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REPORTER'S TRANSCRIPT OF ZOOM PROCEEDING

FRIDAY, MAY 28, 2021

10:00 A.M.

OROVILLE DAM CITIZENS ADVISORY

COMMISSION MEETING

HOSTED BY THE CALIFORNIA NATURAL RESOURCES AGENCY

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Reported by: ANN R. LEITZ, CSR NO. 9149

ROLL CALL

- 1
- 2 Lieutenant Collins
- 3 Supervisor Connelly
- 4 Supervisor Conant
- 5 Secretary Crowfoot
- 6 Deputy Director Curry
- 7 Supervisor Fuhrer
- 8 Assemblyman Gallagher
- 9 Captain Million
- 10 Director Nemeth
- 11 Senator Nielsen
- 12 Councilmember Pittman
- 13 Superintendent Teague
- 14 Genoa Widener

15

16 ALSO PRESENT:

17 Nick Saffold, Kearns & West

18

19 PRESENTERS:

20 Sharon K. Tapia, P.E., PMP

21 David Sarkisian, P.E., CEG

22 Dr. Rune Storesund, P.E., GE

23 Eric Halpin, P.E.

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AGENDA

- Item 1: Welcome and Introductions
- Item 2: Action Items & Roadmaps
- Item 3: Dam Safety Program: Regulatory Perspective
- Item 4: Dam Safety Program: Public Safety Perspective
- Item 5: Risk Assessment
- Item 6: Spillway Cameras
- Item 7: Public Comment
- Item 8: Adjourn

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1 PROCEEDINGS

2 Thursday, May 28, 2021, 10:00 a.m.

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4 NICK SAFFOLD: Good morning, everyone. We're going to
5 get started. I'm Nick Saffold with Kearns & West. I'm going
6 to be helping support today's meeting. In just a minute, I'm
7 going to turn it over to Secretary Crowfoot. But I just
8 wanted to run through a few instructions and then do a quick
9 Roll Call.

10 Today's meeting is being held in a virtual format in
11 accordance with California Executive Orders to protect public
12 health during Covid 19. There's going to be time for public
13 comment and questions following today's presentation.

14 Today's meeting is being conducted over a Zoom webinar
15 and it's being recorded. The complete virtual meeting guide
16 with these instructions can be found on the Citizens Advisory
17 webpage. If this resource does not address your issues, our
18 colleague, Eva Spiegel, is available during the meeting to
19 help you troubleshoot. You can reach Eva at 530-400-9608.
20 You can also ask technical questions by clicking on the icon
21 on the bottom of your screen and submitting a question.

22 The Commissioners as well as the experts presenting
23 today will be able in "Presenter" mode, and Commissioners will
24 be able to mute and un-mute themselves to ask comments and
25 make questions, ask questions. Members of the public will be

1 muted and in listen-only mode until we reach the public
2 comment period.

3 And now I'm just going to describe a few of the ways
4 that you can make public comment over the Zoom platform.
5 There's two ways that you can ask a question. You can raise
6 your hand on the Zoom platform within that icon, which should
7 be located at the bottom of your screen. If you do that, the
8 Webinar Host, Justin, will call on you and un-mute you so you
9 can speak. And then, if you wish to submit a written question
10 or comment to be read for you, you may click on the "Q&A" icon
11 at any point during the meeting. That icon can also be
12 helpful for any kind of troubleshooting. If you're
13 participating by phone instead of Zoom, you just need to press
14 "#2" to raise your hand to speak during the Public Comment
15 period. You also may have to un-mute your phone manually, so
16 just be mindful of that. And then each speaker will have
17 about three minutes, and your time should be shown on a timer
18 on the screen.

19 Again, this meeting is being recorded and a transcript
20 will be posted at a later date on the Citizens Advisory
21 Commission webpage.

22 So now I'm just going to do a quick roll call, so,
23 Commissioners, if you wouldn't mind just un-muting yourselves,
24 and then when I call on you, say "here" or "present."

25 Lieutenant Collins, are you with us?

1 LIEUTENANT COLLINS: Here.

2 NICK SAFFOLD: Supervisor Connelly?

3 SUPERVISOR CONNELLY: Here.

4 NICK SAFFOLD: Supervisor Conant?

5 SUPERVISOR CONANT: Present.

6 NICK SAFFOLD: Secretary Crowfoot?

7 SECRETARY CROWFOOT: Here.

8 NICK SAFFOLD: Deputy Director Curry?

9 DEPUTY DIRECTOR CURRY: Here.

10 NICK SAFFOLD: Supervisor Flores? Supervisor Flores,
11 are you with us?

12 Supervisor Fuhrer?

13 SUPERVISOR FUHRER: Here.

14 NICK SAFFOLD: Assemblyman Gallagher?

15 Supervisor Kimmelshue? Supervisor Kimmelshue, are you
16 with us?

17 Deputy Licon? Deputy, are you with us?

18 Captain Million, are you here?

19 CAPTAIN MILLION: Here.

20 NICK SAFFOLD: Director Nemeth?

21 DIRECTOR NEMETH: Here.

22 NICK SAFFOLD: Senator Nielsen?

23 Councilmember Pittman? Councilmember, are you with
24 us?

25 Mayor Reynolds?

1 Lieutenant Stokes, are you with us?

2 Superintendent Teague?

3 SUPERINTENDENT TEAGUE: Here.

4 NICK SAFFOLD: Supervisor Vasquez? Supervisor, are
5 you with us?

6 And Genoa Widener?

7 GENOA WIDENER: Here.

8 NICK SAFFOLD: Thank you. A few folks might be
9 joining late, but we'll keep rolling here. Is there anyone
10 that I missed? Or anyone that is off mute?

11 COUNCILMEMBER PITTMAN: I'm here; Pittman.

12 NICK SAFFOLD: Councilmember Pittman, thank you.
13 Okay, great.

14 James, we can go to the next slide, please. Great.

15 Secretary, I'm going to turn it over to you now.

16 SECRETARY CROWFOOT: Great. Well, thanks, everyone,
17 for joining what is our seventh Meeting of this Commission.
18 As always, thanks for taking the time from your busy days to
19 participate. We're, obviously, meeting virtually once again
20 for this meeting, but given where we're at as it relates to
21 returning toward normal life, I am confident that we'll be
22 back in person meeting as a Commission up in Oroville later
23 this year.

24 We have two-and-a-half hours for today's discussion,
25 so we'll conclude by 12:30. We've got a good, packed agenda

1 today. We'll get a quick update on Commission Meeting, the
2 Roadmap for Commission Meetings from here, and specifically
3 our Action Item Tracker, which was a suggestion made in a
4 previous Council Meeting -- or Commission Meeting to actually
5 track the actions that we're discussing in these meetings to
6 ensure that they happen.

7 We have a series of Dam Safety Program presentations
8 from DWR. Importantly, we'll also hear a presentation on Risk
9 Assessment, one from Dr. Rune Storesund, who was a
10 Comprehensive Needs Assessment Ad Hoc community group member;
11 and one from Eric Halpin, Consulting Engineer, who spent most
12 of his career with the U.S. Army Corps of Engineers in the
13 Risk Management Program at the Army Corps prior to going into
14 private consulting. So both Rune and Eric will have an
15 opportunity to provide their separate independent perspectives
16 from Department of Water Resources. We'll have an opportunity
17 to ask questions as well.

18 And then we'll discuss the status of the Spillway
19 Cameras. We heard loud and clear from Assemblymember
20 Gallagher around the concern of taking out those temporary
21 cameras. So I think DWR is going to share some good news on
22 that front.

23 Lastly, we'll have Public Comment.

24 Before we get into the agenda, I think it's helpful
25 for me to see if Karla Nemeth, who, of course, directs our

1 Department of Water Resources, has since joined the meeting to
2 give an update on drought and what it actually means for
3 Oroville.

4 DIRECTOR NEMETH: Thank you, Secretary, and I'll be
5 brief. It's good to see all the Commissioners and the public.
6 This is just a really important public touchstone for the
7 Department. And, certainly, we're all experiencing the
8 drought, and I wanted to give you all just a brief update of
9 where lake levels sit at Oroville, what we project for the
10 summer. We do have a community electronic newsletter that
11 goes out periodically so you can get more information there
12 or, certainly, reach out to my office.

13 As you all are probably well aware, it has been the
14 driest two years in the Feather Watershed since the mid-1970s,
15 so we are drier than 2014/2015 in this part of the state.
16 Right now, the Oroville sits at just below 50 percent of
17 average for this time of year. Right now, total releases out
18 of Oroville are about 1800 cubic feet per second, and we are
19 really managing those releases to do a couple of things. One
20 is to meet water quality regulations downstream and the other
21 is to make sure that we are getting enough water in the river
22 for fisheries management. We are keeping the low-flow channel
23 above 600 cubic feet per second. That's really important for
24 salmon and steelhead. So there's regular coordination
25 happening between DWR, the Department of Fish and Wildlife and

1 federal biologist about how to best manage those things.

2 For our Feather River Settlement Contractors, the rice
3 growers up here, they are at 50 percent of their contracted
4 amount, which is what happens when we get into these
5 critically dry conditions. We are not exporting water from
6 the bank's pumping plant to customers in the Central Valley or
7 Southern California. All that export water is coming from
8 water that's currently stored in San Luis Reservoir that was
9 stored there over the last couple of years, with the one
10 exception, there is a small amount of pumping that feeds parts
11 of the Bay Area, but that's how we will continue to operate
12 throughout the summer. We are working with the Water
13 Resources Control Board about how to balance carryover storage
14 in Oroville, so how much we keep in Oroville as a hedge
15 against a dry year next year, as a need to deal with
16 endangered species issues and water quality conditions down in
17 the Delta. So this is a year when the State Water Contractors
18 are relying on stored supplies to meet their water needs
19 because it is so dry.

20 Lastly, I'll close on lake level, because I know
21 that's really important to community members up here,
22 recreation. So essentially where we are this year, of course,
23 is low, low, low. We do believe that as the lake level
24 continues to drop, it is going to start to impact some of our
25 boat launch facilities between Memorial Day and the Fourth Of

1 July holiday, particularly, at Lime Saddle and at the spillway
2 and then at Loafer Point. The Bidwell Canyons, we've got a
3 stage-three boat launch and we anticipate those to remain open
4 through early July. Typically, what we do when we get these
5 really dry conditions is an opportunity for the Department to
6 extend boat launch deeper into the fluctuation zone of the
7 reservoir. Obviously, you can't construct when you're under
8 water. But this is an opportunity for us to build facilities
9 that enable those boat launch ramps to be functional even
10 during drought periods. And that's what we'll be looking at
11 this fall and winter, particularly, if it remains dry. And I
12 would say all of this is a way in which the Department is
13 looking to maintain all the benefits of this facility,
14 particularly the important recreation benefits to this
15 community, even as we have a deeper fluctuation, if you will,
16 given the pressures of climate change. So, you know, the
17 flood management, which I think we'll probably hear a little
18 bit more about flood and dam safety, but, also, when it's very
19 dry, you know, what are the things we can be doing to maintain
20 recreation benefits when the lake level drops so low?

21 I'll stop there. Thank you for indulging me,
22 Secretary. Perhaps, I'll just say I do need to step out at
23 11:15 to handle some drought issues. Chief Deputy Director
24 Cindy Messer is here, and she will represent the Department
25 here on the dais. So thank you.

1 SECRETARY CROWFOOT: Thanks so much, Karla.

2 Matt Teague, I'm not sure if you are on the line?

3 Yes, you are. I wanted to ask you if you had any other
4 discussion -- anything you wanted to add? You lead the State
5 recreation area at the lake, around the lake. Anything you
6 want to add on the impact of drought and recreation that you
7 want to share publicly here.

8 SUPERINTENDENT TEAGUE: I think Director Nemeth hit
9 most of the topics when it comes to the developed boat ramps.
10 A topic in the news and the media that most people have
11 probably seen is the houseboat removals. And we have been
12 working with boats and the marinas and the new owners there in
13 removing the necessary houseboats to accommodate the capacity
14 that is appropriate for these projected lows.

15 As hard as it is on these houseboat owners, the
16 process has actually gone somewhat smooth based on the
17 volunteer process that the marina came up with. So they have
18 removed the houseboats at this time. They are staged in most
19 of the parking lot areas that we have up at the stage one
20 facilities, and they will continue to be housed there until we
21 look at a better rainfall of a situation in the watershed.

22 SECRETARY CROWFOOT: Great. Just because drought is,
23 obviously, top of a lot of people's mind, I want to make sure,
24 I want to see if any Councilmembers have any questions of
25 Karla or Matt in terms of how the reservoir is being operated

1 or its impact on the local community. Okay, then. Moving on,
2 I'll just -- Sorry; Captain?

3 CAPTAIN MILLION: Thank you. The only question I have
4 is talking about, like, the recreational that's come up in
5 question in our agency because we have three lakes -- or four
6 lakes; King Collins, Boars(phonetic), portion of Englebright
7 and Camp Far West. We're seeing a pretty significant
8 influence, especially with Folsom limiting to five mile per
9 hour. Didn't know if some of the public facilities were going
10 to be potentially closed in the future? Because, obviously,
11 that is going to have a residual trickle down effects to the
12 surrounding communities and lakes, and, obviously, that's
13 going to increase our influx of boaters and recreational use
14 and could have an impact on our ability to provide, you know,
15 how much more public safety, where is it going to go to. I
16 don't know if that's been considered or not?

17 SECRETARY CROWFOOT: Matt, do you want to take that?

18 SUPERINTENDENT TEAGUE: Yeah, as Director Nemeth said,
19 we're looking at the beginning of July sometime where we're
20 going to basically lose most or all of our developed concrete
21 boat launch facilities. So the discussions have been taking
22 place where we're looking at other lakes in the area that have
23 higher levels and facilities in the water. We're assuming
24 there is going to be increased visitation going to those
25 reservoirs.

1 SECRETARY CROWFOOT: Your point is there just won't be
2 ways to access the lake, but not that the lake is going to
3 close, per se?

