

MEETING SUMMARY
Oroville Dam Citizens Advisory Commission
Meeting #12: October 21, 2022
10:00 a.m. – 12:00 p.m.
Southside Community Center, Oroville, CA

This meeting summary provides an overview of the October 21, 2022 Oroville Dam Citizens Advisory Commission (OCAC) meeting and focuses primarily on capturing the comments and questions posed by Commissioners and members of the public. It is organized by agenda topic to assist readers in cross-referencing the meeting materials. This document is not intended to serve as minutes of the meeting or a transcript of the discussion. A transcript and materials from the meeting are available on the Oroville Dam OCAC website:

<https://resources.ca.gov/Initiatives/Oroville-Dam-Citizens-Advisory-Commission>

MEETING AGENDA

- Welcome & Opening Remarks
- Update on Commission Report
- Inundation Mapping Presentation
- Atmospheric River Research
- Oroville Dam Winter Operations Update
- Public Comment & Questions
- Adjourn

ACTION ITEMS

- Kearns & West (K&W) will PDF the instructions about how to leave public comment on Commission report and email Commissioners so they can provide guidance to others.
- K&W will add to the list of potential future Commission agenda topics:
 - Inundation mapping
 - Emergency evacuation planning and protocol
- Sutter Butte Flood Control Agency (SBFCA), Yuba County, City of Oroville, Department of Water Resources (DWR), State Parks, California Department of Fish and Wildlife (CDFW) will meet to discuss maintenance and improvements to levee currently under the City’s jurisdiction.
- SBFCA and DWR will meet to further discuss inundation maps in preparation for a presentation during the February 2023 OCAC meeting.

WELCOME & OPENING REMARKS

As mandated by the requirements set forth in Senate Bill 955 (2018, Nielsen), the Commission comprises representatives from the following agencies and public bodies. Attendance at Meeting 12 on October 21, 2022 is noted in the table below.

Agency or Public Body	Commissioner (or Alternate)	Present
California Natural Resources Agency	(Chair) Secretary Wade Crowfoot	X
California State Senate	(Vice Chair) Senator Jim Nielsen	X*
California State Assembly	Assembly Member James Gallagher	

Department of Parks and Recreation (DPR)	Director Armando Quintero (represented by Superintendent Matt Teague)	X
Department of Water Resources (DWR)	Director Karla Nemeth	X
California Governor's Office of Emergency Services (Cal OES)	Director Mark Ghilarducci (represented by Lori Nezurah)	X
Oroville City Council	Council Member David Pittman	X
Oroville City Council	Mayor Chuck Reynolds	X*
Butte County Board of Supervisors	Supervisor Tod Kimmelshue	X
Butte County Board of Supervisors	Supervisor Bill Connelly	
Representative on behalf of Butte County Board of Supervisors	Robert Bateman	X
Yuba County Board of Supervisors	Supervisor Seth Fuhrer	X
Yuba County Board of Supervisors	Supervisor Andy Vasquez	
Sutter County Board of Supervisors	Supervisor Mat Conant	
Sutter County Board of Supervisors	Supervisor Dan Flores	
California Highway Patrol	Lieutenant Joseph Stokes	X
Butte County Sheriff's Office	Sergeant Brian Evans	X
Yuba County Sheriff's Office	Lieutenant Brandon Spear	
Sutter County Sheriff's Office	Deputy Andre Licon	

**Member present for majority of the official meeting but not present during roll call.*

Secretary Wade Crowfoot welcomed presenters and members of the public to the twelfth meeting of the Oroville Dam Citizens Advisory Commission, which was held in person at the Southside Community Center in Oroville.

The Secretary started by welcoming Lieutenant Brandon Spear and Sergeant Brian Evans to the Commission; they are taking over for Lieutenant Million and Lieutenant Collins respectively.

The Secretary provided an overview of the meeting agenda, which covered an update on the Commission Report, a presentation on inundation mapping, and an overview of current atmospheric river research and science including ARkStorm. He also shared that Flood Preparedness Week would begin the following week and emphasized the three basic steps of flood preparedness are 1) be aware of your flood risk, 2) have an emergency evacuation kit ready at all times, and 3) when advised to evacuate, follow orders and evacuate.

