Stakeholder Questions and Concerns for the Yuba-Feather Water Control Manual Update
(Submitted May 2nd 2025 to California Natural Resource Agency)

USACE Questions A1a) - When the 1970 SPF was developed, was it considered a 1/500 year flood event?

USACE Response: Per Oroville's basis of design, the Standard Project Flood (SPF) functioned as the Reservoir Design Flood event which was equivalent to ~ 150 AEP. The SPF established the amount of flood space required to pass the SPF without exceeding the 150,000 cfs d/s objective flow target on the Feather River.

A2a) - If Oroville dam was constructed today, could USACE exercise their full regulatory authority and require a return frequency of 1/500 yr event for its flood requirement?

USACE Response: If a dam was constructed today, current, relevant authorizations, policies, and procedures would be followed to construct and operate the structure.

A3a) - With the regulators acting as the lead agency in Orovilles WCM Update, could they exercise the full power of their current regulations and seek to achieve a similar level of flood protection?

USACE Response: Public safety is our highest priority. As part of the WCM Update, all relevant USACE Engineering Regulations (ERs) will be followed.

A4a) - Has the regulator already entered into non-mandatory agreements with the dam owner that could compromise flood safety or inject additional uncertainty such as; soil wetness index, start of spring refill, bottom of the FIRO Space, water storage recovery, or only current infrastructure required? If so please explain.

USACE Response: No. Public safety is our highest priority. As part of the WCM Update, potential alternatives will be evaluated based on flood control operations. Water Supply benefits may be considered as a secondary consideration after flood control operations objectives have been met. Water supply/delivery operations are not included in the WCM. As part of the WCM Update process, it will be evaluated if soil wetness index calculations and/or snowpack forecasts will be used to determine flood pool requirements at Oroville Dam. The authorizations for both New Bullards Bar Dam and Oroville Dam are not changing; therefore, the size of the authorized flood space is also not changing.

USACE Question A4a) - Should the results of the 2029 FERC Part 12 Inspection require DWR to adapt one of the CNA plans, thus improving Oroville's release capacity, could the new water control manual be easily adapted after construction, to further improve Oroville's flood operations?

USACE Response: Structural changes to a dam that could impact operations would need an updated Water Control Manual.

A4b) - Could the bottom of the FIRO Space be adjusted to pre-release more stored water?

USACE Response: The authorizations for both New Bullards Bar Dam and Oroville Dam are not changing; therefore, the size of the authorized flood space is also not changing. The sizing of the FIRO space will be a part of the WCM Update process.

A4c) - Would a release diagram for the new Low-Level Outlet need to be created?

USACE Response: Water Control Diagrams do not typically distinguish which outlet water should be released from during flood control operations and are not shown on the Water Control Diagram. Emergency Release Spillway Diagram will describe operating the gates on a gated spillway.

A4d) - Or would these changes require a NEPA process and congressional funding?

USACE Response: Any potential changes to the structure and operations would need to go through the NEPA process. Any updates to the WCM and/or the structure would need authorizations and appropriations.

A5a) - What's the best solution to coordinate the goals of FERC and USACE, both working on 50 year update processes at Oroville, on somewhat similar mandates, spillway capacity to pass the PMF and SPF, but on different timelines?

USACE Response: It is not a direct collaboration between FERC and USACE when updating the WCMs, however, Engineering Regulation (ER) 1110-2-240 Water Control Management requires that "[T]he revised water control plan for non-USACE projects must be in compliance with any other applicable federal laws, FERC (Federal Energy Regulatory Commission) license, and any other operating agreements related to that project." Official FERC license agreements will be considered when updating the WCMs. Work in progress from FERC may be considered when updating the WCMs.

USACE Question A5a) - Aside from using 1986 and 1997 historic floods for evaluating operational performance, could previous storms with snowmelt driven inflows be modeled and scaled so these hydrographs with 350,000 af flood pools (top of the soil wetness index) could be used to evaluate the performance of the wetness index, during the water control manual update process?

USACE Response: The wetness Index parameter in Oroville WCM is computed daily from the precipitation gages throughout the watershed. The wetness parameter calculation is weighted by taking the previous day's parameter and multiplying it by 97-percent and adding the current day's precipitation data in inches. The wetness parameter considers accumulated rain and snow in the watershed and provides a current state of the watershed – dry or saturated. The wetness parameter, by providing the current state of the watershed, will give an indication of how water

may behave during an event. If the watershed is dry, most of the precipitation during an event will be absorbed into the ground and some of the precipitation during an event will end up in the reservoir. In dry conditions, the reservoir does not need a larger amount of flood space to absorb the event. If the watershed is saturated, a smaller amount or none of the precipitation will be absorbed into the ground and most or all the precipitation will end up in the reservoir. In saturated conditions, the reservoir does need a larger amount of flood space to absorb the event.