4 SUPERINTENDENT TEAGUE: Well, we do -- I'll let DWR
5 speak to this, but we do -- there are a couple of primitive
6 facilities that are four-wheel drive only that the public
7 can't access the lake. But, yes, it becomes very limited at
8 Lake Oroville for boating access.

9 SECRETARY CROWFOOT: Got it. Assemblymember, thanks
10 for doing double duty. I know you just got out of a
11 legislative hearing, and you're actually probably -- looks
12 like you're outside? Welcome. Looks like you have a question
13 or comment?

14 ASSEMBLYMAN GALLAGHER: Yeah, I realize I kind of
15 missed the beginning here. I just stepped off the floor, and
16 I'm going to try and be in and out here as I can.

17 Obviously, the important work that we're doing here
18 with the Commission continues, and I just -- you know, as an
19 introductory statement, I just want to say I'm, you know,
20 looking forward to the presentation today. I have looked at
21 Rune's report and I think he raises some very important issues
22 that we should be looking further into and seeing how we can
23 implement those things. And there's some recommendations that
24 I think we should pay very close attention to, you know, not
25 just today, but through our future work. So I wanted to

1 outline that.

2 I realize we're in a very tough situation right now
3 when it comes to the drought and this very dry season. A lot
4 of things that people didn't anticipate have come to
5 transpire. I mean, maybe just one quick question to Karla, or
6 whoever can answer, you know, I get this question a lot is why
7 is it that, you know, a lot of our northern reservoirs seem to
8 be at their lowest point ever historically but, you know,
9 people look at maps and they see that the Southern California
10 reservoirs are, you know, full? What is the reason for that
11 and can there be some explanation as to why that might be the
12 case?

13 SECRETARY CROWFOOT: Great question.

14 I'll just mention Senator Nielsen is also in a
15 legislative hearing and he's also going to join when he's out
16 of that.

17 Over to Karla.

18 DIRECTOR NEMETH: Thanks, Assemblymember, for bringing
19 that question. So what's happening in our system today, as I
20 think a lot of folks are aware, most of our storage is in the
21 form of snowpack. And as few as six weeks ago, we had about
22 70 percent snowpack on average across the Sierra. Although,
23 the Feather Watershed, I will say, was particularly dry this
24 year.

25 But what happened in those intervening weeks was

1 record temperatures and very dry soils from the preceding dry
2 year, and I think what we're really seeing is this steady
3 increase in ambient air temperature which is really drying out
4 the soils. So within that six-week period, we went from
5 70 percent snowpack to two percent snowpack. I think it's
6 actually down to zero as of last night, and very little
7 runoff. So that's the key, is we had the snowpack, it melted,
8 and it seeped into the ground because of the dry soils, but
9 also evaporated because of the warm temperatures. And so,
10 that has been a game changer for us. We've never seen that
11 kind of rapid snow melt in California before, particularly
12 during the month of April. So we are making adjustments to
13 our forecasting models so that we can understand that better.

14 As it relates to Southern California, so, certainly,
15 reservoirs in Southern California, they're capturing rainfall.
16 And it hasn't actually been as dry this year in Southern
17 California in terms of precipitation. But they do use those
18 local reservoirs to store water that they move when it's wet.
19 So water that's now in Southern California reservoirs is water
20 that was moved in 2017 and 2018. So, Assemblyman, probably,
21 from -- you may have missed my opening comments.

22 Last year and this year, we did not meet State Water
23 Contractor water supply needs out of Oroville. All the water
24 that DWR supplied to those contractors was from water that had
25 been stored in San Luis from 2017 and 2018. They take that

1 water and they move it down to their local reservoirs and they
2 store it there. That's really important, because in a year
3 like this one, the water that we have in Oroville is needed to
4 meet our Feather River settlement contractors, which are the
5 local rice growers, but also needed to meet fishery needs and
6 water quality needs elsewhere within our system.

7 So that's how the system is working, but that is
8 essentially why you see this -- you see this depletion of
9 reservoirs in the northern part of the state, very dry,
10 historic snow melts acceleration and historic low runoff into
11 the reservoirs, and that's what's creating this scenario.

12 SECRETARY CROWFOOT: Thanks so much, Karla.
13 Supervisor?

14 SUPERVISOR CONNELLY: I have two comments. One is in
15 past history, before dams, the environment caused droughts to
16 occur and fish suffered. It seems like we're so worried about
17 keeping the Delta flushed out and helping the fish that we're
18 throwing all our local recreation under the bus, and I think
19 there should be more compromise on that and ability to hold
20 water for recreational use. It's having a huge impact on us.

21 The second thing is, I have a question. I have
22 houseboat people that, you know, put their family savings into
23 their houseboat and is a way to recreate with their families,
24 and they cannot afford to remove their houseboat nor store it.
25 Is there some way to give them assistance? We're talking

1 working families here that are contacting me and they don't
2 know -- they may have to sell their boat or do something.

3 SECRETARY CROWFOOT: Thanks, Supervisor. I'll just
4 take the first question, which is, you know, thank you for
5 emphasizing just how important the recreation is and how much
6 of a blow it is when residents can't actually use that. I
7 think we take that really seriously.

8 Karla mentioned, you know, all of the operational
9 changes that are being made for the State Water Project. Most
10 importantly, from my perspective, with the State Water
11 Project, we have to actually allow enough water to flow down
12 the rivers into the Delta to protect that drinking water
13 source from being fowled with salt water. If we lose control
14 of that salinity protection, we'll lose drinking water for
15 upwards of 27 million Californians, two-thirds of
16 Californians.

17 So I don't think we consider an either/or, and we do
18 want to understand how we can limit impacts on recreation.
19 But I can't stress enough how important it is the decisions
20 that Director Nemeth and DWR are making right now to protect
21 the water supply for upwards of two-thirds of California.

22 On the question of houseboats and for families that
23 are in a really bad way actually having to take their
24 houseboats out, Superintendent Teague, Matt, thoughts on that
25 or turn it over to anybody from DWR?

1 SUPERINTENDENT TEAGUE: I would like to start off and
2 say that we definitely sympathize for not only the houseboat
3 owners, but, also, the private business owner of the marinas.

4 We also recognize that with all the incidents that
5 have happened here at the lake and over the years, houseboat
6 owners have been cut off from access to their boats. You
7 know, the last drought where we had to remove houseboats and
8 the marina had to remove houseboats to satisfy the capacity
9 needs. The spillway incident, the Camp Fire, the recent North
10 Complex fire, and even COVID-19, when we had park closures,
11 and trouble for houseboat owners to access. So it has really
12 been quite an impactful five or six years for these folks, and
13 we do sympathize for that.

14 The reality is, is that with these drought conditions
15 we've never seen before and these extreme lows, we have to
16 look at the reality that future capacity of the number and
17 quantity of houseboats that are out there, it's, you know, it
18 is somewhat unrealistic. So we're working through that to try
19 to manage with the concession owner of what is that realistic
20 number to try to avoid these unforeseen conditions and these
21 unfortunate conditions for these recreation houseboat owners.

22 SECRETARY CROWFOOT: Thank you. Turning over to
23 Supervisor Conant.

24 SUPERVISOR CONANT: Yeah, very quick. Karla answered
25 some of the questions that I had. But one last question is

1 what is, if any, inflow presently into the reservoir?

2 DIRECTOR NEMETH: Ted Craddock, I think you're on the
3 line. Do you have that information?

4 MR. CRADDICK: Karla, I'll ask John Leahigh, who is on
5 the line, to maybe speak more specifically to inflow and
6 outflow currently. John, can you answer that question?

7 JOHN LEAHIGH: Yes, yes, I can, if I can find the mute
8 button here.

9 Currently, the inflows are just a little less 2,000
10 CFS coming into the lake, so that's -- you know, that's
11 extremely low for this time of year, as Karla had mentioned
12 earlier. The efficiency of the snowpack was only 20 percent.
13 We only saw 20 percent of the water content of the snowpack
14 actually come into the lake this year, which was something
15 really unheard of. We've never seen that sort of low
16 efficiency on the inflow from snowpack.

17 SECRETARY CROWFOOT: Thanks, John. I want to move us
18 along. I have one more just update, which is the Legislature
19 and the Governor are considering next year's state budget, and
20 I want to update on the Governor's May Revision Proposal.

21 So the Governor typically introduces a budget in
22 January, the Legislature considers it and passes the budget by
23 June. Every May, the Governor's office sends a revision of
24 its proposed budget. Typically, it's tweaking around the
25 edges based on how revenues came in. Well, as a result of

1 very strong economic recovery as well as federal stimulus, we
2 have significant one-time funding. So the Governor proposed
3 actually five billion dollars of funding to build the State's
4 water resilience, both our drought resilience and our flood
5 resilience. And so, there are some -- from our perspective,
6 anyways, in the Governor's administration -- some really
7 important investments including more funding for the Forecast
8 Informed Reservoir Operations that we've talked about in the
9 past in an effort to really, you know, finish that process for
10 Oroville.

11 There is a specific proposal that I want to just ask
12 Ted to briefly overview because it addresses Oroville, and it
13 would be a proposed 200-million-dollar investment in some
14 improvements that would allow for more power generation out of
15 the Hyatt Powerplant.

16 So, Ted, don't take us too deep in there, but I just
17 want people to be aware of what was proposed.

18 MR. CRADDICK: Yeah, sure will. Thank you, Secretary.

19 So as you all recall, last summer we had a couple of
20 extreme heat wave events that resulted in, you know, power
21 outages across the state and really highlighted the importance
22 of adding additional power resources to the State's overall
23 electric grid.

24 One of the things we used to do at Lake Oroville in
25 the Oroville facilities was operate the complex in what we

1 call "pump storage mode." And so, it's a way that allows Lake
2 Oroville and the Thermalito Afterbay Facilities to provide
3 additional power generation at peak times of the day when
4 energy use is at the highest demand locally and throughout the
5 state.

6 And so, with the Governor and the Secretary's support,
7 there is a proposal to provide 200 million dollars for us to
8 make improvements at the Oroville facilities to allow
9 resumption of the pump storage operations. We suspended those
10 operations primarily because we were having difficulty meeting
11 the cold water temperature requirements for the fishery, and
12 through some changes we can make to the plumbing of the
13 Oroville facility system, it will allow us to meet the
14 objective of Fishery targets, plus also resuming the pump
15 storage operation to allow additional energy generation to
16 support the local electric grid and the state electric grid.

17 SECRETARY CROWFOOT: Thanks so much. So we can go
18 deeper into that offline if there are Commissioners with
19 questions. And, Ted -- I should say if anybody has questions
20 or wants more information on that they should just let us know
21 and we'd be happy to organize that discussion.

22 I want to move us on and -- let's see. I just want to
23 make sure -- here's what I'm going to suggest, Nick, typically
24 -- or I should say in our Agenda as the next item we have
25 talking about the Actions Tracker and Roadmap. If we can,

1 Nick, and if it's appropriate, I would like to postpone that
2 and get right into the Dam Safety Discussion, because I want
3 to make sure we have enough time for that, given that's kind
4 of the core of the meeting here today.

5 Nick, unless you interrupt me and stop me and tell me
6 we can't do that, let's move to Item No. 3, which is the Dam
7 Safety Program for this Regulatory Perspective and the
8 oversight measures in place, and turn it over to Sharon Tapia,
9 who leads the Department of Water Resources Divisions for the
10 Safety of Dams, what we know as DSOD.

11 NICK SAFFOLD: That sounds great, Secretary.

12 SHARON TAPIA: Thank you very much. First slide,
13 please.

14 So good morning. My name is Sharon Tapia, and I'm the
15 Chief of the Division of Safety of Dams, more commonly known
16 as DSOD. It is my pleasure to share with you today an
17 overview of the California Dam Safety Regulatory Program.

18 The mission of the program is to reduce life loss and
19 property damage from an uncontrolled release of water
20 resulting from the failure of a dam or its and appurtenant
21 structures. Those are like the outlets, spillways and the
22 saddle dams.

23 DOSD has state regulatory authority for dam safety for
24 over 1240 non-federally-owned and operated dams of varying
25 types and sizes ranging from six feet to 770 feet tall and

1 storing up to three-and-a-half million acre feet of water.

2 These dams are owned by over 600 owners with varying
3 technical capabilities and financial resources, but,
4 ultimately, these owners are responsibility for the safe
5 operation of their dams.

6 Next slide. New legislation often follows major
7 failures and incidences, and that includes the California Dam
8 Safety Program. So, prior to 1929, California did not have a
9 state regulatory program for dam safety, but in response to
10 the catastrophic failure of the Saint Francis Dam on March
11 12th of 1928, the California Dam Safety Program was created a
12 year later in 1929 to regulate on-streams dams with respect to
13 dam safety. Then, in 1956, the Authority for State Regulation
14 of Dam Safety transferred from the Department of Public Works
15 to the newly-created Department of Water Resources. A few
16 years later, in 1965, following the 1963 failure of the
17 Baldwin Hills Dam in Los Angeles, significant changes to the
18 Water Code and the Code of Regulations occurred, such as
19 bringing off-stream dams under State jurisdiction. The
20 Department's statutory authorities under Division 3, Part 1,
21 of the California Water Code, additionally, regulations for
22 the implementation of the program are under Title 23, Division
23 2, Chapter 1, of the Code of Regulations. The chart on the
24 right depicts the criteria of a jurisdictional-size dam, which
25 is basically based on the heighth of the dam and its storage

1 capacity. So, generally, dams that are 25 feet or more in
2 height with a storage capacity of 50-acre feet or more are
3 under State jurisdiction.

4 Next slide. There have been four major initiatives
5 that have recently bolstered dam safety in California. Most
6 of these actions were mandated under urgency clauses for
7 public safety. First is the Governor's 4-Point Plan to
8 Bolster Dam Safety and Flood Protection. This was announced
9 on February 24th of 2017, but it was instrumental in
10 accelerating legislation requirements for inundation maps,
11 emergency action plans and spillway reevaluations.

12 Then, just months later, SB92, or Senate Bill 92,
13 became a law. The main components of this bill focused on the
14 hazard potential classification of dams, again, inundation
15 maps and emergency action plans, bolstering of enforcement and
16 changes to the annual dam fees.

