OROVILLE DAM

CITIZENS ADVISORY COMMISSION

MEETING NO. 10

DATE & TIME: Friday, March 25, 2022
10:06 a.m. - 12:06 p.m.

LOCATION: Zoom videoconference

REPORTER: Eugene Lin, CSR
Certificate No. 14109

Meeting transcript of the Oroville Dam Citizens Advisory Commission Meeting, taken before Eugene Lin, CSR, a Certified Shorthand Reporter for the State of California, with principal office in the County of Orange, commencing on Friday, March 25, 2022, 10:06 a.m., via Zoom videoconference.

ROLL CALL:

Lieutenant Collins
Supervisor Connelly
Supervisor Conant
Secretary Crowfoot
Chief Deputy Director Curry
Supervisor Flores
Supervisor Fuhrer
Assemblyman Gallagher
Supervisor Kimmelshue
Deputy Licon
Captain Million
Director Nemeth
Senator Nielsen
Councilmember Pittman
Mayor Reynolds
Lieutenant Stokes
Superintendent Teague
Supervisor Vasquez
Commissioner Northern

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MR. CROWFOOT: Great. Well, thanks so much all for being here, both members of the commission, and community members, members of the public. This is our 10th meeting of the Oroville Dam Citizens Advisory Commission.

As you recall, our first few handful of meetings was in person, and then we had to shift to the virtual format given the pandemic. I'm hopeful that our next meeting in June, we'll be able to do in person. I strongly prefer that, being actually around a table in Oroville or nearby the Oroville community. So stay tuned on that. But thanks for your ongoing patience on Zoom in the meantime.

We have two hours for today's meeting. And I'm going to respect everybody's time, and we'll conclude by noon. We've got some good conversations queued up for today. We'll have, as always, an update on action items that we've identified in last meetings, the meetings road map moving forward, and the commission report that we owe the legislature.

We'll have an opportunity to hear from DWR on the Palermo Tunnel and the piezometers which has been a subject of questions in the past. We'll hear a presentation on flood risk planning from Rune Storesund

who is joining us today. And then we'll have presentations from CalOES, our Office of Emergency Services, and DWR, and our public safety partnerships. And then, as always, we'll conclude with an important time for public comment.

Before we dive into today's agenda, I would like to note or observe that these public meetings don't always allow the time for a deep dive on some issues that are of great priority to members of the commission. Given that, we have organized on April 22nd a three-hour technical workshop on flood safety really focused for stakeholders on doing a deep dive on the safety aspects of Oroville and the efforts on flood safety.

So again, that's going to be on April 22nd, just about a month from now. And everybody on the commission will get notice of that if you haven't already. And then that will be on the website. And we'll make sure that that's well-known in the community. And there will be an opportunity to do a deeper dive. Rune is going to be providing a 10-minute summary of his work today. And I know he and others are going to really benefit from the opportunity to go deeper on that technical workshop.

The workshop is going to be open to the public, and more details next week on the commission website

about that. And then we'll actually receive a briefing in the summary meeting on the discussion that took place at that workshop.

At this time, I want to give Karla Nemeth, our Director of the Department of Water Resources, an opportunity to talk about Oroville and, specifically, water supply and the drought. But as always, I want to give an opportunity for Senator Nielsen and Assemblyman Gallagher to share their thoughts that they have.

As we talked about in the past, frankly, we're here because they stepped up and created this commission to ensure that we were paying attention to these communities' concerns. So always want to get them on this platform to help frame the discussion today.

So why don't we move to Senator Nielsen first.

MR. NIELSEN: Well, first off, Secretary and Director Nemeth, I want to thank you both. This has turned out that the legislation and the commission far exceeded my expectations and I believe yours as well. It's built, as you know, on a plan I did way back in the mid '80s, the Sacramento River Conservation Forum. This forum is the same, but it's been extraordinarily successful in keeping people involved and informed. And I'm delighted and very appreciative of your leadership Mr. Secretary and Nemeth.

MR. CROWFOOT: Thank you so much Mr. Nielsen.

MR. NIELSEN: Yeah, welcome everybody. And I just want to thank everybody for the continued participation in the commission.

I've heard that there is community involvement. And it is such an important part of our water supply and flood control for the region and for the entire state as we all know. And so I am looking forward to the discussion today. I appreciate the deeper dive on the flood control aspects, technical aspects. And I think that will be a good -- and I thank the deputy -- I'm sorry -- the secretary for setting that up. And I think that will be really beneficial as we look at how we are comprehensively providing for the greater protection of the region.

And so looking forward to the presentations today. And thank you all for joining.

MR. CROWFOOT: Thank you. So I want to turn to Director Nemeth now.

And if you would, Karla, can you give us an update in sort of real time around Oroville, and how it's being used, and what the drought conditions are, and what the community members should be aware of as it relates to the reservoir and dam given the current conditions.

MS. NEMETH: Definitely.

Good morning everyone. It's good to be with my fellow commissioners and members of the public. I don't think I need to tell you that we are experiencing extremely dry conditions this year. We had that record-setting December even in the Feather watershed. But that basically rolled right into a record-dry January, February, and now March.

That is also accompanied by very high ambient air temperatures, which is one of the things we learned last year is the really important effect that higher-than-average ambient air temperatures have on our snowmelt and how that does or does not translate into runoff into rivers, streams, and reservoirs. So we are very much back in drought planning.