In her remarks, Director Nemeth emphasized the importance of the Commission as a beneficial forum because it:

- Enables the DWR to interact directly with community members;
- Allows the Commission to answer questions from the community and provide solutions; and
- Allows collaboration among different entities to keep people safe and perform the objectives of the Oroville reservoir, which is a significant piece of infrastructure for the State of California.

The Director discussed how climate change has resulted in unpredictable and dynamic precipitation and how this requires the State to consider the extreme intersection between drought and flood. She highlighted the Central Valley Flood Protection Plan as an effort that demonstrates the importance of collaboration between the State and local flood control districts to prepare for flood events in the face of uncertain climate science. The Commission is representative of necessary partnerships between State and local entities responsible for public safety during floods as well as efforts to strategically plan for future drought events as California becomes drier and hotter.

Secretary Crowfoot welcomed Senator Nielsen and acknowledged his upcoming retirement and his contributions to the Commission. He invited Senator Nielsen to make some remarks and announce his recommendation for Vice Chair.

Senator Nielsen nominated James Gallagher to be the new Vice Chair of the Commission. Assemblymember Gallagher co-authored the 2018 legislation that created the OCAC with Senator Nielsen. Senator Nielsen then made a motion for a vote. City of Oroville Councilman Pittman seconded the motion.

Assemblymember James Gallagher was elected Vice Chair of the Oroville Citizens Advisory Commission with a simple majority of eleven votes. Below are the results of the vote.

Agency or Public Body	Commissioner (or Alternate)	Vote
California Natural Resources Agency	(Chair) Secretary Wade Crowfoot	yes
California State Senate	(Vice Chair) Senator Jim Nielsen	yes
California State Assembly	Assembly Member James Gallagher	absent
Department of Parks and Recreation (DPR)	Director Armando Quintero (represented by Superintendent Matt Teague)	yes
Department of Water Resources (DWR)	Director Karla Nemeth	yes
California Governor's Office of Emergency Services (Cal OES)	Director Mark Ghilarducci (represented by Lori Nezurah)	yes
Oroville City Council	Council Member David Pittman	yes
Oroville City Council	Mayor Chuck Reynolds	absent
Butte County Board of Supervisors	Supervisor Tod Kimmelshue	yes

Butte County Board of Supervisors	Supervisor Bill Connelly	absent
Representative on behalf of Butte County Board of Supervisors	Robert Bateman	yes
Yuba County Board of Supervisors	Supervisor Seth Fuhrer	yes
Yuba County Board of Supervisors	Supervisor Andy Vasquez	absent
Sutter County Board of Supervisors	Supervisor Mat Conant	absent
Sutter County Board of Supervisors	Supervisor Dan Flores	absent
California Highway Patrol	Lieutenant Joseph Stokes	yes
Butte County Sheriff's Office	Sergeant Brian Evans	yes
Yuba County Sheriff's Office	Lieutenant Brandon Spear	absent
Sutter County Sheriff's Office	Deputy Andre Licon	absent

Senator Nielsen thanked Commissioners and meeting participants. He shared the Commission's history that stemmed from his leadership with the Delta Task Force, which provided an opportunity for affected parties to comment, meet, and talk about the issues related to the Delta. The Senator talked about how when communities in the northern part of California and the watershed region felt excluded, he helped create the Sacramento River Conservation Forum.

Senator Nielsen expressed his appreciation for the Oroville Citizens Advisory Commission as a forum that serves the community of Oroville and surrounding areas affected by the 2017 spillway incident. People will continue to be prepared for future emergencies and disasters as long as the Commission continues to meet. In his closing thoughts, the Senator emphasized the importance of the Commission as a precautionary effort to protect posterity, and to ensure that future generations will have access to water and remain safe.

Secretary Crowfoot thanked Senator Nielsen for his role in starting the Commission and acknowledged the legacy the Senator will leave for the community of Oroville and the state itself. The Secretary also reminded the Commissioners that they can inform the content of meetings and help set the agenda based on what they think are important concepts to discuss for the public's benefit.

UPDATE ON COMMISSION REPORT

Eva Spiegel of K&W provided Commissioners with an update on the development of the Commission's legislative report.

Ms. Spiegel reviewed the history and purpose of the report stipulated in the legislation. This process began last year in 2021, and in December an outline of the report and timeline were presented to the Commission. She noted that the draft report was posted to the Commission

website two weeks prior to Meeting 12 and that the public comment period ends November 18. The goal is to finalize the Commission Report by the end of this year 2022 or early in 2023.