17 Then, about a year later, Assembly Bill 1270 became a
18 law on February 26th of 2018, and this bill specifically
19 defined Inspection Frequencies, Requirements for the cycling
20 of gates and hydraulic control structures, and it required the
21 DSOD convene a panel of experts to review its Dam Safety
22 Protocols.

23 Lastly, Assembly Bill 2516 became law on January 1 of
24 2019, and this bill required the Public Posting of Information
25 Related to Dams with Reservoir Restrictions.

1 Next slide. Many of California's dams are in or
2 upstream of densely populated urban areas, as you can see from
3 the map of California. Like many dams across the nation, the
4 average age of dams in California is about 70 years old, and
5 many of these dams were built before the modern era of dam
6 design and earthquake engineering. These dams are owned by a
7 variety of dam owners, ranging from private citizens to the
8 State of California, and this includes the Department of Water
9 Resources, which has 19 dams that are regulated by DSOD.

10 Dams are classified by their downstream hazard
11 potential, which is based solely on the potential impacts
12 downstream to life and property should the dam fail under a
13 full reservoir condition. Understand that this hazard is not
14 related to the condition of the dam itself. So a thing that
15 categorizes hazard potential into three categories of
16 increasing severity, low, significant and high, and within
17 California we've created a fourth category called extremely
18 high. More than half of the dams regulated by DSOD are
19 classified as either high or extremely high, meaning that
20 failure of the dam could likely result in loss of life. We
21 used extremely high hazard classification to note dam failures
22 that could cause considerable loss of human life or could
23 result in an inundation area with a population of a thousand
24 people or more. While the failure of a significant hazard dam
25 may result in property damage to others, they are not expected

1 to result in life loss. As well as low hazard dams, they are
2 expected to result in little or no property damage and no life
3 loss.

4 Next I will be going over DSOD's organizational
5 structure within DWR, its staffing levels and the regulatory
6 functions performed by DSOD.

7 Next slide. While the Department is both a dam --
8 sorry. While the Department is both a State dam regulator and
9 a dam owner, organizationally, these chief functions are
10 independently managed by separate Deputy Directors. DSOD
11 reports to the Deputy Director of Flood Management and Dam
12 Safety, while the Division of Operation and Maintenance
13 reports to the Deputy Director of the State Water Product.
14 Although, DSOD is under the Department, we independently
15 regulate Department-owned dams just in the same manner as we
16 would any other State-regulated dam. Additional separation is
17 created by DSOD being an offsite building away from
18 headquarters and having a separate funding source. DSOD's
19 funding is solely through dam fees paid by dam owners. Added
20 oversight of Department-owned dams is mandated under Section
21 6056 of the Water Code and Article 5 of the Code of
22 Regulations. An independent consulting board is required to
23 make independent findings every five years of Department-owned
24 dams, and anytime a Department-owned dam has certificate of
25 approval for storage issued or amended.

1 Next slide. DSOD's supervision of Dam Safety is
2 carried out by an expert team of engineers and engineering
3 geologists organized under four technical engineering
4 branches: Geology, Field, Design and a Reevaluation branch.
5 With recent legislative changes to bolster dam safety since
6 2017, DSOD's authorized staffing levels have increased from 61
7 to 81 staff which resulted in the formation of the new
8 re-evaluation branch. This branch is leading DSOD's efforts
9 with respect to reviewing and approving of dam-owner submitted
10 inundation maps that are to be contained in their emergency
11 action plans, as required by Senate Bill 92. In addition,
12 this branch is leading DSOD's new efforts to implement risk-
13 informed decision making under amendments to the program as
14 required by Assembly Bill 1270.

15 Next slide. DSOD conducts independent design reviews
16 on proposed new dams and any enlargement alteration repair for
17 the decommissioning of an existing dam. Analysis performed by
18 DSOD Staff includes structural, geotechnical, hydraulics and
19 hydrology and inundation mapping. Re-evaluation studies are
20 conducted on existing dams, which may involve focused reviews
21 such as spillway condition assessments or more in-depth risk
22 studies. Engineering geology, though, is a key component of
23 the program and it provides site specific geological and
24 seismic hazard assessments for existing and proposed new dams,
25 which is specially important given California's complex

1 geology and tectonic regimes.

2 Next slide. DSOD's engineers and engineer geologists
3 play a key role in the regulatory oversight of construction
4 projects. Inspections are conducted to ensure that projects
5 are being built in accordance with plans and specifications
6 approved by DSOD. Staff have the authority to stop work in
7 the field anytime work is being performed out of compliance.

8 Next slide. DSOD has regulatory authority to
9 supervise the maintenance and operations of dams and
10 reservoirs insofar as necessary to safeguard life and property
11 from dam failures or an uncontrolled release of the reservoir.
12 All dams, except those classified as low hazard, are mandated
13 to be inspected once every fiscal year. Low hazard dams are
14 to be inspected at least once every two fiscal years. In
15 addition, dam owners must fully operate critical control
16 features on outlet systems and spillways every year and in our
17 presence every three years.

18 Next slide. DSOD is also prepared to respond
19 immediately to dam safety incidences and emergencies. When
20 DSOD is notified of an incident or an emergency, we
21 immediately deploy a team out to the site to assess the
22 situation and to provide technical advice and directives to
23 dam owners and emergency management agencies. For a large
24 scaled emergency, such as a major earthquake, DSOD would stand
25 up an emergency operation center and deploy multiple teams to

1 dam sites.

2 Next slide, please. In closing, DSOD continues its
3 ongoing efforts to collaborate with State and Federal Dam
4 Safety agencies, industry and academia and to be affiliated
5 with National Dam Safety Organizations to advance dam safety
6 for the benefit of California and the nation. Thank you very
7 much.

8 SECRETARY CROWFOOT: Thank you, Sharon. We can --
9 let's hold on questions or points of clarification until after
10 Dave Sarkisian's presentation. Let me turn it over to you,
11 Dave.

12 DAVE SARKISIAN: Thank you. Is the audio okay?

13 SECRETARY CROWFOOT: It is.

14 DAVE SARKISIAN: Thank you very much for the
15 opportunity to share our State Water Project Dam Safety
16 Program with everybody. If we can advance to the next slide.
17 Again, this is Dave Sarkisian. I'm Chief of our Dam Safety
18 Services within our Division of Operations and Maintenance as
19 part of the State Water Project, and so what I've got here
20 today is --

21 SECRETARY CROWFOOT: Dave, to Sharon's point, so
22 there's the Division for the Safety of Dams and that's one
23 division, and then you're on the division under the State
24 Water Project, right? Is that --

25 DAVE SARKISIAN: Correct. So my chain of command is

1 with Mr. Craddock.

2 SECRETARY CROWFOOT: Got you.

3 DAVE SARKISIAN: Very happy to share with you what
4 we're doing from kind of the owner's perspective, how we're
5 working to enhance public safety with our State Water Project
6 Dams. Let's move to the next slide.

7 So we have a 26 State Water Project Dams up and down
8 the state, as you can see. We have quite a number, 10 within
9 Oroville Field Division up north; that includes the Thermolito
10 Dams as well as what we will call the upper Feather River Dams
11 and Frenchman, Grizzly Valley Dam.

12 Within Delta Field Division, Bethany Dams, Clifton
13 Court Forebay Dam, Del Valle Dam, Patterson and Dyer Dams.

14 Within San Luis Field Division, these are what we call
15 the joint use facilities, where we operate and maintain the
16 dams, but the actual owner is the U.S. Bureau Of Reclamation;
17 that includes O'Neill Forebay Dam, Sisk Dam, Little Panoche
18 Detention Dam and Los Banos Dam.

19 And then, down south, in Southern Field Division,
20 we've got quite a number of dams; Pyramid, Quail, Castaic,
21 Devils Canyon Second Afterbay, Cedar Springs Dam, Crafton
22 Hills Dam and Perris Dam. And so, quite a geographic spread.
23 A lot of high hazard and extremely high hazard consequence
24 dams within our portfolio.

25 Next. And so, from my perspective, the Dam Safety

1 Programs -- kind of industry prior to 2000 or about that time
2 frame -- were focused largely in these areas of Surveillance &
3 Inspections; Dam Safety Assessments that an owner might
4 undertake; Reservoir Operations, being mindful of the flood
5 control aspects of a reservoir; Maintenance; Design and
6 Construction, and that might be something driven by Dam
7 Safety, or maybe there's a project in proximity to the dam
8 where it -- the dam safety needs to have some oversight and
9 review of the projects; Emergency Action Plans; and then
10 Independent Reviews.

11 And for our State Water Project Dams, as Sharon had
12 noted, we're subject to the Director of Safety Review Board
13 for State Water Project Dams. And for our FERC license dams,
14 which includes the Oroville Thermalito Complex, we're also
15 subject to the Part 12, the Independent Consultant Safety
16 Review which occurs on a five-year basis. And so, this has
17 kind of been standard industry. What I've got to share with
18 you are kind of where we're heading and kind of what we've
19 done the past couple of years.

20 So let's advance to the next slide. In 2017-2018,
21 really triggered by the Oroville spillway incident, we had a
22 number of reviews. Of course, there was the Independent
23 Forensic Team Reports, which had a number of recommendations
24 for DWR, but also industry-wide recommendations for the entire
25 dam safety industry to consider. We also had an Owner's Dam

1 Safety Program Audit, and that was required by FERC on a
2 five-year cycle. To enhance that audit, we asked that audit
3 team to -- in addition to providing that audit service, but
4 also go a little bit deeper and utilize what's called the ISO
5 55000 kind of asset management approach, and ASDSO, the
6 Association of State Dams Safety Officials peer-review process
7 and kind of meld those two and take a deeper look at our
8 program. We also had our Management, met with some of our
9 peers in the industry to get -- to look at what they're doing,
10 what kind of new approaches they're taking with their Dam
11 Safety Programs. Lastly, we utilized what we call a Maturity
12 Matrices, to take a look at ourselves. It's kind of a series
13 of tables that you can work through and can do a self-
14 assessment of where you think your program is at. And so,
15 following the spillway incident and into 2018, this was quite
16 an effort internally.

17 Let's advance to the next slide, please. So through
18 this process, all these reviews, we had some common areas.
19 Not too surprising, a lot of these aligned with the IFT
20 Report. They included updating our Dam Safety Policy,
21 Defining our Top-down structure in a better way and enhancing
22 communication through that structure, Increasing training and
23 interaction with dam safety organizations, Implementing
24 Cross-Divisional Dam Safety Teams, and then Linking our Dam
25 Safety Program to our Asset Management Program, which was

1 started in 2013, and really trying to align how we're treating
2 our different State Water Project Assets uniformly and
3 standardize that approach. We wanted to make sure what we're
4 doing in Dam Safety would align with that. Lastly, Improving
5 a Culture of Continuous Improvement.

6 Next slide. So we took those Recommendations, started
7 what we call Road-Mapping, you know, how are we going to get
8 this work done, and developed a Multi-year Dam Safety Program
9 Initiatives. We had 30 initiatives or tasks. We consolidated
10 those to 16, which you can see in the box there. They touch
11 across a lot more than, you know, that 2000-era Dam Safety
12 Program, bringing in things like Risk Management, looking at
13 our Business Processes, Communication and Change Management,
14 things that a lot of Dam Safety Programs and industry, you
15 know, had not yet really evolved or matured to undertake.

16 Next slide. So I'll walk through just a couple of
17 these Initiatives. I realize we're kind of short on time, so
18 I may go a little fast year.

19 Initiative 1 was to really solidify our Guiding
20 Documents; that included our policy which we updated in 2018,
21 as well as our Dam Safety Program Document, which describes
22 our program, really highlighting that public safety is our
23 highest priority for the Department and the State Water
24 Project. Also, you know, making clear assignments and
25 responsibilities and accountability within the program.

1 Next slide. As part of our new policy, we identified
2 these Program Elements. So you see some similarity between
3 this and that prior slide, but know we've introduced
4 additional program elements in areas where we really want to
5 expand what we're doing and really create a program that's
6 holistically working to enhance public safety. So, again,
7 adding in things like Risk Management, Project Delivery, you
8 know, working to execute our projects effectively,
9 Communication both internally within the Department, getting
10 people aligned for the common purpose, but also externally
11 with our stakeholders. Also, working to build our Technical
12 Expertise, conducting Program Reviews, where we're able to
13 take a look at ourselves and really see how are we doing and
14 make adjustments as necessary based on those reviews.

15 Next slide. Under Initiative 2 was to Complete our
16 Dam Safety Program Functional Design. And so, in 2018, we did
17 receive additional positions and what we did was expand what
18 was the dam safety branch with three sections and elevated
19 that to an office-level organization and added the additional
20 branches that focus on Risk and EAPs, Program and Project
21 Delivery, and then Maintenance as well. So we kind of held
22 onto our geographic flavor because that always aligned well
23 with how we worked with our field divisions, but brought in
24 these new components into the program.

25 Next. In terms of Risk, our Asset Management Program

1 had already made progress in terms of a Risk Matrix for All
2 State Water Project assets. We also benefited greatly from
3 the Oroville Dam Comprehensive Needs Assessment, and that
4 being a very focused risk assessment on the Oroville
5 facilities. And with that, we developed our own internal or
6 Dam Safety Program Risk Matrix that's actually very similar to
7 what was used for the CNA so that we can start taking a look
8 at our other facilities from the risk perspective and really
9 help prioritize to reduce risk across the entire State Water
10 Project Dam portfolio. So far, in addition to Oroville, we
11 had level-two risk analyses conducted for Pyramid and Castaic
12 as well. And so, those identify the potential failure modes,
13 assign a risk estimate, but they don't go as far as the CNA,
14 which also looked at the measures, where measures were
15 identified and the risk reduction that could be achieved was
16 described under the CNA project.

17 Next slide. In terms of Emergency Preparedness, we've
18 had a lot of work there on updating inundation maps across our
19 portfolio. Those are available online through DSOD's website
20 and we have kind of the link there. We also have been
21 updating our Emergency Action Plans. Those go through a
22 review process with Cal OES. And then, we've been busy with
23 our annual EAP Seminars, conducted those virtually as well as
24 Tabletop and Functional Exercises. And then, something that
25 goes beyond the EAP, we're starting to developed Internal

1 Rapid Response and Recovery Plans, which are plans much more
2 detailed to a specific dam and describe what could be done if
3 a failure mode started progressing. And so, we'll be building
4 those out over the next couple of years.