As of Wednesday of this week, Lake Oroville was at 46 percent of total capacity, which is just about 67 percent of its historical average for this time of year. I would also say, to me, one of the very wake-up call stats, I should say, about Oroville this year is that we actually believe that inflow into the reservoir will probably have peaked in February, which has never occurred before. And that is an outcome of these very dry conditions.

As you know, we usually see those inflow

conditions rise and rise throughout the spring as snowmelt occurs at a more attenuated pace. That is not the case this year.

So there's quite a bit that the department is doing to keep as much water in the reservoir as we can to plan for the potential for a dry year next year. So our overall priorities for the reservoir are health and safety needs including, and in particular, health and safety needs for some of our surrounding communities like Yuba City, and others, and Plumas County. But also, dealing with what we need to do to protect such critical threshold needs for endangered species and then meet our settlement contractor needs here in the community. That's our river settlement contractors.

So to do all of that, the department has sought from the Water Resources Control Board a permit to relax some of the water quality standards downstream of Oroville. And we are also putting in our drought emergency barrier, which is something that we did last year as well. So when it gets this dry, how we manage the system is to limit our need to release water from Oroville, to repel salinity in the Delta by using a physical barrier in the Delta, and then relaxing certain water quality standards in the western part of the Delta. That's what helps us keep as much water in

Oroville as we can.

I want to be really clear that the department has also reduced our allocation to our State Water Project contractors from 15 percent in January to 5 percent now. Again, that 5 percent will largely be met by stored water in San Luis Reservoir, not water that we have up in Oroville.

Overall, our goal is to maintain the lake at 860,000 acre-feet of water for end-of-year storage in September. And we are going to be working with all of our partners along the Feather River to understand the availability of their water supplies this year. That's something that we make a determination on by middle of April.

And we're going to be managing locally in the basin for multiple purposes, doing what we can to provide water supply to those senior water rights holders, ensuring that how we use these limited supplies which can also support water formed in the system as you all know. That's an important part of the Pacific Flyway.

And we're going to be taking this year as really on a week-by-week basis working with our colleagues at the Water Board, water usage in the system to continue to track what water is coming into Oroville

as inflow, and ensuring that it meets our expectations. And when it doesn't, making adjustments in real time.

And then lastly, Secretary, I'll add that we did institute this year some new ways of forecasting how snowpack turns into runoff into rivers, streams, and reservoirs. As you may know, we have snow sensors that go up the Feather watershed.

This year, in addition to that, we did aerial snow observatories. That's when we fly over the watershed and can measure in 3-meter grids the snow water content all the way up the slopes of the Sierra Nevada. That's going to be really important for California, not just in the Feather watershed, but to improve our accuracy over time when we know that given the changing climate, we anticipate snowpack to recede up the slope.

And so we need to be ready with our instrumentation that can capture further up the Sierra Nevada what the snow water content is so that we can prepare everyone for water availability for that year. So that's something new that we did this year. And we are looking at different ways with a lot of our partner agencies.

This is not a California-specific challenge. We have drought in the west side. And there's a lot of

important work happening to improve forecasting with our federal partner at the Bureau of Reclamation, U.S. Geological Survey, and NASA, and other entities. And we look forward to continuing to update this group around these really important improvements to water supply forecasting.

MR. CROWFOOT: Thanks so much Director Nemeth.

I would like to give an opportunity to commissioners who have questions about Karla's overview. Feel free to raise your hand if you're interested in asking any questions or sharing observations on her report. And if you're on the phone, you can simply speak up.

MR. CONNELLY: Can you hear me? Can you guys hear me?

MR. CROWFOOT: I can hear you very vaguely.

So if you share your thought or your question, then I can repeat it.

MR. CONNELLY: All right. First off, I really appreciate having the meetings and so forth.

But would you consider, in the future, if the Secretary, and Director, and the Senator, and Assemblymen have to leave, leaving the facilitator and staff -- this is for future consideration, not this meeting -- so we can stay after, a half hour to an hour,

if we have unfinished business?

The next thing is: Reading old documents, I saw a proposal to share the salinity problem with the federal facilities. So there's some sort of drawdown with parity which impacts local recreation and the operations. I still think that's worthy of considerations.

Those are the couple of thoughts I had. Thank you for the report. And I really appreciate that we're getting into this century on weather forecast and snowmelt. Thank you.

MR. CROWFOOT: Thanks so much.

So Supervisor Connelly, his first suggestion is for us to consider the possibility that a facilitator, like Nick, could continue a meeting beyond sort of the end time if there's unfinished business or ongoing discussion if indeed the elected and appointed officials need to leave. So that's a suggestion we'll need to respond to.

And I think the supervisor was talking about the discussion that had happened around the -- Karla, did you hear that? -- working with the state and Federal Government on salinity control and, I think, as I heard it, its impacts on recreation and other community amenities.

MS. NEMETH: Yeah, so that's a good question Supervisor. And for clarity, DWR does partner with Reclamation on managing for salinity control.

This year, Reclamation will be really using the Folsom Reservoir for their connections to salinity management. And that's because that watershed also got more of the December storms like the Feather and the Yuba watershed. The area that did not get that big slug of weather in December was the Sacramento River watershed and up behind Shasta.

So Shasta is in a critical condition. They've been in a critical condition all year. That reservoir is not in a position and has not been -- we have not been using that reservoir jointly to repel salinity in the Delta which is why getting that barrier in place is really important as is this urgency change request that we have in front of the Water Board that will provide some relief to Oroville so that we can do the best we can to maintain recreational amenities as long as we can in the reservoir.