Ms. Spiegel acknowledged the Commissioners who helped develop the report, Supervisor Bill Connelly, Lieutenant Collins, and Rob Olmstead, Senator Nielsen's chief of staff. She reviewed the report's development and status.

SB 955 requires that the report cover:

- An overview of ongoing maintenance and improvements made to the dam and its site
- A register of communications received from the department and other parties to the Commission
- Notice of upcoming plans made by the department for the dam and its site
- An overview of flood management projects on the Feather River affecting public safety and flood risk reduction

Ms. Spiegel described the report landing page on the Commission website and how to submit public comment using the public comment form.

Secretary Crowfoot asked how the Commissioners will be able to read comments and whether comments would be included in the report. Ms. Spiegel explained that the website includes her contact information to submit input. Comments would be packaged and shared with Commissioners and likely included in the final.

INUNDATION MAPPING PRESENTATION

Michael Bessette, the executive director of SBFCA, provided a presentation on floodplain inundation mapping from the perspective of a stakeholder downstream of the Oroville Dam. He coordinated with DWR staff, along with Supervisor Connelly and Commissioner Bateman, to get an understanding of the inundation maps to convey today at the Commission meeting.

Mr. Bessette began with an overview of SBFCA and its role in providing flood protection in Sutter and Butte counties. He described the agency's history, formation, and SBFCA achievements, including the approximately 45 miles of levee improvements along the Feather River that provides a 200-year level of protection for urban areas.

Mr. Bessette acknowledged the difficulty in understanding inundation maps, especially for the general public. Many assumptions go into inundation mapping efforts, including possible levee failures. Levees are subject to failure, so this must be considered when performing hydraulic models. "Sunny day" scenarios are hydraulic maps or hydraulic models without rainfall or without a lot of other factors bringing additional water into the system.

Mr. Bessette stated that the 2017 spillway incident resulted in many lessons learned. One main concern is the timing of evacuation that may need to happen in the future. For example, staggering waves of evacuation rather than everyone leaving at once might be safer, but it requires further planning conversations. He stressed the importance of understanding the variability of future scenarios associated with local flooding impacts so that people can be directed to safe evacuation routes within a timely manner.

DWR, CDFW, and local stakeholders partnered on the Flood Stage Reduction and Ecosystem Enhancements project. Located in the Oroville Wildlife Area, this project is a nature-based

strategy to reestablish historic floodplains and make the region better prepared for a flood scenario.

Mr. Bessette concluded by saying that SBFCA is seeking construction money for the Flood Stage Reduction and Ecosystem Enhancements project and informed the Commission about coordination efforts with staff to secure funds.

Secretary Crowfoot acknowledged Mr. Bessette's constructive critique that inundation maps are difficult to interpret and understand. He suggested that this be a follow-up conversation topic between DWR and SBFCA, with solutions or outcomes from that conversation brought up at a future Commission meeting.

Director Nemeth commented that legislation passed in 2017 and 2018 sponsored by Senator Nielsen and Assembly Member Gallagher catalyzed DWR and other dam owners and managers directly working together to update inundation maps. Director Nemeth said that there are annual meetings between these entities, the most recent with Butte and Sutter counties having just occurred in October. At that meeting, staff identified State and local agency coordination as an area of necessary improvement in light of the 2017 Oroville Dam emergency. Director Nemeth noted that more conversations need to occur on the topic.

Mayor Reynolds raised the issue of an unclaimed "orphan" levee running through Oroville and multiple jurisdictions with no clear owner. The City of Oroville is interested in adopting the levee from a maintenance standpoint and would like the Commission to consider alleviating the jurisdictional hurdles needed for such adoption. The City's goal would be to manage any trash or contamination issues associated with illegal campers who dig holes in the sides of the levee close to the waterways.

Councilman Pittman then raised the topic inventorying bridges in addition to levees, and the importance of evaluating the structural integrity of bridges to withstand high flooding events.

Supervisor Fuhrer expressed his appreciation for the presentation. He specifically noted Mr. Bessette's discussion about how inundation mapping has historically not fully reflected the realities of flooding scenarios, and that evacuation procedures can be improved in the case of future emergencies. Supervisor Fuhrer asked that Oscar Marin, who heads Yuba County Office of Emergency Services, be involved in the follow-up conversations between the State and local agencies about safe and strategic evacuation protocols.