5 Next slide. You know, we realize our staff are really
6 key to our success, and so, we want to really make sure we're
7 building them up over time. And so, we've spent some time
8 identifying the knowledge, skills and abilities that we're
9 looking for to execute our positions within my office, Dam
10 Safety Services, and we utilize this model from the U.S.
11 Department Of Labor Engineering Competency model, which is
12 comprised of multiple tiers. Kind of starting at the
13 bottom, just the basic Personal Effectiveness Competencies and
14 working your way up kind of through -- if you can kind of
15 envision as one goes through college, one enters the
16 workplace, the skills they're building over time until they
17 get to up in like the Tier 5 area where they're in a position
18 that's highly technical. Hopefully, at that point, they have
19 got those basic technical competencies, but they're also
20 building the knowledge of the facility they're working on,
21 that they're understanding the instrumentation, the
22 performance, the history. And so, that's what we're trying to
23 build with star staff here in Dam Safety Services. This is to
24 really make them a subject matter expert on our dams.

25 Next slide. To do that, obviously, a link to

1 training. And so, we've formalized and expanded our training.
2 We've executed contracts with ASCE as well as ASDSO to
3 engineering organizations that commonly provide training, and
4 having the contracts, we've been able to continue that this
5 whole past year in the virtual environment, which is actually,
6 I think, created a lot of cost savings since there's no travel
7 involved. We've also developed what we call Dam Safety
8 Awareness Modules that are just about a half hour, 40 minutes,
9 web-based, On Demand, and we've assigned that to all State
10 Water Project employees. And that's just all about getting
11 awareness about dam safety, because our program is much more
12 than my office. It spans our other State Water Project
13 divisions. We're supported by Public Affairs, by many other
14 parts of the Department. We want to make sure that they
15 understand that State Water Project has dams and that we have
16 a dam safety program and we rely on them to fulfill our
17 mission. We're also working on Field Division specific
18 modules that really get into the aspects of individual dams;
19 and those, again, will be recorded and available so that when
20 we have new staff come on board, we've got training right
21 there available that's very specific to their job duties.

22 Next slide. Industry Outreach. You know, the
23 Department has always had a good connection with the Dam
24 Safety community, but we recognize, listening to the IFT
25 recommendations, that we needed to increase that. So we've

1 worked hard to collaborate with the Army Corps & Reclamation
2 and we've -- with Assist Dam Remediation project coming up
3 there's been a lot of points of contact with Reclamation.
4 We've worked to get our folks out to Dam Safety conferences
5 and more workshops and increased our participation in CEATI,
6 which is an industry driven, utility driven organization with
7 a really strong Dam Safety interest group, which gives us an
8 opportunity to see what other programs are doing, learn about
9 the best practices they're developing and stay on top of new
10 technologies as well.

11 Next slide.

12 SECRETARY CROWFOOT: Just a time check. Just a
13 couple, few more minutes.

14 DAVE SARKISIAN: Sure. We're working hard to enhance
15 our communication. Opportunities like this are just an
16 example of being able to share what we're up to.

17 Next slide. And lastly, just a Formal Program
18 Management Review. And so, we've got biweekly meetings with
19 Mr. Craddock, Mr. Yarborough and my division chiefs to let
20 them know what the program is up to. If I have a specific
21 need, I'm able to share that with them and get the help I
22 need, as well as quarterly meeting with our regulators. And
23 then, we're looking forward to our next Program Review and
24 Audit, which will be in the 22/23 time frame, where we'll get
25 a good check of our progression and maturity as a program.

1 With that, thank you very much for the time.

2 SECRETARY CROWFOOT: Thank you both, Sharon and David.
3 It's a lot of information to take in, of course, but important
4 that you provide the comprehensive overview.

5 Nick, question; can these PowerPoints be included on
6 the Commission's website so that people can download them and
7 take time to absorb them?

8 NICK SAFFOLD: Yes, they're already posted on the
9 website so people can access them and they're also in an
10 accessible ADA format as well.

11 SECRETARY CROWFOOT: Good. There may be some
12 questions that folks have. My recommendation would be to hold
13 off on the questions, because we have two more important
14 presentations on this topic. And so, let's move on to
15 Dr. Rune Storesund to present on the Dam Safety Risk and Risk
16 Assessment.

17 As you probably -- as you may know, Dr. Storesund is
18 with the U.C. Berkeley Center for Catastrophic Risk
19 Management. He was also the Comprehensive Needs Assessment
20 Ad Hoc Community Group Member. So welcome, Rune.

21 DR. RUNE STORESUND: Thank you, Secretary. Can
22 everyone here me?

23 SECRETARY CROWFOOT: Coming through loud and clear,
24 Rune.

25 DR. RUNE STORESUND: Good morning. It's nice to see a

1 lot of familiar faces and names on the Zoom roster here. So
2 I'm excited to have the opportunity to share with you some
3 concepts and ideas stemming from my involvement with the
4 Oroville Dam CNA Ad Hoc Committee. I refer to the Oroville
5 Dam Complex as a socio-technical system. And I do this
6 intentionally in order to signify the importance of not just
7 the physical performance, but also the risk enhancing and risk
8 reducing factors associated with human and organizational
9 factors. I personally see these human and organizational
10 factors as far more important than just a physical hazards
11 posed to the system.

12 The topic of Risk Management in Socio-Technical
13 Systems is complex and requires far more than one presentation
14 to explore. I don't have time to get in this today, but would
15 be more than happy to come back later and share insights with
16 the community if there's interest.

17 Next slide, please. A little about me. I have a
18 unique perspective that is systems-based and looks at the
19 whole life cycle of a system, with consideration of both the
20 physical aspects as well as the human and organizational
21 factors.

22 My educational background consists of a Dual Degree
23 Program where one can choose any humanity degree from U.C.
24 Santa Cruz and then be guaranteed a transfer to U.C. Berkeley
25 in your choice of Engineering discipline, and that's assuming,

1 of course, you show up and pass your classes while you're at
2 Santa Cruz. So I received a B.A. in Anthropology from U.C.
3 Santa Cruz, a B.S. in Civil Engineering from U.C. Berkeley. I
4 worked for a bit, then got Masters in Geotechnical Engineering
5 at U.C. Berkeley, worked a bit more, came back and got my
6 Doctorate in Engineering in Civil Systems from U.C. Berkeley.

7 Today, I'm wearing the hat of Executive Director for
8 U.C. Berkeley's Center for Catastrophic Risk Management, or
9 CCRM. I also have a consulting practice, a software
10 development company, a construction company, and just recently
11 started a nonprofit on the topic of safety, risk reduction,
12 resilience and reliability.

13 Next slide. I have a varied register of Disaster
14 Research in Forensic Engineering. My focus includes the human
15 and organizational factors rather than just the focus on the
16 physical aspects of failure. This Disaster Research has
17 identified some cross-cutting phenomena related to the safety
18 and reliability of critical infrastructure systems. While the
19 industry sectors may differ, they all share one common
20 feature; they're managed by people. My goal here today is to
21 share some of these cross-cutting themes with you in hopes of
22 leveraging them to enhance the safety and reliability of not
23 just Oroville Dam, but all dams in California.

24 Next slide. So a bit of background relative to myself
25 and Oroville Dam. I served as a Risk Management Expert for

1 the Ad Hoc Committee between 2018 and 2020 at the request of
2 Senator Nielsen and Assemblyman Gallagher. I have produced a
3 technical report with my comments and implications for
4 community safety related to the CNA process, and it's my
5 understanding that most of the Committee Members have received
6 a copy and it's also posted on my SafeR3 projects website.

7 Next slide. So there are a number of basic
8 fundamentals that I would absolutely love to cover today,
9 but -- next slide -- unfortunately, with only 20 minutes, I
10 won't really be able to talk about much of any of these
11 before. Like I said before, I'm happy to come back at a
12 subsequent meeting, or if you have further interest, I will be
13 offering a risk management boot camp for decision makers in
14 the Fall, so stay tuned to that.

15 Next slide. So I believe we're all here and this
16 effort has been established to achieve safety. The reality,
17 though, I think is we're actually searching for a way to
18 achieve that safety. DWR wants to ensure safety and the
19 community wants to feel safe. The problem is, there's no
20 silver bullet. What we've done is fooled ourselves into
21 thinking that a regulator such as CERT or a group of
22 individuals who ascribe to the label of "Dam Safety Expert"
23 can somehow wish us into safety through magical probability of
24 failure estimates. But these estimates are really just
25 guesses, and there's no physical way we can actually test or

1 prove or confirm that these guesses are correct.

2 Next slide. So, in my report, I recommend exploration
3 of what I call Performance Insurance. This seems like a
4 fairly straightforward concept. If one promises a certain
5 level of performance and fails to deliver, then the impact of
6 parties should be made whole financially. This puts financial
7 accountability on the dam owner-operator and its consultants.
8 Now, I've spent the last few months exploring this concept and
9 was surprised to find that the insurance and bonding industry
10 frankly sees dams as high risk. This means that their
11 perception of the need to pay out on a dam claim is high.
12 During my conversations with these industry leaders, they
13 point to lack of empirical performance data and express
14 substantial doubt on the reliability of the risk estimates
15 generated by the dam community. It's not an issue of the
16 magnitude of the money, as mega projects are bonded all the
17 time, it's solely a determination that dams are not quite as
18 safe as promised. My takeaway from this is, if the insurance
19 industry doesn't believe these dams are as safe as reported,
20 why should the community believe anything different?

21 Next slide. So let's revisit February 2017.

22 And before I get too far, I think it's important to
23 acknowledge and appreciate Sheriff Honea for his courage and
24 leadership to ensure public safety at a time when the
25 integrity and performance of the spillways were in question.

1 It's my personal belief that he acted admirably in the face of
2 uncertainty and made the responsible and correct decision. He
3 is my hero.

4 Back to 2017. Here we have the best of the best
5 technical and dam safety individuals, arguably in the world,
6 working on the dam, despite three previous in-depth potential
7 failure mode, or PFMA analyses, FERC and DSOD oversight,
8 extensive dam safety programs in place and countless hours
9 from subject matter experts on probability of failure, nobody
10 from DWR was able to attest to the safety of the dam. When
11 Sheriff Honea asked if there was something he was missing,
12 some confident assurance of safety, nobody spoke up. Now, in
13 hindsight and some years later, doubt is being cast on the
14 notion that the emergency spillway structure was really
15 vulnerable to collapse from the observed head cutting. This,
16 I'll argue, is counterproductive. What we really should be
17 asking ourselves is what backups have we implemented so when
18 future surprises happen we have contingency options? The
19 reality is that if Oroville Dam were to breach, it's unlikely
20 we'll have enough time to evacuate all those in harm's way.
21 In fact, the stark reality is thousands of people will likely
22 be dead before the evacuation system has even been fully
23 activated. What we should be doing immediately is
24 implementing backups like the low-level outlet. I'm not sure
25 why we're still thinking about this. While the spillway has

1 been updated, the flood control outlet structure has not, and
2 if the flood control outlet structure goes off line for any
3 reason, the only other meaningful way to discharge water
4 before overtopping the dam is via the emergency spillway,
5 which has a little more than half the discharge capacity of
6 the full design intent of the two spillways. So my caution to
7 you is, at the end of the day, this is yet another example of
8 hopeful thinking rather than safety thinking.

9 Next slide. From my perspective, the Ad Hoc Committee
10 has passed the baton to this Oroville Citizens Advisory
11 Commission. I see numerous opportunities for the CAC to take
12 a meaningful and immediate leadership role and proactive risk
13 reduction to be helpful not just at Oroville Dam, but all
14 dams. We all know deep down that it's unlikely the dam is
15 going to fail tomorrow, but we have clearly established that
16 the current techniques are deficient. We know it takes
17 decades to implement substantial improvements. We know we
18 have aging infrastructure, and the anticipated service life of
19 the infrastructure is not known. We know that assumptions
20 from 50 years ago likely do not fully account for the future
21 conditions the dam might encounter as a result of climate
22 change. Statistics will tell us we have had two evacuation
23 events in the past 50 years and it's very likely to happen
24 again in the future. As a result, it's critical that we start
25 laying a foundation of resilience today. That requires us not

1 to just think differently, but act differently. Next slide.

2 So I think this cartoon does a masterful job of
3 illustrating our typical approach to Risk Management. First,
4 there's some recognition or perception of a potential risk.
5 In the case of this cartoon, we have a boulder that may or may
6 not fall on two individuals at the base of the hill. There's
7 deliberation between the individuals as to the likelihood that
8 the boulder will actually fall on them. Meanwhile, and quite
9 separate from the outcomes of their deliberations, the boulder
10 starts to move and the parties evacuate the area, which is
11 then referred to as "risk management." Having the situation
12 require action versus proactive measures implemented before
13 action is required is preferred because it's easy for the
14 decision maker. There was no question. Action was required.
15 My challenge to the CAC is, Let's do better than this cartoon.
16 Next slide.

17 What can we do? Well, I can actually think of lots of
18 things that can be done. And the CAC could commission or
19 strong suggest the commission of anyone or even all of these
20 Mini Projects. Let's start off with re-engaging the IFT and
21 have them do a review of which lessons to be learned have been
22 implemented. Let's be more explicit in defining what we mean
23 when we say "safe." If everyone has a clear understanding of
24 what is safe, we'll then be able to much -- we'll then be able
25 to be much more mindful and send out alerts if we see that

1 we're straying from the expected safe conditions into
2 unexpected or potentially unsafe conditions. I think we can
3 be up front about financial accountability associated with
4 performance if we promise a certain level of performance and
5 it's not achieved, who will be made whole and what payout
6 constitutes being made whole. We can do detailed assumption
7 audits where we go back and, one, confirm that we have a
8 complete inventory of initial design assumptions and, two,
9 review those design assumptions to ensure they're valid and
10 appropriate today and for the intended service life into the
11 future. Where we're missing the original design assumptions,
12 back calculations will be needed to re-establish assumptions
13 so we can assure they're valid and appropriate today and for
14 the intended service life into the future. We should be
15 scrutinizing asset management as well as the operations,
16 maintenance and management methods and procedures. Finally,
17 we should be mandating life-cycle based management of all
18 aspects of the dam starting today. Life-cycle based
19 management is far superior to the risk processes currently
20 being proposed because, one, it formally states the expected
21 service life of all components assemblies and systems; and,
22 two, allows for the explicit and direct comparison between
23 what was supposed to happen and what's actually happening.
24 This is a hundred percent measurable.