And that's where things sit. You know, I know this isn't great comfort for folks. But when we do have these dry conditions, it does give us an opportunity -- and I'll check with my team and I can report at our next meeting -- if there's ways in which we can accelerate

projects because of the low lake levels. You know, that there is a small opportunity in there when it's so dry.

And we will look to take advantage of that because we know we are going to get rain again in California. And if we can have those recreational amenities in place and those improvements in place, that's really good for everybody.

MR. CONNELLY: Thank you.

MR. CROWFOOT: Thank you. Thank you for the suggestions and questions Supervisor.

Seeing no other hands, let's move to Nick who is going to give us an update on some of the key kind of action items and points of accounting in the last meeting. It's a really important thing that we do in the meeting so we make sure that this conversation isn't just discussion that then doesn't lead to anything else.

So Nick, why don't you give us your update.

MR. NIELSEN: Let me jump in real quick because it fits right into Karla's comments.

I want to thank DWR and the Water Commission. Finally, there is some movement on Sites. That's kind of a long-term thing for our water needs in California. But finally, with the commission apportioning some of the bond money and a substantial commitment of federal funding, $2.5 billion I think, that is going to begin to

move. And I'm frankly surprised and delighted by that. But for the 10-year plan, that's significant.

Thank you.

MR. CROWFOOT: Well, thank you Senator. And you've been a really strong voice on moving forward on that. And so appreciate those comments.

And for those that don't know, a big advancement for the project, even in the last few days as the Senator noted, that the U.S. EPA is providing a loan of over $2 billion to the project to help facilitate it. And that plus funding from the state is really a really, really big step forward. So more work to come.

But definitely recognize the urgency that you're bringing to actually getting more smart supply online.

Over to you Nick.

MR. SAFFOLD: Great. Thank you Secretary.

James, let's go to the next slide.

And just as a reminder to everyone, all meeting materials, transcripts, and the meeting summary notes are posted online on the commission website.

Yeah, so I'm just going to briefly provide a few updates on our "Action Items," our meeting road map, and then the commission report. Let's see here. Okay.

Great. So we're in the "Action Items" slide. You know, everyone has kind of seen these previously. We just have a few new items at the end here. So all of these you'll be familiar with.

Item Number 1: Report out on instrumentation during winter operations. It's, again, just an ongoing item.

Regular updates and milestones on FIRO as well as New Bullards Bar Water Control Manual processes. We have this as an ongoing item.

Number 3 here: Follow up on the status of the FERC relicensing. So we're on track here. And here's hoping to provide an update at the 2022 meeting this year.

An update on FEMA reimbursement. This is, again, an ongoing item that we'll share when we have anything new.

Item Number 5: Discussion to help state agencies and local partners address homeless encampments around the Feather River. So this is an item that we have for future commission consideration. No movement just yet on that item.

Item 6 is a DWR update on debris and storm inflows. Again, kind of a monitoring item. And DWR will alert the commission if there's anything new there.

Number 7: Agendize discussion on lessons learned from 1986 to 1997 water events. This item is on track. And we're hoping to discuss some of that at the stakeholder technical workshop.

Go to the next slide James.

Okay. So Item 8 is: Respond to commission questions regarding what constitutes failure. And also, this item has been completed, but we're going to keep it on the list because it's an important topic. And we're hoping to have ongoing discussions and dialogue around that one.

Number 9: Develop a single tracking log cataloging ongoing or future safety projects. And also, this is ongoing item. And we're also going to try to address some of that at the annual dam safety and project updates at the next meeting.

Item Number 10: Continue to discuss risk assessment and hear from outside experts. We're going to be hearing from outside experts today. So again, this is an ongoing item that we want to hear not just from DWR but hear from a variety of viewpoints and experts.

Item 11 here: Update on water theft prevention. So this is something that came up at meeting 8. And it's just something for future

commission consideration.

Item 12 here: Resources for sediment removal. Again, another meeting, an item that we'll consider for a future meeting topic.

There was a request at meeting 8 for Capital Improvement Projects discussion and expenditure chart. And also, I believe all of that has been shared to the appropriate commissioners. And so that one is completed. And we'll take that one off our list. Let's see.

Item 14 here: Recreation expansion project updates. Not this meeting, but we're hoping at some 2022 meeting, we'll have an update on that item.

Item Number 15: Update on Proposition 1 and the Sites Reservoir. This item has been completed. The resources agency has provided an update to Senator Nielsen's office on that one. That came out of meeting 9.

And then these are new items: 16, 17, 18. You know, the Secretary mentioned, but we're going to be hearing an update on the Palermo Tunnel and piezometers. And those are items 16 and 17. So that will be covered at today's meeting.

And then Item 18: Update on flood control outlets. We're hoping to address that at the July 2022

meeting.

So that's sort of our action list.

And James, you can go to the next slide.

MS. NEMETH: Not a comment on that list. It's not a comment on that list. It's a separate comment. Thanks. Yeah.

MR. CROWFOOT: Got it.

Over to you Nick. We'll have her add a comment after you're done.

MR. SAFFOLD: Yeah, that sounds great.

So we're looking at the kind of meetings road map. And again, just looking at what our future meetings will look like in terms of content and to kind of -- you know, these are kind of subject to change based on commissioner feedback of these meetings.

But as you can see -- the Secretary sort of touched on this -- but we'll have a three-hour workshop on April 22nd. And this is kind of intended to discuss at the detailed level many aspects of flood safety. And as the Secretary already mentioned, it's kind of an opportunity for stakeholders, community members to join that, and ask lots of questions, and provide their perspectives as well.