Typically, before large flood events, the maximum flood space of 750,000 ac-ft is required because of the precipitation leading up to the large flood events because of the magnitude of the wetness index. Large precipitation events are typically preceded by smaller events that saturate the watershed and increase the value of the index. Snowpack alone does not influence the wetness index.

For the FVA, flood simulations of the current water control plan, a wetness index value calling for the maximum flood space was used. This results in the largest flood peak reduction. If the value was less, and less flood space was available, then peak flows would be higher. For the WCM evaluation, all the historical events for approximately the last 100 years will be simulated (period of record simulation). These historical events are simulated using the historical wetness index that changes each day. Thus, this assumption of maximum flood space with the large inflows is not necessarily assumed; rather the top of conservation, which sets the required flood space, will be driven by the historical wetness index for that day.

A5b) - If the results of these hydrographs further reduces the flood protection, creates additional risk due to forecast uncertainty or increases the duration of downstream levee saturation, could a more comprehensive approach for Spring Refill be developed during the WCM update process?

USACE Response: The wetness index is computed the same way year-round; the same computations are done the spring as in the winter. Thus, the same limitations of the current wetness index exists. The opportunity in the water control manual update is to consider a new indicator of required flood space that accounts for not only the previous rainfall, but all the current snowpack and the forecasted runoff from that snowpack and forecasted precipitation. The period of record simulation will cover high flow events in the summer and the spring. Public safety is the USACE highest priority, thus year-round flood evaluation is an important part of the analysis.

A6c) - Assuming ID4 (Interative) is the selected plan could a “seasonal” lower priority rule in the HEC-ResSim rule stack help achieve end of season water benefit instead of the firm-ruled and risky approach the Soil Wetness Index would limit operators to?

USACE Response: Public safety is our highest priority. As part of the WCM Update, potential alternatives will be evaluated based on flood control operations. Water Supply benefits may be considered as a secondary consideration after flood control operations objectives have been met. Water supply/delivery operations are not included in the WCM. Refer to DWR and Yuba Water for water delivery operations for ORO and NBB.

USACE Question A7a) - In a previous response to this, it was stated that “as part of the

WCM update process, levee data will be collected and used as evaluation criteria for alternatives.
What levee data will be collected that mirrors the requirements of ER 110-2-1913?

USACE Response: As part of the WCM Update process, levee fragility curves and other relevant data will be collected and will be used as evaluation criteria for alternatives.

A8a) - Are there any viable options to help reduce the rapid drawdown rate caused by uncontrolled tributaries that could help reduce the downstream levee's susceptible to slope slouching following long duration of saturation?

USACE Response: Ramping up/down rates for both New Bullards Bar Dam and Oroville Dam are found within their respective WCMs. Downstream conditions are considered when determining ramping up/down rates of change for dams. During real time operations, downstream conditions are considered when making release decisions.

USACE Question A9a) - Could a period of record water storage benefit analysis be conducted for various situations such as; 813 ft elevation as bottom of the FIRO Space at Oroville,
with / without use of Oroville's proposed wetness index, with / without March 1st spring refill?

USACE Response: During the WCM Update process, a full POR evaluation will be conducted to access the impacts of the proposed alternatives during the NEPA process.

A9b) - Could the findings be available before the final selection of the alternative plan to help advise just how much flood risk should be taken for the benefit of water delivery?

USACE Response: As part of the WCM Update, potential alternatives will be evaluated based on flood control operations. Water Supply benefits may be considered as a secondary consideration after flood control operations objectives have been met. Water supply/delivery operations are not included in the WCM. Refer to DWR and Yuba Water for water delivery operations for ORO and NBB. A draft WCM and draft NEPA document will be available for public review before final selection of an alternative.

USACE Question A10a) - Assuming the ID4 (Interative) plan is adapted, could a suggested downstream flow that's short of triggering community evacuations be incorporated into the HEC-ResSim rule stack and assigned a lower priority?

USACE Response: Public safety is our highest priority. As part of the WCM Update, potential alternatives will be evaluated based on flood control operations.