25 Next slide. So I must confess, to date, I haven't

1 found any explicit documentation of what constitutes
2 "Failure." When you look at the (unintelligible) shown in
3 this figure, there's only two categories of Consequences
4 listed; first, Public Safety, which is the blue highlight at
5 the bottom of the figure, and, two, Financial Impacts in the
6 yellow highlight at the bottom of the figure. It's unclear
7 who's responsible for the direct and indirect financial
8 impacts. Is this chart establishing that DWR will pick up the
9 financial impacts? If so, is it correct that DWR will have
10 the cash reserves on hand to pay out any of the realized
11 consequences? Or, is this chart saying that the community is
12 going to have to bear the burden, and the technical term for
13 this phenomena is "risk transfer." That asks the question,
14 has the community been alerted to this risk transfer and has
15 the community agreed to accept this preordained assignment of
16 financial responsibility? I suspect the answer is "no."

17 Next slide. So not only is there vagueness and
18 ambiguity in terms of what "failure" is, failure also changes
19 what time. This is known as the "bathtub curve," where you
20 have a higher failure rate in the early stages of a system;
21 these are referred to as "burn-in failures." Then you have an
22 extended period of time with more or less constant failure
23 rates. Then as you approach the end of the service life of a
24 structure, the failure rate starts to increase as a result of
25 wear-out failures. In almost all risk analyses, only one

1 probability of failure value is given. This is a problem
2 because it completely neglects the increasing failure rate
3 with wear-out failures and is blind to when the wear-out
4 failures start occurring. This is not safe.

5 Next slide. As I've noted before, the current risk
6 approaches rely on the imagination of experts to develop
7 failure scenarios and then estimate their likelihood. That's
8 the substantial basis by which "safety" is described. The
9 problem -- and I'll represent to you this is a substantial
10 problem -- is that an expert's imagination is limited. You
11 just can't imagine all the possible failure scenarios. Now,
12 does that mean we shouldn't be doing these exercises? No, I
13 am not saying that. What I am saying is we need to do that
14 and more. You need to cross-check with multiple techniques.
15 If you evaluate using six different methods from six different
16 perspectives or disciplines and you see convergence, you're
17 probably close to the mark. If all six give you different
18 answers, that should tell you that more work is needed. If
19 you rely solely on one technique, you would never know you had
20 a problem until it was too late. That is not safe.

21 Next slide. So here's how I would encourage us to
22 think about confronting uncertainties associated with safety
23 with a spectrum of organizational capabilities. In the top
24 row, we have situations where the magnitude of uncertainty for
25 the likelihood of failure are pretty small. That means we

1 have a high degree of certainty with respect to the
2 occurrence. On the bottom row, there's more uncertainty, to
3 the point where we have very little or no certainty. For the
4 consequence portion of the risk, we have a similar breakdown
5 where the left column are instances where we have a high
6 degree of certainty, but then in the right column, we have
7 very little to no certainty with respect to the type and
8 magnitude of consequence that will be realized.

9 I've labeled these as four boxes. Box 1 is what I
10 consider to be the Traditional Quantitative Risk Analysis.
11 There's low certainty with respect to both the likelihood of
12 failure and consequence of failure. We can fairly, reliably
13 assign a probability distribution, shape parameters, and have
14 a fairly good handle on the important variables to be
15 considered. Problems are well-structured, well-defined and
16 bounded. This is essentially exercise. We kind of know what
17 the answer is before we start, we just may not know the exact
18 magnitude.

19 Box 2 is a situation where we know we're in failure
20 mode, but we don't know how bad it's going to be. I refer to
21 these as unfolding events. The key factor to minimize the
22 consequence of failure in this area is access to appropriate
23 resources, especially reliable near realtime or realtime
24 information, and First Responders do this routinely.

25 Box 3 in the lower left are instances where we have a

1 pretty good idea what the consequence is going to be, but
2 we're very uncertain as to the likelihood of occurrence. This
3 can be thought of as possibilities, and climate change is a
4 wonderful example of a Box 3 risk.

5 Finally, we have Box 4 in the lower right-hand corner;
6 these are surprises or black swans. These are the epitome of
7 crisis and have the characteristics of being ill-structured,
8 undefined and can be completely unbounded.

9 So let me be clear, it's not my contention that these
10 are discrete regions and you're either in or out, these are
11 spectrums of gray and are highly time dependent. My main
12 point here is that these are different settings of
13 uncertainty, and different uncertainty settings require
14 different approaches. And it's imperative that organizations
15 develop tools and capabilities so when the time comes they're
16 able to more reliably navigate the highly uncertain context.

17 Next slide. As you have heard before, "If all you
18 have is a hammer, everything looks like a nail." So I'm
19 strongly suggesting organizations have more in their toolbox
20 than just a hammer.

21 Next slide. I'll quickly mention the concept of
22 Johari's Window. Note that you may not have all the answers.
23 There are things that may not be known to you but may be known
24 to others; that is a resource.

25 Next slide. I talk about this in more detail in my

1 report, but this figure illustrates through the Johari's
2 Window the opportunity we have to leverage tools, approach
3 methods and capabilities developed in other industries to the
4 dam industry in order to enhance the safety and reliability of
5 our dams. The items in red are tools, approaches, methods and
6 capabilities known by other industries that, from my
7 perspective, would enhance the safety and reliability of dams.
8 Our opportunity is to extend these tools approaches, methods
9 and capabilities into the dam industry so we have a more
10 robust menu of techniques to evaluate safety, cross-check our
11 perceived degree of safety, and ensure a safer and more
12 reliable dam. Again, let me reiterate, I'm not suggesting we
13 do away with risk-based approaches, but add to them.

14 Next slide. My time is just about up here, but before
15 I conclude, I would like to deputize everyone in this Zoom
16 meeting with the Risk Management Pledge. So if everyone who
17 is willing to take the pledge of Risk Management, raise your
18 right hand and repeat after me. You can be on mute; that's
19 okay.

20 But it says, "I, state your name --" I see a few lips
21 moving out there in the world; good, okay "-- promise to
22 appreciate the value and importance of uncertainties in civil
23 systems and help decision-makers avoid confident ignorance by
24 arming them with pragmatic information and avoiding over-
25 simplification and E3 errors." E3 errors are solving the

1 wrong problem precisely. "I also promise to triangulate
2 answers instead of relying solely on one technique."
3 Congratulations. You've all been deputized into the Risk
4 Management Pledge.

5 If you go to the next slide, that's the end of it for
6 me.

7 SECRETARY CROWFOOT: Rune, thank you so much. That
8 was comprehensive and focused and cogent. I appreciate it. I
9 think that probably people will have questions. My
10 recommendation would be to move on to Eric for the final
11 presentation, and then we can open this up to Commission
12 dialogue. So let's move on to Eric.

13 ERIC HALPIN: Thank you, Secretary. Can you hear me
14 okay?

15 SECRETARY CROWFOOT: Sure can.

16 ERIC HALPIN: I really appreciate the opportunity to
17 talk to you about something that is really important and I
18 care a lot about. Of course, this is Oroville Dam in the
19 background, and if you work in the dam industry like I do, you
20 know it as really an iconic structure really in all of North
21 America. I've been fortunate to work on it in different
22 aspects.

23 Next, please. So most of my experience comes from my
24 40 years with the Corps of Engineers, where I led the largest
25 dam and living infrastructure portfolio in North America where

1 we invested about a billion dollars a year.

2 I was the primary interface with elected officials in
3 Congress as well as those in the administration, and I also
4 led the International Partnerships with other countries on the
5 issue of safety programs. That certainly gave me a different
6 perspective what's going on around the world. By the way, the
7 Dutch are doing safety programs like the Americans now and
8 they even call it "American-style." So there you go. And
9 last couple of years, I do this now for Clients in Industry.

10 Next. So this is the outline of my presentation,
11 mostly focused on a lot of stuff that Sharon and Dave captured
12 and what is the state-of-the-art program, because I think
13 that's essentially what they described, really talk about the
14 challenges and communicating to people how do you sustain that
15 through time, and then finally talk about some trends and
16 challenges in the future.

17 Next, please. So this is one of my favorite authors,
18 and I think the only thing I would like to say here is that
19 governance, as with safety programs, really depends on both
20 the people and the governance systems they work within, so I'm
21 going to talk about governance systems, which is Safety
22 Programs.

23 Next, please. First topic is really talk about the
24 state-of-the-art of the Dam Safety Program. Next.

25 So, like Sharon mentioned, you know, following some

1 well-noted failures in earlier part of last century, safety
2 programs -- the traditional safety program was built around
3 that. So they were talking about lower San Fernando, Picton,
4 Vajont Dam in Italy, and essentially it has three major
5 components. One is, you're trying to understand the
6 infrastructure by inspecting it and by looking at
7 instrumentation. Two, you want an idea of predicted
8 performance and part of that was done by evaluating compliance
9 with standards. And then the third one was to have some
10 independent regulation of safety, checking of safety, if you
11 will. So, although, that's not the modern framework, all of
12 these elements are in a modern Dam Safety Program.

13 Next. So pictorially this is what that looks like.
14 The traditional focus was just on the infrastructure. So it
15 wasn't necessarily that much on the hazard or the extreme
16 events or the consequences of failure. It was really kind of
17 focused on how we built them and not how they'll perform.
18 Because Mother Nature is going to exploit every lack of
19 integration in the infrastructure on a 24/7 basis. And then,
20 finally, was really focused on this whole idea that safety was
21 compliance with a design standard.

22 Next. So this is what those traditional programs
23 yielded. It's a risk chart that shows 3,000 risk assessments
24 on Dam and Levee infrastructure in the U.S., okay? Couple of
25 big takeaways from this. This is kind of what following

1 standards alone got us. It's a seven-orders magnitude spread
2 in risk, or a factor of 10 million. So a huge variation. We
3 over-invested in some and we under-invested in others. I was
4 personally responsible for some of those dams in the upper
5 right there that are scary. And we worked on the wrong
6 priorities. We really didn't understand the infrastructure
7 and how it would perform. And in this really dynamic and
8 uncertain environment, it's very clear we can say that one
9 size of standards, or the traditional approach, really didn't
10 fit all projects.

11 Next. Thanks. So this is a modern safety program,
12 and I think Dave did a great job of running through what this
13 is. But I'll just -- from a high level, now we try to
14 understand dams via things like risk analysis and risk
15 assessment, and that incorporates everything we traditionally
16 did like standards. And so, that's just not one kind of risk
17 analysis, that's many kinds, and it's many perspectives at the
18 table with experts. Then we use that understanding to make
19 better decisions, so that's risk management. And then,
20 finally, we recognize that dams don't exist in isolation, they
21 are part of the communities. So communication of risk is
22 really important to everyone doing their piece in helping
23 manage risk. The envelope around all of that is governance.
24 So that's -- again, Sharon and Dave talked about it's the
25 people, it's the process and the policy that goes with that.

1 So that's the modern dam safety program.

2 Next, please. Just a minute to say, why is this
3 strong risk framework really necessary? Because it does take
4 a lot of investment, as California has seen. So two big
5 things to point out. Because they were designed in pieces by
6 separate engineering disciplines, integration is a problem and
7 integration can get exploited by the natural environment. So
8 the weight of credibility is having a system that will show
9 you not how they were designed but how they're going to
10 perform. Risk analysis is a tool that modern programs use to
11 do that. So we've often said, if we can understand the
12 problem, solving the problem is not so hard, and that's true.

13 The second thing is dams last for hundreds of years.
14 There's one dam in the national -- International Registry of
15 Dams that's over a thousand years old. So they're going to be
16 around a long time. So they need to be able to endure or
17 cross a lot of change. So change in what we understand about
18 science, what we understand about models and methodology. So
19 risk is a nice framework to be able to capture how to deal
20 with all of that change.

21 Next, please. So pictorially this is what a modern
22 risk-informed program looks like. It's looking at the
23 hazards, seismic and flood probabilistically, it's looking at
24 how the infrastructure is going to respond to that hazard
25 probabilistically, and that's including every kind of analysis

1 that exists out there. It's actually bringing the best
2 analysis to the table. And then, finally, the big change is
3 really having an explicit consideration of what the possible
4 consequences and vulnerabilities are. So the modern program
5 steps back from the dam, looks at the problem a little more
6 broadly, and is able to really better understand the problem.

7 Next slide, please. So just a little bit, few slides
8 on how do we sustain the state of the practice. Because one
9 of the questions following Oroville is, should that have
10 happened? How does industry respond it to?

11 Next, please. So one thing to understand first is all
12 engineering is some balance between the things we are trying
13 to achieve -- so in this case it's safety, prevention of loss
14 of life, prevention of economic damage -- receiving those
15 project benefits -- you know, clean water for 20 million
16 Californians is a pretty big deal -- against the economy. So
17 what does it cost in people and money? And so, you never can
18 achieve absolute safety, because you never have absolute
19 economy, do you? So it's a bit of a balance there. What's
20 really important is the constraints on the left-hand side of
21 the slide. So, within that balance, there's external
22 influences of legislation and regulations of funding. And
23 then, a really important thing, which Rune touched on a little
24 bit, which is the state of the practice, which is a primary --
25 in a common-law legal system is the primary way that industry

1 and organizations that are dam owners and regulators receive
2 some kind of assurance that they are doing the right things
3 the right way. So I'll talk a little bit more about state of
4 the practice.