And then we have projected out a July 2022 meeting, July 29th, and this will be largely focused on

facilities and safety. So like the Secretary said, we, again, are going to do a recap of the April workshop and then talk about the commission report a little bit. But the bulk of the time will be spent really on facilities and safety.

And also, as you can see, the commission will essentially receive a dam safety and annual maintenance plan presentations from DWR similar to years past.

And then we're hoping to have a meeting kind of in the October, November time frame, but that hasn't been determined or scheduled yet.

Okay. Next slide please James.

All right. We've all seen this before. This is kind of the OCAC report the commission report development timeline. And like a quick status update here on the report. The commission, again, has seen this. And we're going to continue to show this and just show kind of where we're at in developing the report.

But if you recall at the August meeting of last year, we talked about this and kind of laid out the milestones. And then last December, we provided a high-level report outline. And then since then, we've developed a more detailed outline.

And we've had a chance to discuss it with Supervisor Connelly, and Collins, and Senator Nielsen's

office. And so just a big and huge thanks to them for their time and their input there. We went over the content, and the topics, and how we're building that out, and what we covered in the detailed outline. And they sort of generally approved of the general structure and direction that is all headed in. And that's been shared around.

And then you can see on kind of that next milestone, we're hoping to have the first draft of the report to share at our July meeting. And so that will be circulated around the commission ahead of time. But also, we'll talk about that in a little more detail since we'll have a first draft. But I think that's headed in a really good direction.

And again, appreciate everyone's feedback there and kind of the subcommittee's support on that progress.

So Secretary, I think that kind of does it for me. I'll turn it back over to you.

MR. CROWFOOT: I appreciate that.

Director Nemeth and then Senator Nielsen.

MS. NEMETH: Yeah, I just wanted to follow up with one or two more specifics on Supervisor Connelly's comments about summer operations and recreation.

So with our target end-of-year storage, that will drop the level of the lake almost about 100 feet

once we get to September 30th. We've extended the boat launch at Loafer Creek. That's going to enable access much deeper into the season, basically, down to 675 feet as the elevation of the lake. People will still be able to access Loafer Creek boat launch. So that's an improvement that's in place to extend the capability of recreation.

And then this fall, we're going to go ahead and extend that boat ramp deeper into the lake to about 640 feet so we can handle recreation at the lake even when the level drops to 640 feet in the future, Supervisor. So I know how important that is for you and the community. And I want to be clear about that here this morning.

MR. CROWFOOT: Thanks so much.

Senator, I think you're on mute.

MR. NIELSEN: There we go. Kind of a historical observation and then a question for Director Nemeth.

The barrier, way back in the '80s as a Delta senator, we were looking into what was called the Reber Plan. This barrier is the same thing that that was intended to be; is that correct? The barrier? For salinization?

MS. NEMETH: I don't know how it relates to

that particular plan, Senator, but I can certainly find out. But I can say it does serve the same function which is to repel salinity as best we can.

MR. NIELSEN: That's just a curiosity.

MS. NEMETH: Okay.

MR. NIELSEN: And here's another that has some type of merit to consider.

I think it was in 2010, we were coming up with a new water plan for California. A whole bunch of us were meeting regularly. I'll never forget the guy's name, it was Dr. Trask. And he commented on our need in the river was more salt, more salinization coming up the river. And I was stunned.

Is that any part of any discussion now? To have more salinization rather than less?

MS. NEMETH: It's not part of the discussion now. And I'm familiar there's been some debates about how you restore the system back to and the function of salinity intrusion going more deeply pre- "any dams in the system." But it isn't a part of how we discuss managing our current system given the balancing of all the needs.

MR. NIELSEN: Well, thank you. That's an important observation. And I'm glad that -- well, I'm not surprised. I'm glad you're aware of it though and

that you folks are staying in touch with it. Thank you.

MR. CROWFOOT: Thank you very much.

Any other questions for Nick? If not, then let's move to the next item which is an update from DWR and Dave Sarkisian on Palermo Tunnel and the status of the piezometers.

MR. SARKISIAN: Great. Good morning. David Sarkisian. Is my audio coming across okay? So let's go ahead and advance to the next slide.

Yeah, I'm David Sarkisian. I manage our State Water Project Dam Safety Program. And I'm happy to report some progress on our piezometers in Palermo.

So let's advance.

And also, you might recall some new piezometers were identified through the Oroville Dam Safety Comprehensive Needs Assessment project, and they were endorsed by the CNA Independent Review Board, and also Part 12D Independent Consulting Board and grouped them as Early Implementation Projects. We have the flood control outlet piezometers, the Oroville Dam Toe piezometers, and also, Oroville Dam Core Block and Grout Gallery. We put together a plan that will be submitted to FERC and the California Division of Safety of Dams for review and approval prior to installation.

Next.

So quickly look at the FCO piezometers. We installed four in 2020. And each of those were outfitted with two vibrating wire instruments for redundancy. So those are the actual instruments that are inserted into the core holes. These instruments replaced original instruments that reached their useful life in the mid 2000s. And, of course, these provide information on uplift pressures and the effectiveness of the grout curtain and drains that were installed for the structure.

Since installation, as you obviously know, we've had really low reservoir levels less than 800 feet. And that's really the elevation where these instruments are located. And also, we haven't yet have the lake come up to really gather the information that these instruments are intended to gather. We did see one piezometer show a modest response to precipitation. And also, that the rain structure gets into the fractures of the rock and ultimately was detected by one of those instruments. And the figure on the right just illustrates how we install these. We actually installed them through the structure and down into the rock beneath the structure.

