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.

Lake Oroville (DWR)  
New Bullards Bar (Yuba Water)
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?**
  o Too many atmospheric river storms cause flooding
  o Too few lead to drought

• Need to accurately predict precipitation and flood risk to successfully implement Forecast Informed Reservoir Operations
WHAT IS AN ATMOSPHERIC RIVER?

youtu.be/NULrvr8pTBq
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.
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.
Secondary Spillway – Public Safety and Climate Change Resilience

NEW BULLARDS BAR DAM
645 FT. TALL (MAX) 2,323 FT. WIDE (AT CREST)

*when water surface elevation is at the base of the flood pool
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*

*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

**Feather River flow below Yuba**

*Stage Reduction: about 2.5'*

*Peak Flow Reduction: about 60,000 cfs*

**Improved Forecast and WCM**
Operating rules allow for coordinated pre-releases from ORO and NBB

**Increased Flood storage created from ORO and NBB pre-release**
allows for minimizing downstream flows during the peak

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- Red line with FIRO (and NBB SS)
- Blue line without FIRO (1997 observed flows)
Building Climate Change Resiliency

TODAY

Northern Sierra
Central Sierra
Southern Sierra

SNOW
MIX
RAIN

FUTURE

Northern Sierra
Central Sierra
Southern Sierra

SNOW
MIX
RAIN

Snow confined to higher altitudes
Combining Projects and Partnerships to Maximize Benefits

**F-CO**

- **Secondary Spillway**
- **Update to the Water Control Manual**
- **Forecast-Informed Reservoir Operations**

**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.
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
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.