5 Next, please. So where's it done? So, right now, if
6 you look at a map of the world, you've got North America
7 really leading the practice of Dam Safety Programs and
8 decision-making in the world. So it's the second largest
9 portfolio in the world of large dams, and all four major
10 federal agencies in the U.S. are doing it exactly the same
11 way. Canada is doing it the same way. Then, you have a
12 number of countries in Europe that have gone to fully risk-
13 informed decision-making, including the Dutch, the Spanish,
14 the Brits and the French. Then, of course, Australia and New
15 Zealand, they have long been leaders in this area. An
16 interesting thing, though, is the World Bank who is one of the
17 largest investors of dam -- of money in dam projects, has come
18 out with their own guidance that mirrors what we're doing in
19 the states; that is a risk-based dam safety program. So, as
20 they invested in South America, in Africa and Asia, they were
21 requiring the same approach there. That's why India now, with
22 the third largest portfolio of dams in the world, has gone to
23 a fully risk-informed dam safety program.

24 Next, please. So, again, the IFT Report, I think it
25 was really important and it's a great example of how our

1 industry responds to the incidents like the spilling incident
2 in Oroville. Personally, when I was with the Corps of
3 Engineers, one of my jobs was to lead the federal response to
4 how we were going to react to the Oroville incident. So I
5 went in front of the House T & I Committee and the Senate EPW
6 and talked to them about the legislation that would require
7 the Feds to collaborate on an independent peer review of the
8 risk analysis process. So that has happened. It's a big
9 report called the Tri Services Report; and it kind of keyed in
10 on some of the same things you see there in the Change
11 paragraphs, which is Risk Analysis needed to consider things a
12 little bit differently. I think really, importantly, though,
13 it's said a couple of other things, IFT and the Tri Services,
14 which is you need to not throw the baby out with the bath
15 water. So you should sustain some of these things that
16 really, in the case of Oroville, helped the community make
17 good decisions along the way. And so, that is the brutal
18 debate that comes with independent peer review is really
19 important and we have to keep a focus on doing that
20 independently, and then this complexity that comes from
21 systems and human factors is important to consider, but we
22 have to recognize that safety programs are there in part to
23 manage that complexity and uncertainty.

24 Next, please. So here's the foundational guidance
25 documents that guide the federal agencies and, in turn, many

1 of the State agencies and international practice in Dam Safety
2 right now. It is incorporation of risk and how we analyze
3 problems and how we make decisions based on that analysis. So
4 the interesting thing about the guidance documents is they're
5 scaled, they deal with dams of all sizes and types to enable
6 you to make consistent, good decisions. And then they're
7 adaptable over time and changes in the environment while being
8 equitable. That's one of the big powers of risk.

9 Next, please. So a busy slide, but let me explain it
10 a little bit. On the bottom there you have Physical Systems.
11 I use, actually, an example of Isabella Dam. You see, dams
12 are generally made up of multiple physical infrastructure
13 systems, just like Oroville is. Those dams are part of
14 multiple dams on single river systems, and then those river
15 systems are part of larger watersheds. So the physical
16 interactions on the watershed level get really complex. Then
17 you add on top of that the governance features, the political,
18 environmental and social factors and external influences that
19 might come from national and regional efforts, there's a lot
20 of human systems to deal with. But safety programs, in trying
21 to manage that complexity and uncertainty really deal with the
22 first two. And, frankly, that's enough at this point. The
23 practitioners that actually have to do this, they understand
24 that complexity, but they don't have the luxury of taking an
25 academic approach to it. You actually have to do things. So

1 I appreciate Dave's presentation and Sharon's. These are the
2 very specific things they're doing.

3 Next, please. So this is the Edenville Dam in
4 Michigan, made the news in the last two years. This is just
5 to point out that problems like were experienced there are
6 addressed within a Risk Informed Dam Safety Program. So where
7 we have processes that deal with complexities, particularly
8 system complexities and physical interactions between
9 different elements on dams. I won't go through them, but some
10 of those are actually familiar to you because of Oroville.

11 Next, please. Safety programs also deal with human
12 factors, and I would agree with Rune that human factors are
13 the wildcard always and probably in any industry.

14 So on the right there, you see the example of gate
15 reliability. Gate reliability can change a risk assessment
16 three orders of magnitude, a factor of a thousand, because
17 there's humans involved. So -- but we have ways, fault trees
18 and different risk analysis to deal with that and to kind of
19 understand what's the most likely outcome, but how bad could
20 it be and how good could it be, and that probability
21 distribution around that. So we are dealing with issues like
22 that, at least to some degree.

23 Next, please. So how else is our modern Dam Safety
24 Programs dealing with mitigating the effect of human factors
25 in risk and uncertainty? So here are things. You'll see a

1 long list that are part of a good program, and it's actually
2 part of what you see in almost every incident that comes out
3 of Dam Safety. By the way, the Dam Safety Industry is -- has
4 a failure rate that's about one in 10,000. So the existing
5 programs, although we all believe they should continue to
6 improve, have an extremely low failure rate. But meetings
7 like this public meeting is part of a good program. It's
8 collaboration with stakeholders, getting different
9 perspectives about what matters to different elements of the
10 community. So you're now part of the solution, I would say.

11 Next, please. So just a couple of slides on looking
12 forward to some of the trends and challenges and opportunities
13 we have within safety programs.

14 Next. So, first of all, the Risk Analysis Community,
15 as pointed out by the Tri Services Federal Guidelines
16 Independent Review that came out of Congress, is moving
17 forward with a bunch of things. One is, we understand the
18 importance of extreme events. So extreme seismic events,
19 extreme flood events, in the one million -- a one-in-a-million
20 chance in a year kind of event. We're getting better models
21 to do that. There is a big need in industry to build a
22 stronger bench of consultants to support owners in risk
23 analysis, and that's happening pretty rapidly. There are
24 already some great tools out there for systems and human
25 factors, things like HEC-RAS out of the Hydrologic Engineer

1 Center and human factors. But we can't forsake where
2 governance is, and that governance is actually part of the
3 answer to these three things as well. So you see advancements
4 in governance as well. Building an organization around the
5 concepts of Risk Management, like Dave pointed out.

6 Next. So it's probably worth stepping back from
7 Oroville and saying, you know, compared to incidents, not just
8 in damage in engineering, but in engineering, period, there's
9 some themes that keep coming back, and it's why we have things
10 like independent peer review is that it does take multiple
11 perspectives, that the numbers you crunch out in a risk
12 analysis are not decisions, they're just another piece of
13 evidence to help you make a better decision.

14 And then, finally, this recognition that I'm a civil
15 engineer with a couple of degrees in engineering, it's -- the
16 civil part of it means that things we design and build and
17 operate exist in society, and so, there's an interface, an
18 engagement with society, like this public meeting, that are
19 actually really important to embrace.

20 Next. So Challenges. We do have challenges going
21 forward, and I'm going to touch on them in two slides here.
22 So I think we have to be careful of how we deal with the
23 complexity of uncertainty, but there's going to have to be
24 some simplifications, because at the end of the day, it's nice
25 to have an academic approach to that. But decisions still

1 have to be made by owners and regulators.

2 Two, we can't forsake what actually has helped us make
3 good decisions and drive failure rates so low. So that's good
4 governance systems. And then the question for everyone now
5 outside of California is, how can you not take risk analysis
6 approach? How can you afford to not do it? When I was at the
7 Corps of Engineers, risk informed decision-making did two
8 things; it doubled our budget for what we wanted to spend
9 money on and it cost avoided seven billion dollars. So it
10 helped in all areas in just making better decisions.

11 Next, please. So we do have a problem like many
12 industries with the issue of Overconfidence Bias. So this is
13 Alan Greenspan. You probably know when we said this quote.
14 This was in 2008, right before the massive economic downturn.
15 And Overconfidence Bias is just us looking to the future and
16 overemphasizing the positive and under-appreciating the
17 possible negatives. So we have to realize that this exists
18 within our industry as well. And the best way to deal with
19 that is to bring multiple perspectives, multiple approaches
20 and a diversity of thought to how we solve problems,
21 particularly for these iconic massive projects like Oroville
22 that are so important to the regional and national economy,
23 really. And Risk Analysis has actual methodologies to help
24 deal with Overconfidence Bias.

25 Next, please. So, finally, I hope we can change this

1 conversation. I really like this quote, because I think it's
2 true, and that is because traditionally we have said safety is
3 binary, safety is your safe or you're unsafe. The reality is,
4 all safety programs are doing it, they're trying to manage
5 risk. And so, we should ask people to trust that we're going
6 to manage risk the best we can, because ultimate to either
7 side of this equation is not a realistic goal, it's not a
8 possible goal. So I hope these -- this theme of risk
9 management came through.

10 Next, please. I think I got us almost within time
11 limits. Thank you. I appreciate it, again, the opportunity
12 to talk to you.

13 SECRETARY CROWFOOT: Eric, thanks so much for your
14 presentation. Also, really compelling and helpful for the
15 non-experts among us.

16 Nick, I wonder if you can move us back to gallery
17 view, away from the slides, or somebody can, maybe James, so
18 we can see each other as we're talking, and librate Eric from
19 being the speaker here so we go back in the gallery view.

20 So, from my perspective, a lot to unpack or a lot to
21 consider within those four presentations. And most of us on
22 the Commission I don't think are civil engineers or dam safety
23 experts. So for me, anyways, there's a lot to absorb there
24 that's going to take a little more time than just this
25 meeting.

1 We do want to provide an opportunity to for initial
2 questions, thoughts, and then my recommendation would also be
3 given the time constraints of any one meeting that these are
4 issues that we revisit, of course, in subsequent meetings. To
5 me, the heart of this Commission's work is, you know, ensuring
6 effective risk management and addressing safety questions.
7 And so, this seems like a topic that we need to -- obviously,
8 doesn't get addressed in one meeting.

9 I want to welcome Senator Nielsen. I let everyone
10 know, Senator, that you and the Assemblymember had legislative
11 hearings this morning. But really appreciate you being here
12 as always and for your leadership. Again, I always point out
13 you guys are the reason why we have this Council.

14 Let me pause and just open this up for questions or
15 thoughts from the Commission, recognizing that this won't be
16 the final discussion of the presentations or suggestions or
17 content raised in the presentations. Genoa?

18 GENOA WIDENER: Hi. So, man, that was a lot to take
19 in without stopping for questions in between everything.

20 But I guess I'll start with the most recent little
21 presentation. At the end of that he said, you know, that we
22 need to -- when wear dealing with risk management and risk
23 analysis in the dam industry, the public needs to have that
24 trust that the experts are, you know, doing the best that they
25 can to keep us safe. And, unfortunately, that is one thing

1 that we, you know, are still struggling with here in Oroville
2 after the 2017 incident. So, you know, it's going to take
3 time to build back that trust, I think. It's encouraging to
4 see, you know, the new things that have been implemented by
5 the Department of Safety of Dams since 2017 and Dam Safety
6 Services, but it is also important to acknowledge that those
7 things were implemented because of a serious failure on their
8 part to keep Oroville safe and to accurately assess the risks
9 that were happening here at the time.

10 I also heard a lot of communication being so important
11 in the Dam Safety Industry and talk of shareholders,
12 operators, owners, regulators and communication. But the
13 public really needs to be a part of that communication as
14 well. That's why I'm so thankful for this Commission. I
15 think there needs to be, maybe, a little bit more clarity when
16 we're talking about risk assessments from DWR, especially from
17 the Department of Safety of Dams to the public.

18 Reading over Dr. Storesund's report and then the State
19 Water Project responses to his report, you get an idea, I
20 think, of the lack of clarity when we're talking about risk
21 and when we're talking about new developments and things that
22 are being implemented in the response that the State Water
23 Project had to Dr. Storesund's report, I repeatedly saw that,
24 Oh, these recommendations that Dr. Storesund is making is --
25 they're similar to proposals, they're consistent with elements

1 being implemented, they're similar to proposed potential
2 regulations, but those are all proposed regulations, those are
3 things that are in the process of being implemented.

4 So when we're talking about how safe the dam is and
5 you're still in the process of implementing these safety
6 measures, I just don't think that that's accurately
7 communicated to the public that we're working to make the dam
8 safer, we're working to make sure that the future of Oroville
9 is safe, but to say that we are at this moment might not be
10 the most accurate thing to say if you're still in the process
11 of implementing new guidelines and things like that.

12 The other thing that was in the response was that -- I
13 guess I just need some clarification, maybe from DWR, about
14 what is considered a failure. There seems to be a problem
15 with calling the 2017 incident a "failure," which was
16 described as an "uncontrolled release of reservoir water,"
17 that was generally regarded as the definition of "failure." I
18 was here in 2017, and when the water came over the emergency
19 spillway, it looked pretty uncontrolled to me. So I just want
20 some clarity on, you know, DWR, do they consider that a
21 failure? Because I do. It was an uncontrolled release of
22 water, correct?

23 So the other thing that I wanted to touch on was --
24 I'm so, I'm just looking at all my notes; this was a lot to
25 take in during this meeting.

1 SECRETARY CROWFOOT: I agree.

2 GENOA WIDENER: Eric, I believe, was the last
3 presenter, was his name. He talked about how there's a
4 thousand-year-old dams. But it is important to recognize that
5 in the case of the Oroville Dam, a lot of the materials that
6 were used to build this dam had a 50-year useful life
7 expectancy, which has come and gone. And so, yes, I'm sure
8 there's thousand-year-old dams still standing somewhere, but
9 that would not be the case with the Oroville Dam.

10 And as far as the communication goes, I've touched on
11 this before and it's always bothered me, that, you know, we're
12 still calling the installation of new piezometers "early
13 implementation." It seems like those, just little things,
14 that if, you know, we were more honest and clear about the
15 situation, I think that we could rebuild the trust with the
16 public and DWR, because the Department of Safety of Dams
17 recommended new piezometers at least 25 years ago. So to say
18 now, we're in 2021, and it's in early implementation, that's
19 just crazy. I mean, it doesn't make any sense to me. So it's
20 little things like that that really cause those kernels of
21 distrust to grow in the community and for people to feel like
22 they're not getting the whole story.