Any quick questions on this installation? I see the Senator has his hand up.

MR. CROWFOOT: It looks like you're on mute Senator.

MR. NIELSEN: This is an important point.

I remember when we had the initial problem, there were discussions about the dam and had there been piezometers. And I think there hadn't been but one. I really am pleased to see that we're having some installed. And even this one example you have just given, this here, this is proof of the merit.

So again, the whole team is really on top of things. And I'm very impressed.

MR. SARKISIAN: Thank you. Appreciate the support.

Yeah, let's advance to the next slide.

So over at the dam toe, we installed eight piezometers in 2020. And again, outfitted those with real-time vibrating wire instruments. These instruments are intended to enhance that surveillance for the internal erosion-related potential failure modes and also informs seepage analyzes and modeling.

We did collect some data this past fall if you remember the October rains and December rains. These instruments really reacted to that rain as it passes through the shell of the dam and gets into what we call that seepage collection pool kind of depicted in the

figure there. And so, again, recommendation coming out of the CNA that was taken to be implemented here.

Next slide.

And then lastly, our Core Block and grout gallery piezometers. Again, eight piezometers planned as well as some improvement to the seepage weir instrumentation within the grout galleries. These are also focused on monitoring for our internal erosion-related failure modes and will help us also refine that seepage analyses.

This past fall, we got started on the preparation for these installations because we are in these very confined areas within these concrete grout galleries and the Core Block. They're very tough to get access to.

And also, we've been working hard with our contractor to get each location prepared in terms of concrete demolition, and also, a lot of logistics in getting specialized drilling rigs to get to these locations. We do plan to have the installations occur this fall. We want to do it when the lake is low, and that's something we worked out with the regulators as well to make it as safe as possible when we make these installations.

You might recall the estimated risks here for

potential failure modes related to internal erosions. A lot of them are down in the bottom-right corner. So that's what these instruments are targeting.

Next slide. Palermo.

We started working on this Palermo project back in 2016. What we did back then was use a ROV to inspect the facility but then also remove the bulkhead. And that picture in the top right, that's actually the intake structure. That's down at elevation 575 in the lake, so obviously submerged. And that top piece there is like a chimney, and within it is a bulkhead. And so in order to dewater this tunnel, that bulkhead will be lowered down and basically block the intake.

And also, what we did is that we pulled that bulkhead up. It's never had to be used. And so pulling that out of the water, it had been refurbished in 2017 and 2018. And so that involved recoating the bulkhead, giving it new seals. And then when we were in a position to reinstall the bulkhead, gets it staged again. And as part of that, we also had a plan to install a new pully system that would kind of help its installation because it would take quite a diver to come over to get this installed. And so we're making improvements to make it easier to install should we need to.

We were able to get out there on the lake in September with the low level. And the chart on the right there kind of depicts the lake conditions throughout this past fall. We were able to locate the intake, do some cleaning of the silts, remove the trash rack.

And also, we've developed a template, basically, like a false bulkhead to install first to make sure that all the dimensions would fit well. We installed the pully system. And then also, actually lowered the bulkhead into place. That worked out well. We call that commissioning and restaged it right where it needs to be right in that chimney slot.

The last challenge was getting off the lake with the rising lake and with all the crane work we needed to implement to get things off the lake. We were really watching lake levels rise and lucked out with a period on December 20th and 21st where the lake was in a good spot. And we had a good shot at the shoreline to pull all of the equipment off the lake.

So for those of you who aren't familiar with the intake structure, it's there kind of by the Hyatt intake structure, but again, down at elevation 575. So when we were doing this work, we had about 80, 90 feet of water over the intake. And it basically supplies

water through the left abutment rock to the canal through preexisting water rights that were in existence prior to construction of Oroville Dam.

Next slide.

And here's just some photos to get a feel for what was out there. I imagine some of you saw this work out there on the lake. So the top left is our barge with all the equipment on it. You can see the crane, the little office, and everything. Quite an effort to get that put together and ready to launch.

And then we staged it over at the intake structure, as you can see, on the top-right photo. And the bottom-left photo is a picture of the bulkhead with that nice white coating. And on top of that is the template.

So basically, we sent that down in first, because we figured if that wouldn't cut right, we could cut it out with torches. We didn't want to send the bulkhead down and find out that the dimensions didn't fit. So it fit nicely. And on the bottom right there, you can see the bulkhead being lifted by the crane. So quite an effort.

I'm proud of our team that put this together. A lot of safety planning and a lot of help from Oroville, our contractor, Division of Engineering, and

it really -- I think it ended up being a great project for us.

So I think that's it. And maybe next slide and take any questions.

MR. CROWFOOT: We've got a couple of questions.

So Senator Nielsen and then Supervisor Connelly.

MR. NIELSEN: I have one? Excuse me.

MR. CROWFOOT: Got it. Okay. I think Senator Nielsen, maybe that hand was a legacy from his last question.

So let's move to Supervisor Connelly.

MR. CONNELLY: Thank you for telling us what was going on. The locals were out there recreating and watching that. And we're curious. So I understand that's a temporary slide that's down there that dewaters the tunnel and then you can inspect it.

What is the condition of the tunnel? And what is the condition of the -- there must be a valve on the downstream side or facing the dam; is that correct? Is that how it operates?

MR. CROWFOOT: David, can you repeat for the folks that can't hear.

MR. SARKISIAN: Yeah, is my audio okay?