Supervisor Kimmelshue requested that SBFCA be considered as the lead agency moving forward with a levee inventor and structural management due to the agency's expertise in levee repairment.

Secretary Crowfoot asked that jurisdictional boundaries, levee and bridge management, and associated emergency protocols be added to the list of follow-up conversations outside of the Commission meeting between the City of Oroville, SBFCA, and DWR. Director Nemeth requested that State Parks and CDFW be included in these conversations.

Commissioner Bateman then posed a question about the possibility of inundation maps representing a 180,000 cubic feet per second (CFS) and 200,000 CFS outflow scenario, which nearly occurred in the 1997 flood. Commissioner Bateman requested that whoever at DWR is responsible for inundation mapping commit to examining this level of outflow.

Ted Craddock, deputy director of the State Water Project at DWR, responded that Oroville dam safety modeling has been done for failure of the structure during sunny day events. He noted that the Department would be interested in considering how those analyses could reflect a greater suite of assumptions. This is an opportunity for DWR to have further discussions and collaboration with SBFCA and other partners in the area.

Mayor Reynolds also asked about what the maximum inflow is to Lake Oroville. Mr. Craddock responded that DWR has modeled different types of inflow scenarios including the probable maximum flood.

Secretary Crowfoot noted that these topics of probable extreme inflow and outflow scenarios will be added to the follow-up discussions between agencies to happen before the next Commission meeting.

ATMOSPHERIC RIVER RESEARCH

Jeremy Hill, Manager of the Hydrology and Flood Operations Branch in DWR's Division of Flood Management, provided the presentation on atmospheric river research including the ARkStorm scenario. ARkStorm is an extreme but plausible scenario that includes a statewide series of storms over a month-long period. "AR" stands for atmospheric river, which is a band of moisture in the atmosphere that can produce phenomenal precipitation rates in California. DWR is looking at two different scenarios in ARkStorm 2.0: the historic scenario and the future condition with climate change. This is an update of the ARkStorm 1.0 analysis done in 2011 by the U.S. Geological Survey.

DWR is partnering with multiple research organizations including the University of California, Los Angeles and the Oak Ridge National Lab to evaluate precipitation information, impacts, and consequences over the next few years through statewide inundation modeling. This will help the State plan for future extreme events.

Mr. Hill reviewed a timeline of ARkStorm 2.0 activities, including its relationship with other key DWR programs, including the Central Valley Flood Protection Plan. DWR will continue to collaborate statewide on flood preparedness activities, including conducting meetings across the state and talking to partner agencies about how to best prepare for the flood season and potential extreme events like ARkStorm. Analyzing ARkStorm can help agencies prepare for extreme flood events through inundation map information, which can be used directly in tabletop exercises like those done with SBFCA.

Director Nemeth reinforced the point that the tabletop exercises are done in conjunction with the Governor's Office of Emergency Services, which brings other county-level emergency response services and resources to the local level.

Secretary Crowfoot then asked how the implications of ARkStorm modeling and emergency response relate to the safety activities or infrastructure at reservoirs across the state, including Oroville.

Mr. Hill responded that DWR selected the ARkStorm scenario because although infrastructure cannot be designed to handle such a scenario, evaluating this scenario allows for emergency response planning. As the ARkStorm study progresses, scientists will share key findings to inform and further shape effective emergency response.

Council Member Pittman noted that the 1997 flood scenario involved a four-foot snow event quickly followed by a warm rainstorm that melted the snow within the same afternoon. He requested that the ARkStorm study consider this kind of scenario.

Mr. Hill said DWR is looking to improve forecasting capabilities. A better understanding of snow forecasting will improve understanding of snow melting in conjunction with atmospheric rivers.

Director Nemeth said that there are significant efforts underway to improve forecasting, including new information being developed by the Scripps Institute. Predictive capabilities are improving every year to give agencies more lead time for emergency response.

Secretary Crowfoot noted that a future Commission meeting should include a follow-up ARkStorm presentation with updated science and information because of its relevance to Oroville dam operations and emergency response.

