

# Overview of Oroville Dam Spillway Incident

---

L E G I S L A T I V E   A N A L Y S T ' S   O F F I C E

Presented to:

Assembly Committee on Water, Parks, and Wildlife

Hon. Eduardo Garcia, Chair

Assembly Committee on Accountability and Administrative Review

Hon. Susan Eggman, Chair

Assembly Budget Subcommittee No. 3 on Resources and Transportation

Hon. Richard Bloom, Chair





## Oroville Dam: Basic Information

---



### **Built and Owned by the State, Tallest Dam in the United States**

- Completed in 1968, earthen dam stands at 770 feet high.
- Can hold up to 3.5 million acre-feet of water in Lake Oroville (second largest human-made lake in California).



### **Serves Multiple Purposes**

- Water supply for State Water Project.
- Flood control for Feather River basin.
- Hydroelectric energy production through Hyatt Powerplant.
- Recreational opportunities including boating and camping.



### **Designed to Release Water Through Four Outlets**

- River valve outlet system (4,000 cubic feet per second [cfs]).
- Hyatt Powerplant (17,000 cfs).
- Main spillway—concrete-lined and gated (150,000 cfs).
- Emergency spillway—ungated concrete weir and unlined hillside.



### **Subject to Annual State Inspections**

- Historically inspections have focused primarily on dam itself, with more limited visual inspections of spillways.



## Recent Emergency at Oroville Dam

<b>Oroville Dam Spillway Incident: Timeline of Key Events</b>	
<i>2017</i>	
<b>February</b>	
7 <sup>th</sup>	DWR discovers large area of concrete erosion in main spillway, stops releases.
8 <sup>th</sup>	DFW begins evacuating fish from Feather River Hatchery due to muddy water flows.
9 <sup>th</sup>	DWR suspends operations at Hyatt Powerplant due to accumulation of debris.
11 <sup>th</sup>	Inflow causes lake level to overtop, engaging emergency spillway for first time ever.
12 <sup>th</sup>	Base of emergency spillway begins to erode. Butte County Sheriff orders mandatory evacuation for Oroville area. DWR increases flows through main spillway, causing it to erode further. Governor declares state of emergency for Butte, Sutter, and Yuba counties.
13 <sup>th</sup>	DWR begins round-the-clock work to repair emergency spillway. FERC requires DWR to begin repair design and convene independent BOC.
14 <sup>th</sup>	DWR continues main spillway releases and lake levels drop. Butte County Sheriff downgrades evacuation order to evacuation warning.
18 <sup>th</sup>	Lake level drops and DWR reduces main spillway releases. DWR begins removal of debris from pool beneath spillway.
27 <sup>th</sup>	DWR stops main spillway releases, increases debris removal efforts.
<b>March</b>	
1 <sup>st</sup>	BOC holds first meeting.
5 <sup>th</sup>	DWR resumes operation of Hyatt Powerplant.
17 <sup>th</sup>	DWR resumes some main spillway releases to accommodate lake inflows.
19 <sup>th</sup>	Governor requests federal disaster declaration and financial assistance, for emergency response.
22 <sup>nd</sup>	Butte County Sheriff lifts all evacuation warnings and advisories.
<b>April</b>	
2 <sup>nd</sup>	President announces \$274 million in federal funds for emergency response.
6 <sup>th</sup>	Governor issues executive order to expedite spillway repairs.
17 <sup>th</sup>	DWR awards \$275 million contract for spillway repair to Kiewit Infrastructure West Company.
DWR = Department of Water Resources; DFW = Department of Fish and Wildlife; FERC = Federal Energy Regulatory Commission; and BOC = Board of Consultants.	



## Several Key Entities Involved in Oroville Dam Operations and Spillway Repair

---



### State Agencies

- **Department of Water Resources (DWR).** Maintains and operates dam. Will oversee development and implementation of repair plans and work.
- **DWR's Division of Safety of Dams.** Conducts annual dam inspections. Will review and approve repair plans and work.
- **California Department of Fish and Wildlife.** Operates Feather River Fish Hatchery below dam. Will review and issue permits for repair work related to impacts on fish and wildlife.



### Federal Agencies

- **Federal Energy Regulatory Commission.** Licenses and regulates dam operations. Will review and approve repair plans and work.
- **U.S. Army Corps of Engineers.** Sets standards—and corresponding dam release requirements—for maintaining flood-control capacity in lake. Will provide technical assistance for repair plans and work.



### Others

- **Forensic Evaluation Team.** Recently convened. Will determine causes of the spillway malfunction.
- **Board of Consultants.** Recently convened pursuant to state law and federal requirements. Will provide independent review, assessment, comments, and advice on repair plans and work.
- **State Water Project Contractors.** Pay debt service for original dam construction as well ongoing dam maintenance and operations costs. Likely will pay share of repair costs.



## Next Steps: Key Legislative Oversight Questions

---



### **What Lessons Can the State Learn From the Incident at Oroville Dam?**

- What has been learned about the causes of the malfunction that might help prevent a similar occurrence at another facility?
- What has been learned thus far during the response and recovery that can inform future emergency events?



### **Do Safety Risks Remain at Oroville?**

- Will Oroville Dam be able to safely accommodate runoff through this spring?
- Will repairs be completed in time to safely accommodate runoff next winter?
- How will repairs address any safety flaws identified in the structure's original design?



### **Do Safety Risks Exist at Other Dams Around the State?**

- Are there other facilities that could be similarly vulnerable?
- Should the state undertake additional efforts to investigate and address potential risks at other facilities?



### **What Oversight Role Does the Legislature Want to Play in Recovery and Repair Efforts?**

- How can the Legislature help ensure repairs are implemented in a timely and cost-effective manner, and that state interests and public safety are protected?
- Does the Legislature have access to sufficient information to provide effective oversight?



## Next Steps: Key Legislative Oversight Questions

*(Continued)*

---



### **How Will Oroville Dam Recovery and Repair Efforts be Funded?**

- How will recovery and repair costs be divided among State Water Project contractors, the federal government, and the state?
- Who will make this cost-share determination?