Supervisor was asking the condition of the

tunnel and configuration of valves downstream. So in 2016, when we pulled the bulkhead out, we sent the ROV to swim into that tunnel all the way to where the valves are. So that was about 2,000 feet. And that effort took a big barge like what you just saw.

Conditions are great. It's really surprisingly in good condition. There was about anywhere from 6 to 12 inches of silt kind of at the portal. And it thinned out as expected. And then downstream, there's a tunnel plug, and then there's a steel pipe within that which goes to a valve. And it's a 30-inch butterfly valve and goes into a fixed valve where we make the releases.

So that equipment is original equipment. It's in good shape, but we do have plans in the future to make some valve replacements at that location. And also, this project really kind of gets us in a position to be able to perform that work.

MR. CONNELLY: I guess the follow-up question is: Are you sure there's no seepage from the tunnel? Because not being an engineer, it just seems like when the lake is full, there's a tremendous amount of head pressure on that tunnel. I mean, if it's at 900 feet and the valves are on the downstream side, I can understand why. But that's a lot of pressure.

Are you sure that tunnel doesn't leak?

MR. SARKISIAN: So the question was the condition of the tunnel and is it having seepage?

And so the answer is: It does have some seepage, but that's to be expected. That tunnel plug was provided with a grout print around that tunnel plug, so kind of like a circumference. And it's right there in the same location of the abutment. And the designers put a lot of thought in trying to create that impermeable barrier at that location.

And also, what we've seen in the tunnel where we can actually go into the valve chamber and people can walk in there and perform maintenance, there are drain holes that alleviate pressure or any seepage that might have gotten past that grout curtain. There's some seepage, but it's really very minor. And so from what we've seen, all that work during construction was really effective in creating that impermeable barrier.

MR. CONNELLY: I think the concern is seepage along the tunnel itself because it does go through the dam. And it's been brought up by people that are supposedly much more educated than I am.

Is there any way to make sure there is none?

I'm just curious because there are people that are concerned that there -- I mean, it's a liability to the dam. It has a life. And maybe I don't know what

the life expectancy is, and I don't know how to give the proper answer.

I appreciate you're trying to give me the proper answers to that. And maybe we should look for a viable alternative in the future, maybe not in our lifetime, but simply pump the water up from below the dam and put it in a ditch.

MR. SARKISIAN: Yeah, so what I can say is through our condition assessment and maintenance, what we can see when we come in from the downstream side and walk into the tunnel, what we see is that this facility is performing as designed and intended.

But you're right. Everything has a certain service life. And so certainly, planning for the longer term for this particular part of the Oroville Dam could be something we look into.

MR. CROWFOOT: Thank you so much Supervisor.

Let's go to Supervisor Conant. And then we'll circle back to Senator Nielsen and see if he has a question.

MR. CONANT: Back to the piezometers if we don't mind. So originally, if I'm not mistaken, 52 piezometers; is that correct? And now we put in eight. And I think two are functioning still or something of that nature.

Can you maybe address that and tell us why you think eight is adequate.

MR. SARKISIAN: Well, the original piezometers were installed largely to evaluate that early life of the facility under that initial reservoir loading and to verify that the expectations of the design team were met. And so we kept reading those. And over time, they started failing as expected with the nature of the period construction.

So through that needs assessment, this question has come up quite a bit: How many piezometers should we have moving forward? With that we've identified so far, we just kind of walked through. And from my perspective, we've got probably a couple of years to get data out of these piezometers, understand what they're telling us. And we need hydrology to help us here to give us these levels and see how everything reacts.

And then I think, at that point, we would address that question: Do we have enough? Do we need some more? Are there some areas that we wanted better coverage? And also, I think what we presented here really helps us advance that conversation. And I would not be surprised -- and we identified some additional locations in the future to further inform our understanding of the seepage.

MR. CONANT: Okay. That's okay. My concern is that do we have enough? And it sounds like we'll be adding more down the road if need be.

MR. SARKISIAN: It's possible. And when we propose new piezometers, we have dialogue with our regulators because there's risks installing new instruments as well. So we have to take that into consideration too.

MR. CONANT: Thank you.

MR. CROWFOOT: Anybody want to raise their virtual or actual hand? Or take yourself off mute and ask questions for Dave on the piezometers or the tunnel?

All right. Well, thanks Dave. And again, I believe -- well, not only will this meeting be recorded, but the materials that Dave provided will be on the website too. And Dave will be available for more conversation over subsequent meetings. All right.

Let's turn to Dr. Rune with UC Berkeley Center for Catastrophic Risk Management. And we've asked Rune to present a summary here over the next 10 minutes or so on risk scenarios, and then looking forward to that deeper dive on April 22nd.

So over to you Rune. Welcome.

MR. STORESUND: All right. Thank you. I look very similar with the uniform, the white shirt, and blue

tie. All right. Well, hello everyone. And good morning.

I want to thank the Oroville Dam Citizens Advisory Commission and Secretary Crowfoot for allowing me the opportunity to share with you what I consider to be an exciting risk reduction opportunity for the downstream communities for Oroville Dam.

Today, I'm going to wear the hat as executive director and consultant for my nonprofit, SafeR3, which is focused on safety, resilience, reliability.

And next slide here.

So as part of my previous work on the Comprehensive Needs Assessment ad hoc committee and combined with two previous evacuation events, one in 1997 and the other one in 2017, it seemed to me that there was an existing hazard with regards to elevated releases from Oroville Dam.