23 So just things to think about when we're looking over
24 these reports and trying to digest this meeting. I mean, I
25 appreciate everyone's presentations. I understand the process

1 of risk management, but at the basis of it it's about trusting
2 the people that are analyzing the risk. And, you know, I
3 understand this is very methodical, but the risk definitely
4 changes when you can look up and see the dam above you. Your
5 perception of how high that risk is is a lot different when
6 you're living underneath it. I, myself, have been evacuated
7 twice because of the dam. So it's putting a lot of trust into
8 the owners and the operators of the dam, and we're still
9 working on rebuilding that, I think. Risk analysis, I mean
10 it's all about perception, right?

11 SECRETARY CROWFOOT: Well, I just want to acknowledge
12 that. I mean, I consider the rebuilding of trust a journey,
13 and I think that there's a lot more work to do, to your point,
14 Genoa. And I think I'll just personally say, I totally hear
15 you. You're somebody that lives under that dam. This is a
16 different issue to you than if you worked for the state or
17 lived somewhere else in the state. This is a matter of you
18 and your family's safety. I want to acknowledge that. I also
19 want to agree with you. As I said, this is a lot to digest.
20 I think it's a really constructive set of presentations, but I
21 also think I, for one, need some time to digest this and
22 understand how we use this Commission to rebuild that trust
23 and to really explore, you know, suggestions made by Rune and
24 Eric and also understand from DWR, you know, really how
25 they're integrating these reforms and broader perspectives. I

1 think this is an important step forward for the Commission.
2 Again, I want to reduce any pressure to have some sort of, you
3 know, fulsome discussion on this here in the next 45 minutes,
4 because it's going to take a lot more than that.

5 Councilmember?

6 COUNCILMEMBER PITTMAN: Thank you, Secretary. As one
7 that survived and participated as a coordinator in the 1997
8 evacuation, the high-water event, it strikes me that I wish we
9 had this Commission back after the '97 event so we might have
10 been a little better prepared for the events that we
11 experienced recently. Certainly, got to give high remarks to
12 Senator Nielsen and Assemblymember Gallagher to put this
13 Commissioner together. I think the idea that we're all sworn
14 in as observers and filling the leadership role, as we look to
15 us all downstream of the dam and the river, I think it's the
16 strength of the future is going to be in our hands as we move
17 forward. So I appreciate the discussion. Certainly, a lot of
18 stuff to digest. But I believe that the communication is
19 going to be the big issue.

20 Like I said, back in '97, after the event, we just had
21 a quick recovery. Many people don't remember the devastation
22 that occurred even in the Hughes Lake Area, Marysville, lives
23 lost at that time. So if we learn anything, I don't think we
24 had any lives lost in this recent event. But at the same
25 time, this is going to be a future leadership trendsetter for

1 these type of structures. So thank you all. I appreciate
2 everyone's participation.

3 SECRETARY CROWFOOT: Yeah, and I'll just agree with
4 you, communication is going to be really critical. These are
5 such technical issues, and I think they can't stay in the
6 province of technical experts. I think that's part of what
7 this Commission is about, so policymakers can actually
8 understand what's happening or what else needs to happen.

9 I want to get on Rune, but I just want to call on a
10 Councilmember, Supervisor Conant.

11 SUPERVISOR CONNELLY: Finally.

12 SECRETARY CROWFOOT: Sorry; I didn't see your hand
13 raised. I see Supervisor Conant, and it's like he's got the
14 yellow hand raised.

15 SUPERVISOR CONNELLY: Go ahead.

16 SUPERVISOR CONANT: I think thought Connelly was going
17 to speak first even though I was called on.

18 I would just like to say thank you. This was a great
19 presentation, great issue, but just called to light more some
20 of the things that I've thought for a long time about the
21 failure. Not only the spillway, but the inability to manage
22 the water coming down the river, rising, huge amounts, 50,000
23 second feet down to nothing and back up, which destroyed the
24 habitat along the river, destroyed farmers' operations,
25 destroyed fish habitat for the future. We still haven't

1 recovered from that. I don't know -- you know, some of that
2 habitat that was destroyed, some of those trees were literally
3 hundreds of years old and they're gone now, and they line the
4 river and the river is a much shallower channel now than it
5 was. It's done a lot of damage, and it will never recover
6 from that, at least in the modern, our lifetime, I don't
7 think. That's some concerns I have. I think that all could
8 have been handled better. I think everybody agrees with that.
9 And it just goes to show you that this project should have --
10 we're looking back, and it's always good to quarterback on a
11 Monday night after the game, but, you know, I think there were
12 some things that were very flawed in the whole design of the
13 spillway that should have been caught earlier if proper
14 testing and management had been done earlier on. I'll leave
15 it at that.

16 SECRETARY CROWFOOT: I appreciate that. I think
17 that's a reality check just to understand that the damage from
18 the incident continues. I think --

19 SUPERVISOR CONANT: If I can add one more thing? Not
20 only that impact of people who farm downstream that were
21 directly impacted, but because the water was left so high for
22 so long in the river, trying to get a handle on it and get the
23 water down, it should have been managed better, and that's
24 where the secondary spillway -- another spillway might lower
25 the level of the dam in the future. We need to look at that.

1 It also damaged operations and orchards and farming operations
2 all the way down past Sacramento.

3 SECRETARY CROWFOOT: No, I appreciate that. You know,
4 this is the only Commission of its kind that's actually
5 legally required to have the people -- it's the only
6 Commission I sit on of this kind that is legally required to
7 have everybody on here and actually have the conversations
8 that we're having, which indicates just ultimately how serious
9 the incident was.

10 Let me turn to -- oh, Supervisor Connelly?

11 SUPERVISOR CONNELLY: Thank you very much. Secretary,
12 I really appreciate your very well-prepared, you're very
13 educated on things, and kind of set me straight on a couple of
14 things. I appreciate everybody's presentation, everybody that
15 is here. And I'm not an engineer. I'm a self-educated guy,
16 you know, simple guy, but I represent a lot of people like
17 Councilman Pittman that are pretty scared about the dam and
18 the way it was.

19 But a couple of observations, you know, just being a
20 laymen, I'll throw this out there. You said over and over we
21 need to digest all this, but immediately I saw two
22 presentations that basically, Look how great we are and what a
23 good job we've done and how rare it is anything could ever
24 happen, you know, you got a one in ten-thousand's chance or
25 whatever. Then I heard a third presentation by Mr. Storesund

1 that presents a new way to do safety. And I put it to the
2 safety of all dams, and a particular one in my back yard,
3 should be on par with a nuclear flat top or a nuclear
4 powerplant. And I think if you would consider this,
5 Secretary, that we could take Rune's presentation and try to
6 implement it -- I mean really implement it -- push it through
7 so that our safety leads everybody's and everybody will feel
8 much better about it. I don't think that that's a big ask. I
9 think every water contractor, everybody that receives water
10 from here would benefit from that safety coming to that level.
11 I think the safety industry could change because of what he's
12 proposed.

13 The status quo has failed us. I mean, we had dam
14 safety. We had FERC. We had DWR tell us that the spillway
15 was safe when, obviously, it was not constructed safely or
16 maintained properly or forecast to fail, and it did. And
17 that's a little bit scary to me, and I'm speaking -- this is
18 just me, a layman, talking; we need to think more than
19 generational. We need to think a hundred years out or farther
20 so that my grandchildren will be safe and other people around
21 this. And it's great to say how great we are and how people
22 are imitating us now, but I think Rune's report, having read
23 it and just the titles on what he wants to implement, if we
24 would follow -- if you did serious consideration to following
25 through with that, I would like to see that happen. That was

1 my only comments. Thank you very much.

2 SECRETARY CROWFOOT: Thank you. And I'll call myself
3 a layman on this as well because I don't have a good
4 understanding of the technical issues.

5 I do think it's progress that DWR had, you know,
6 invited this independent analysis through the IFT. I do think
7 it's helpful to have these external perspectives. You know,
8 the way I interpreted the two presentations from Sharon and
9 Dave at DWR is less about sort of defending the status quo and
10 more about saying, Hey, the incident at Oroville catalyzed
11 some really important changes and these are them. That being
12 said, I agree that we need to, you know, assess both Rune and
13 Eric's work to understand, you know, what else possibly we
14 could be doing or should be doing.

15 And then, when I say "time to digest it," just because
16 I haven't had the benefits of understanding their
17 presentations outside of 20 minutes, I just want to understand
18 what exactly they're suggesting. But I do think that the
19 intent is to strengthen the process and to improve both safety
20 and the sense of safety that people have as part of restoring
21 trust.

22 So I hear you. You have my commitment to actually
23 take time to understand what's being recommended here and then
24 to continue to talk through this at the Commission so that
25 this doesn't get -- we move on and all the sudden this is in

1 the background. This, to me, is the crux or the core of why
2 the Commission was created in the first place, is to
3 understand what we can be doing and everything from
4 quote/unquote risk management to communication.

5 SUPERVISOR CONNELLY: Thank you for your comments.

6 SECRETARY CROWFOOT: Thank you. Senator?

7 Rune, I haven't forgot about you, I just wanted to
8 give priority to the Councilmembers. Senator?

9 SENATOR NIELSEN: I want to thank you. James, I have
10 been delayed because we have been, in fact, in session this
11 morning. I don't really feel I've missed anything, but I have
12 had something greatly reaffirmed, that the value of what we
13 are doing here together is incredible, in all respects. And I
14 will attest how rare it is -- this was built upon an idea that
15 goes back to the 1980s, the Sacramento River Conservation
16 Forum, which was about how do we manage the Sacramento River
17 and its complicated problems and the diversity of interests
18 thereby affected. It's worked and now it's working here,
19 because the citizens are having the opportunity to be directly
20 involved. Sadly, this is contrary to what's going on in the
21 rest of government right now.

22 In the State Capitol, folks, the biggest thing that is
23 happening is the members of the legislature ceding your
24 authority, the citizens' authority, to governors and governors
25 usurping the local authority and state legislative authority

1 to do whatever they want to do almost unilaterally. And
2 that's my greatest frustration of the moment.

3 But to set that aside, because we are dealing with
4 that issue, it was interesting -- just probably part of what I
5 was doing while I was absent from the first part of this was
6 debating legislation called The Canal Conveyance Capacity
7 Restoration Fund, Canal Capacity Restoration Fund. What this
8 relates to is decades of the whole State Water Project.
9 Oroville is the headquarters; that's a stop -- where it all
10 starts. But it doesn't mean anything if you have just the dam
11 and you don't have a conveyance system. And there's been a
12 deterioration over decades for many reasons, including
13 subsidence of the conveyance system. And now there's a
14 recognition that that, too, has got to be dealt with.

15 Interestingly enough, it can be, in fact, to a degree
16 dealt with replenishing the ground water. And that's a part
17 of the water bond, what funds have been directed for ground
18 water replenishment, which will help with the subsidence, but
19 it's going to help with all of this because of our declining
20 water levels pursuant to the drought and whatever. So these
21 things are kind of fitting in together as far as giving me
22 some greater hope for the future.

23 And, again, I want to -- almost every time I talk I
24 commend the Secretary for his very personal involvement. This
25 is absolutely rare in government, to the citizens that out

1 there, that this doesn't much happen. Even legislators don't
2 get as much access as what you are getting, in many cases.
3 That's very precious and very special, and it gives us a lot
4 of hope for the future that that dam is going to be fixed in
5 good order and going to operate well and be well-managed and
6 coordinated and a part of the whole system.

7 I'm going to express a little of my frustration right
8 now, though, and that's we tried to do something seven years
9 ago that would have helped us in this period of drought. And
10 this is not the fault of the secretary at all; it goes back
11 all those years. But the water bond, 2.7 billion dollars was
12 set aside for large surface storage seven years ago. We come
13 down seven years, we do not have one gallon of water large
14 surface storage. The only thing in process is Sites
15 Reservoir, and that's having some bumps along the way in no
16 small measure because of the agencies of state government.
17 Again, that's not the Secretary's problem. We all have to
18 deal with it. And we're going to have to continue to be very
19 diligent. What is different though is the legislators are
20 seeming to wake up and to vote on this capacity restoration
21 fund was interesting. I think there was only one "no" vote.
22 And that was kind of a unique circumstance. So, in the macro,
23 meaning the whole system of water in California, I think that
24 there is a modicum of hope here for us, and I feel pretty darn
25 good about it. I think I can speak well for James also on

1 this.

2 Another thing of some passing interest, in both the
3 Water Bond and in the Statute, the New Water Plan for
4 California that was negotiated in 2010 -- and I spent
5 thousands of hours on that -- I was able to secure provisions
6 in both the bond and the statute that affirmed a human right
7 to water. Now, that would seem to be a silly thing to even
8 think about. But with my experience up to that point, that
9 for various reasons, most -- many of them litigation, the
10 human right to water had been greatly diminished, if not just
11 wiped out. And now we do have in statute -- and some people
12 forget about it because it's very seldom ever talked about.
13 And, in fact, yesterday the first time that it showed up in a
14 legislative letter. This was a letter from a member of the
15 legislature, the auditor, the State Auditor, and it
16 acknowledged in 2012 California was the first state to enact a
17 human right to water law, and then it stated every human being
18 had a right to safety and to water, in other words. Now, that
19 has arguable degrees of legal standing, but it does have legal
20 standing, and it does mean that that's a part of water policy
21 to the future of California. That, to me, is significant and
22 fundamental and was timely, as I got to report to you, that
23 that just now showed up in a legislative document. I'm
24 blabbing about it all the time because I don't want people to
25 forget that we have a right to water as humans. But, anyway,

1 that's just kind of a petty -- no, it's not petty; that's a
2 big deal, personal thing. But let's get back to where we're
3 at here.

4 To me, this is really exciting, that Rune has done a
5 magnificent job and the technical committee did also, giving
6 us their take on what had happened and where we need to go in
7 the future, help us chart a course. And I truly believe that
8 we have the expertise, the people of the State of California,
9 the officials in government and in the local communities and
10 the citizens themselves, through their various and sundry
11 organizations and entities, we're going to be able to do some
12 really good things in the future. I feel very confident about
13 that. I hope you do, too, and I appreciate all of you who
14 have been participating regularly in these meetings. We're
15 going to keep them going.

16 Again, I want to thank the Secretary and Karla Nemeth,
17 too, for their very personal interest as Directors. They're
18 very busy people, but they have devoted their personal
19 attention to this that's so important to us and to all of the
20 State of California. That's my two bits worth, but thank you,
21 Folks.