Deputy Director Nezhura asked about probability of weather forecasting, and whether probability for an ARkStorm scenario is calculated for the whole state or individually on a regional level because there could be regions that are more likely to experience atmospheric rivers than others.

Mr. Hill said that DWR will investigate these details as the study progresses. DWR has not yet looked at the reverse interval probability.

Mayor Reynolds added that DWR should be aware of the variability of snowstorm events in these modeling efforts.

OROVILLE DAM WINTER OPERATIONS UPDATE

John Leahigh, State Water Project water manager at DWR, gave the winter operations update. Mr. Leahigh explained that Water Year 2022 included both extreme wet and extreme dry months, leaving Oroville storage slightly better than last year but still below average. October through December 2021 provided record precipitation. Then January through March 2022 were the driest on record. DWR is planning for a fourth consecutive dry year and will continue preparing for extreme weather events.

Mr. Leahigh explained that there will continue to be storage opportunities built into Oroville operations for flood control purposes. Storage is currently two-thirds of the average for this time of year. This storage level is better than last year at this time, but not where we would like to see it. DWR is working closely with local rice growers to balance their conservation needs with the needs of migratory birds on the Pacific Flyway in 2023.

DWR has funded additional Airborne Snow Observatory flights for this winter, which will gather spatial distribution data of snowpack for improved prediction efforts forecasting capabilities. The Forecast-Informed Reservoir Operations (FIRO) program will also continue, and a progress report will be coming out in about a month. The end of calendar year 2023 will be the end of the FIRO program, which will inform the U.S. Army Corps of Engineer's Water Control Manual update process.

Secretary Crowfoot noted that if there is another wet winter, the Commission could call a special meeting (for the public and local officials) so that everyone is made aware of how the reservoir is being operated.

Supervisor Kimmelshue asked about lake level prioritization based on downstream agricultural and fish needs, and whether electricity generation is a consideration when making decisions about lake levels.

Mr. Leahigh said that while electricity generation is important, it is not in itself the primary driver of decisions around where to maintain minimum lake levels. The primary driver is the need to maintain adequate outlet capacity to meet all the needs downstream in the Delta, in the river, and for local rice farmers.

Secretary Crowfoot added that power generation was able to occur this past summer, even with low lake levels.

PUBLIC COMMENT

A Yuba City resident addressed the Commission. He stated that the Comprehensive Needs Assessment examined the question of whether the current spillway has the capacity to pass the probable maximum flood, which is currently 743,000 CFS coming into Lake Oroville. He also stated that the main spillway can handle 280,000 CFS, and he stated further his view that the capacity of the emergency spillway is uncertain. The public commenter listed several reasons that he has concern with the currently predicted probable maximum flood. The public commenter asserted that there is an opportunity for improved analyses for the safety of Oroville Dam's facility and the public below.

The public commenter proposed the inclusion of ARkStorm projections at 50 percent more precipitation, with 20- to 30-day durations, increased frequencies all be taken into consideration when calculating the spillway capacity to survive an ARkStorm, and to include this as a presentation topic at the next Commission meeting. They talked about how a 200-year storm will become a 70-year storm and a 500-year storm will become a 160-year storm.

Secretary Crowfoot thanked the member of the public for his comments and diligence in attending and providing comment at the Commission meetings. The Secretary also thanked the DWR team's efforts in addressing the concerns of the public commenter and other Commission meeting attendees, noting DWR's contribution to bridge communication and information between the public and decision makers.

Secretary Crowfoot acknowledged the alarming nature of ARkStorm, but that many people are working hard to address future flood scenarios and emergency response in light of climate change. The Secretary said that DWR's ARkStorm updates can inform real planning and infrastructure improvements for worst-case scenarios and asked that DWR staff make themselves available for further conversations around the topic.

The public commenter then expressed a desire for important topics to be confronted and not ignored. Secretary Crowfoot acknowledged the public commenter's desire, noting that having these side conversations offline and bringing back the summary to the Commission meetings will achieve this.

ADJOURNMENT

Secretary Crowfoot thanked Senator Nielsen once more for his role in establishing the Oroville Citizens Advisory Commission. Senator Nielsen thanked everyone for their participation. The

Senator acknowledged the hard work other Commissioners and State agency staff have dedicated to this forum and other emergency planning efforts.

Secretary Crowfoot adjourned the meeting.