Now I understand and appreciate that the maximum release from the dam is on the order of 150,000 cubic feet per second. But there's little information to better understand the potential consequences associated with any possible elevated releases. And I think understanding the impacts of the elevated releases is important to understand any potential benefit/cost of risk reduction evaluation.

I did submit my notice of intent in to CalOES to help provide funding to gain an understanding of inundation augmentation expenses of what I call elevated releases.

The next slide here.

So the aim here is to provide inundation mapping to be included in the next update of the local hazard mitigation plans for downstream counties.

And here, I show a page from the Butte County Mitigation Plan. And what caught my eye was the occasional occurrence of catastrophic dam failure. And I think this highlights an opportunity for us to have a structured conversation between the dam owner/operator, and the community as to the experience downstream impacts.

Now the dam has actually never failed. In 1997, there was an elevated release which was greater than the 150,000 cubic feet per second. And in 2017, the primary spillway fail, but the dam did not fail.

Next slide.

So from a hazard perspective, the elevated flows fall into the realm of likely to unlikely. There are a number of very unlikely events considered. So my question is: Well, why not also consider these elevated releases to fall within the likely to unlikely spectrum?

We see mapped a sunny day failure of Oroville Dam. Why not map the inundation with a probable maximum flood? We can use this information to ask questions related to evacuation planning, land use, and mitigation projects.

Next slide.

So I did receive a redacted version of the Oroville Dam Flood Control Manual from the Corps of Engineers. And one of the scenarios presented was the release of over 620,000 cubic feet per second. I wasn't able to find any mapping showing the expense of that inundation. And then, I also want to point out that a lot of the downstream consequence evaluations that were done in the late 1960s may actually be quite different from the downstream consequences today just due to development and planned use change over time.

Next slide.

So my request to this group is to offer collaborative support if the commission finds value in delineating the different degrees of inundation from these elevated releases. The outcome of the effort would be a series of inundation maps for flows between the standard project flood and the probable maximum flood. And then these maps can be used for future initiatives to inform discussions and planning related to things like evacuation, economic and environmental

impacts.

And I just want to point out that these subapplications is due to CalOES on April 8th. So we have a few weeks in front of us but not necessarily a whole lot of time. And I think there were three areas where help would be greatly welcomed.

So number one would be to help recruit letters of support from the downstream communities.

Number two would be helping to meet those 25 percent local partner cost share through either financial or in-kind service contributions.

And finally, number three, working with the Department of Water Resources and the State Water Project. They do have existing models that could be used for this mapping. Those models were used in part for developing the sunny day future inundation. And I think we could use the same model to evaluate inundation associated with the elevated releases.

Now it may be that the department has done some of this modeling or all of the modeling. Then the question would be, "Hey, would you be willing to share those inundation maps with the local emergency services officials? And if the modeling hasn't been done, would you be willing to perform the modeling and make those maps available?" And I think that's it.

So next slide should be the -- yeah, thank you.

So yeah, I look forward to working with everyone to really make this a win, win, win across the board. So thanks for your time. And definitely, thanks for the opportunity to present to the commission.

MR. CROWFOOT: Rune, thank you.

And I want to call on Deputy Director Curry, who helps to lead the Governor's Office of Emergency Services or OES.

MS. CURRY: Thank you Wade. Thank you Dr. Storesund for that presentation and good news. CalOES is on the advisory commission, so consider that input taken in terms of endorsing this idea of better data analyzes that goes into the local hazard mitigation plans.

And I want to lift up and appreciate the highlighting of the local hazard mitigation plan. We do, at OES, have funding opportunities to help this funding taking place. But more so, we're all constantly working with the counties and cities who file these plans well before their expiration date. They have a five-year kind of life span so that we make sure we're matching funding opportunities, not letting those plans lapse. But what makes them effective is the data that feeds into them to accurately update the risk analysis.

So I just wanted to offer and just punctuate that point that there's this spending opportunity. We will have others behind it. And the importance of these planning updates, and our communities, and the help that we can provide to make those plans happen financially as well as with technical assistance. So I just wanted to add that point.

Thanks Wade.

MR. CROWFOOT: Yeah, thank you. And I'll just say the Department of Water Resources, obviously, is a large focus of the discussion given its management of the dam and the reservoir.

But huge thanks to OES and Tina because you guys are really the point of the spear on the mitigation hazard mitigation planning but then also the response. And whether it's wildfire, or drought, or a terrorist attack -- God forbid -- it's always OES. So really appreciate Deputy Director Curry's participation here in these meetings.

I see Ms. Widener has her hand up. And so, why don't I turn to you again.

MS. NORTHERN: It's Northern. I'm Mrs. Northern. I've been married.

MR. CROWFOOT: Oh, my gosh. Wonderful. Congrats.

MS. NORTHERN: Thank you. I just want to speak up and say how important this work really is to the community.

During the 2017 spillway evacuation and the days leading up to the actual evacuation, it was really hard to find inundation maps for the Oroville Dam and Lake Oroville if there were a failure. I'm sure everybody knows by now, I really like the DWR website. I have done a lot of research on it. I know how to Google. I had to help a lot of older friends find information as far as evacuation.

You know, having these tools, if something were to happen or knowing that we have them, is really so important to the community. I think this needs to be -- personally, I would love to endorse this project. And as a group, I think that we should as well.

I saw he needed letters of endorsement or support. And I just think that this is one of the most important things that we can do as a commission is to try and push forward these kinds of projects for our community.

MR. CROWFOOT: Thank you very much. And one of the things to unpack -- I don't want to take too much time on this -- is I believe the application to OES. And OES sits on the commission. So it's a little

unprecedented for me to try to understand sort of what would be the formal position on the application that our state commission would take that OES is part of.