22 SECRETARY CROWFOOT: Thank you so much, Senator. I'm
23 going to call -- I think Councilmember Pittman may have his
24 hand up as an artifact of a prior comment he made. So then
25 I'm going to call on Rune in a moment. I want to do a couple

1 of things. I want to make sure folks that are joining from
2 the community can provide public comment, and so we'll that.
3 I then I do want to end on time at 12:30, given the folks on
4 the phone or here today have, obviously, a number of other
5 duties. We clearly need to continue this discussion at our
6 next meeting, which is going to take place in late August.

7 So, Rune, why don't you finish us up with any
8 observations you want to share, and then we're going to move
9 to public comment.

10 DR. RUNE STORESUND: Thank you, Secretary. I just
11 wanted to commend this group for the work that they're doing.
12 The conversations that I'm hearing I think are the right
13 source of conversations on the journey towards trust. So keep
14 up the good work.

15 The other thing that I would like to sprinkle into
16 your deliberations as you move forward is let's not get too
17 focused on all the extreme events or bad outcomes, let's also
18 have conversations about expected conditions. So Oroville is
19 a little unique in that it's part of a design discharge
20 through both the primary spillway and the emergency spillway.
21 It came up to 700,000 CFS. That's the maximum release that
22 can come out of that dam. So I think good conversations for
23 the community to have is what sort of impacts and response
24 would we see at 150,000, which is kind of the maximum normal
25 release, but then what happens at two-hundred-,

1 three-hundred-, four-hundred-thousand? So if those
2 conditions arise there is an idea of what the evacuation zones
3 are and what to do and they're not surprises, and I would
4 bundle that into kind of normal operations discussions
5 separate and aside from the million-year earthquake. That's
6 it. Thank you so much.

7 SECRETARY CROWFOOT: Thank you so much for all of your
8 work on this. Thank you, too, Eric. Two excellent
9 presentations.

10 Let's turn it over to Nick. Help us understand, move
11 us into public comment.

12 NICK SAFFOLD: Thank you, Secretary. I know we're
13 limited on time, but we have three folks, it looks like,
14 Ronald Stark (phonetic), Matt Mentink (phonetic) and Beth
15 Bello (phonetic).

16 So, James, if you wouldn't mind allowing Beth to speak
17 and then we'll go to Matt and then Ronald.

18 I also just want to mention, Secretary, that there are
19 ways to communicate, other communications channels with the
20 Commission. We have an email address on the website and we
21 also have a phone number, if anyone wants to reach out or
22 provide public comment that way or ask a question.

23 SECRETARY CROWFOOT: Thank you. Beth?

24 PUBLIC MEMBER: Good day. I'm Beth Bello; I'm a
25 resident here in the Kelly Ridge, and our home is directly

1 adjacent to the Lake Oroville State Recreation Area. Today
2 I've heard multiple presentations on safety, drought, and
3 climate change.

4 I would like to bring up concerns on fire fuel
5 reduction in the Lake Oroville State Recreation Area. Fire
6 science has changed since the Fuel Reduction Plan was created
7 over a decade ago for the Lake Oroville State Recreation Area.
8 It is time for change. Millions of dollars have been spent
9 building boat ramps at Loafer Creek and Bidwell Canyon. Why
10 is not more money put aside for safety to protect our
11 wonderful recreation area through fire prevention? I have
12 serious concerns on the need to reduce the fire fuel
13 reduction, ladder fuel reduction in this area directly
14 adjacent to the Kelly Ridge community. The critical area in
15 need is from the south end dam parking lot up both Bidwell
16 Canyon, down BB (phonetic) trails to the Visitor Center, down
17 to Kelly Point -- onto the Bidwell Canyon Marina. It will not
18 matter how much defensible space we make at our homes if we
19 are faced with a huge wall of fire from dense underbrush, dead
20 manzanita, pines adjacent 101 feet from our homes. Fire by
21 nature travels up hills and creates wind from the heat. It is
22 obvious where the fire would travel, and that is to our home.

23 I am aware of the recent fire fuel reduction in Wilfer
24 (phonetic) Creek, but, ironically, this does not have
25 residents. There's an excessive amount of unmanaged growth

1 adjacent to the residential community properties and extends
2 all the way down to the reservoir. These areas are a huge
3 time bomb waiting to go off. Our neighborhoods will not have
4 a fighting chance if there is a fire. If we have a fire in
5 and our homes are lost, there's serious and costly economic
6 and environmental implications that would far surpass the
7 reduction cost. Most recently, the Camp Fire that threatened
8 Kelly Ridge estimated 1.35 billion dollars from Cal Recycle
9 for the debris removal. Anyways, this fuel reduction plan is
10 over a decade old. Fire science, along with climate, has
11 changed.

12 Thank you for letting me bring up this serious concern
13 about fuel reduction, which is very badly needed, and the plan
14 changed from 100 feet out from our properties to much more
15 beyond.

16 SECRETARY CROWFOOT: Thanks so much. Just know that
17 we are focused on investing more in that fuel or vegetation
18 management, and we made some progress at the State Recreation
19 Area. And maybe Matt Teague -- I'm not sure if we can get
20 Beth's contact information, you can share more about what
21 we're planning. But point well-taken that there's more that
22 needs to be done. I think we're moving onto, Matt.

23 Senator?

24 SENATOR NIELSEN: Let me pipe in here to give you a
25 little bit of confidence and hope. This has been a

1 frustration again of mine. We're on 40 years of we didn't
2 manage our forest and wildlands, we just locked them up.
3 Well, unfortunately, because of the disastrous fires, plural,
4 all over California that has changed now, and the Secretary is
5 right -- and I'm the Vice Chairman of the Senate Budget
6 Committee, so I'm sitting right in the middle of it. Real
7 money is now being put into forest and wildland management.
8 Even up in our neck of the woods -- and they'll get ahold of
9 you, Ma'am, and chat with you, and if you want to chat
10 further, call my Chico office and give them your specific
11 concerns.

12 But the point is, in the macro sense and in the micro
13 sense, a lot is happening. And that's really encouraging. We
14 could not ever used to even talk about managing the forest and
15 the wildlands or removing the brush. Another aspect of it,
16 which I have been very forceful about acknowledging and trying
17 to educate people, it is not only the personal lives of our
18 citizens and the property, but it's the wildlife. Some people
19 who have advocated locking up the forest and the wildlands and
20 not doing anything are ignoring and putting at risk our
21 wildlife. And that's just intolerable.

22 At least, I can tell you that there's some progress
23 being made, there's hope ahead, and that's the good news in
24 this area. But for many years, there was no good news.

25 SECRETARY CROWFOOT: Point well-taken.

1 Onto Matt. James?

2 WEBINAR HOST: You should be able to unmute, Matt.

3 PUBLIC MEMBER: I think I got it; thank you. I'll try
4 to keep it at three minutes, so, Ron, you can get your three
5 minutes in.

6 A lot of questions I'd like to talk about regarding
7 safety. What I choose to do instead is to try and help
8 continue to improve this Advisory Commission. Today's meeting
9 was the first in which we actually gave a presentation at DWR.
10 Thank you, Rune and Eric, for that.

11 Advisory means advising, not citizens, but the
12 agencies as well. It was -- we saw the layout of the
13 Recommendation Log. We missed a couple items. We were
14 supposed to follow up on Hyatt today, and next meeting we're
15 supposed to have visitors from the State Water Contractors
16 join us, as we talk about Asset Management. We added number
17 12, which I think is the Contact Log so that we can submit
18 both advanced questions to the Presenters of the meetings but
19 also ask follow-up questions after the meetings.

20 With that done, I think the tie-on piece to that is
21 that the questions submitted after the fact, have a website --
22 listed on the website so all the other Commissioners and
23 members can read these after the fact questions and answers so
24 they don't get repeated in future meetings. We're making
25 great progress. I think this is turning into what was

1 envisioned when this charter was created.

2 For next meeting, Asset Management, my recommendation
3 I would like to make for today is we received the FERC Part 12
4 recommendations, 39 recommendations in there, and very good
5 ones. I think what it tells us is how much we don't know, how
6 many additional studies we need to find to better quantify the
7 risk before we dive into selecting one of the ten alternative
8 measures that the Comprehensive Needs Assessment provided.

9 What we didn't see was the DOSD's recommendations. We
10 didn't see the internal recommendations for Dave Sarkisian's
11 team on what internal employees are finding themselves rather
12 than simply relying on FERC. My suggestion is that we take
13 all of these, we take the FERC recommendations, the level-two
14 recommendations, the DOSD recommendations, we take the
15 Comprehensive Needs Assessment recommendations, we even take
16 the five-year capitalization plans that are already scheduled
17 over the next five years and we create one sort of all-
18 encompassing documents that encapsulates all the work that
19 needs to be done for the public to be better informed.

20 Since this is all about communication and trust, if we
21 aren't provided with all the work that's out there through all
22 these different oversight agencies, how do we know that we're
23 following up. Especially, given the history that we waited
24 eight years for a Probable Maximum Flood Study that was
25 acceptable by FERC. We waited 12 years for piezometers. We

1 waited 16 years for a geology report on the hillside emergency
2 spillway, waiting 40 years for a new Water Control Manual that
3 doesn't send 11 feet of water over the unprotected emergency
4 hillside for the storage that was never provided at
5 Marysville. There isn't a very good history of urgency when
6 it comes to safety. So if we take all of these and we put
7 them in this all-encompassing document similar to the
8 recommendation log, we can call it the "recommendation log of
9 regulatory recommendations," if you want. But it will provide
10 us a status, a timeline, a schedule. Status timeline and
11 schedule is contained within the Part 12 conclusions. Not
12 only was it recommended by the independent councils that
13 timeline, schedules and recommendations is provided to the
14 public, but the charter for this also says that we can ask for
15 whatever relevant information we want regarding timelines,
16 schedules and maintenance. And it's even in State Water
17 Contractors own Safety Policy, communication to externals. So
18 that is already there, this collective data is already in Dave
19 Sarkisian's division, it's also in Ted Craddock's hands. We
20 just need you to turn it into a public version.

21 SECRETARY CROWFOOT: Got it.

22 PUBLIC MEMBER: Thank you.

23 SECRETARY CROWFOOT: Matt, thank you.

24 PUBLIC MEMBER: Rest of the time is yours, Ron.

25 SECRETARY CROWFOOT: Matt, thank you. I recognize

1 that we skipped over an update on the Tracking Log that we are
2 now using. I would say we start with that at our next meeting
3 and then also consider integrating Matt's good suggestions
4 around aggregating some of the recommendations and data to
5 make them much more understandable and trackable by the
6 public. Big thanks, Matt. More to come on that in, probably,
7 next meeting. Over to you, Ron.

8 PUBLIC MEMBER: Ron Stark, former member of the ad hoc
9 group. This is a quick tale of standards at two capitals. I
10 want to thank Eric and the Corps for their attention to
11 Isabella Dam, which is under extensive reconstruction, half a
12 billion dollar reconstruction, because, in part, the spillways
13 did not meet the probable maximum flood standard. And the
14 capital, of course, is Bakersfield, the capital of country
15 music in the Western United States. And the reclamation is
16 still working on a billion-dollar reconstruction of Folsom
17 Dam, in part because there was no -- it could not meet the new
18 probable maximum flood at Folsom. In contrast, the Department
19 of Water Resources, in response to a letter from FERC
20 inquiring about the 140,000 CFS gap between the spillway
21 competence at capacity at Oroville, responded since we last
22 talked, that, Well, you know, we didn't really think we need
23 to meet that standard. With FERC, that's a standard, it's not
24 just discretionary action. At least it has been in all the
25 times that I've seen. And I can't express to you how

1 disappointing that is that the Department would tell FERC
2 that. And, of course, there was no discussion about one of
3 the flood water management consequences of not having the kind
4 of confidence at the spillways. So I would like to have a
5 chance to re-brief the Department and to brief the Secretary
6 on the details of this important matter. Thank you. 12:30;
7 just in time.

8 SECRETARY CROWFOOT: Thank you, Ron. Folks, we're to
9 the end of the scheduled meeting. As usual, we'll end on
10 time. I want to flag a few things. One is, clearly, we've
11 start to unpack questions and ongoing concerns here that we
12 should continue to discuss in the August meeting.

13 Nick, can you just remind people when the next meeting
14 is, August?

15 NICK SAFFOLD: August 27th.

16 SECRETARY CROWFOOT: August 27th. That's on the
17 calendar.

18 We'll make sure to hit on, at the beginning of the
19 next meeting, both an update on the Tracking Log so that the
20 discussions and what we decide or direct out of this
21 discussions at the Commission actually gets done.

22 And we'll have an update on the cameras that were on
23 the spillway. Bottom line up front is DWR is working to keep
24 camera or cameras operating there given public interest in
25 doing that. Those have been temporary cameras, but they're

1 working on having those continue to provide realtime footage.
2 So more on that at the next meeting.

3 Huge thanks to everybody for your time, particularly,
4 those of you who don't do this as part of a regular job.
5 People like Genoa, who are members from the public who are
6 volunteering their time.

7 Senator Nielsen, let me just turn it to you for any
8 final works. I think Assemblymember Gallagher has left us, so
9 I turn it to you, Senator.

10 SENATOR NIELSEN: Everything's fine. I thank you very
11 much, everybody. Very productive. We're going to keep it
12 going.

13 SECRETARY CROWFOOT: Thanks so much, all. Have a good
14 day. Have a good weekend. Happy Memorial Day weekend.

15 (Adjourned at 12:32 p.m.)

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REPORTER'S CERTIFICATE

STATE OF CALIFORNIA)
)
COUNTY OF CONTRA COSTA)

I, ANN R. LEITZ, a Certified Shorthand Reporter of the State of California, do hereby certify:

That I am a disinterested person herein; that the Zoom Advisory Commission Meeting was taken before me, in shorthand writing, and was thereafter transcribed, and is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not of counsel or attorney for any of the parties to said meeting nor in any way interested in the outcome of said meeting.

I declare under the penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated this 2nd day of June, 2021

/s:/Ann R. Leitz

ANN R. LEITZ, CSR NO. 9149