But point well-taken from you as a community leader. That your voice is critically important as a member of the public that's part of this. That this would be important. And also, for Tina to hear that from OES and for you to make that clear. It helps.

Let's go to Supervisor Connelly.

MR. CONNELLY: First, Rune, how much short are you on funding to complete this project? And what is the total cost?

MR. STORESUND: It's not a shortage per se. My understanding is that the federal government would provide about 75 percent of the funding, and then the local community has to come up with 25 percent. I believe the ask was on the order of 330,000. So the 25 percent is like 85,000. And that can be financial contributions. My understanding is that it can also include in-kind services.

The motivation for my ask here is more on engaging the community, and doing outreach, and getting everyone engaged and part of the process. I can probably even donate the 85,000 in local cost share myself personally, but that kind of defeats the purpose.

What we're trying to do is we're trying to start a conversation on understanding our vulnerability and our hazards. And I think alerting people to this cost share and having them be part of the solution is an important element moving forward.

MR. CONNELLY: Could you in-kind with DWR? I mean, really partner with you? Because I think it's very necessary to do these studies so we don't over-evacuate like we did during the spillway incident which put more people at risk than was necessary because we didn't have this. And would DWR do in-kind or even help you with money? Why not ask? I think that's why this group exists.

MR. STORESUND: So the question was on the local 25 percent match. Is that something that the Department of Water Resources could provide? This is my first time applying for this grant, and I am not an expert in the FEMA, and grant structures, and rules, and regulations.

But my understanding is that it likely would qualify. And I think that would be a wonderful contribution. Again, if we already have the models, why recreate new models? I think that's a waste of energy. There are so many problems for us to tackle out there in the world. Let's leverage the resources that we have so

that we're answering as many questions as possible as opposed to answering the same question 10 times.

MR. CROWFOOT: Yeah, I appreciate that. And why don't I consider that a suggestion. My understanding is this was -- I didn't have a full understanding of Rune's presentation here today and totally understand that he's asking for the support of the members of this as we move forward. Again, I want to be thoughtful about just maintaining the protocol of the application to one of the state agencies that's on this commission.

But Supervisor Connelly, point taken in terms of your suggestion, our request that DWR consider it or how it could provide local match.

Supervisor Conant.

MR. CONANT: Yes, Rune thank you for the presentation you gave.

And I assume that part of the presentation will be answers to questions like "Is this a 'once in a hundred years' event for the spillway?" Or "Once in a thousand years"? So this would help for planning issues as well in our counties. Thank you.

MR. STORESUND: Yeah, so when it comes to the recurrence interval of these releases, we can definitely put numbers to it. I just want to point out that most

of these recurrence intervals are based on past data. As climate change enters the picture, yesterday's information may not be a perfect predictor of tomorrow's reality. So we're going to be hampered to some degree. But yeah, there's a spectrum of occurrences. And we can give some indication as to where on the spectrum would these scenarios fall.

MR. CROWFOOT: Very helpful. Thank you.

Senator Nielsen and then Director Nemeth.

MR. NIELSEN: This is a shout-out for Office of Emergency Services. This goes back a few years when OES was launching a new upgrade of the 911 system.

For the longest time, I've had huge problems and was very critical of the billions of dollars the state has squandered in technological upgrades, IT. And also, I had some major concerns with OES about their portion of this implementation of the new 911 upgrade.

And usually, an agency will give you a brief answer and then just put you off figuring you're going to forget about it. This is the first time in my career I've had an agency go to the extent that OES has to be on top of this 911 upgrade. And quarterly, we get together on the phone, and I get an update. I've never had that happen before by any agency. And I really want to give them a shout-out.

Reggie Salvador has been the fellow that I've worked with on that. Done a fantastic job. And the Director has been wonderful too. It's a deserved kudos to an agency of government that is very critical and is doing a great job moving us ahead in the future. So just a pat on the back to the good folks at OES.

MR. CROWFOOT: Well, they'll take that pat on the back; right?

MS. CURRY: Thank you for your contribution on this important, massive problem. And we'll look forward to working on the success of this for really just an important safety feature for all of our communities to modernize the systems. So appreciate your support. And it all interrelates to the topic at hand of Oroville and the importance of our public safety systems and communications.

MR. NIELSEN: And thank you.

MR. CROWFOOT: Over to Director Nemeth.

MS. NEMETH: Well, obviously, one of the things that the department learned in 2017 and then with the legislation passed by Senator Nielsen and Assemblymember Gallagher in response to that is how critical it is that the department and CalOES be engaging with county OES. And that's something that we're doing at all of our DWR facilities from Ventura, to Butte County, everywhere.

And that's a real improvement thanks to the proactive legislation by Senator Nielsen and Assemblymember Gallagher.

I can't tell in the participants list if we have Butte County here, and I don't want to put them on the spot. But Butte County Sheriff's Office have been really important partners with the department in really honing in on what emergency response looks like. So to the extent that we move towards some kind of a workshop, I want to make sure that they are fully engaged. And then Supervisor Conant, I think, also mentioned their need to know. So all the effected counties.

I think the real value here is to make sure that we're -- you know, to kind of quote Dr. Storesund -- is really making sure we're asking the right questions. And so I want to be sure that the questions that we're asking are important for the local county emergency services since it's those folks that protect their communities when we do have a problem. And we would certainly want their guidance on usefulness of information and planning scenarios here.

MR. CROWFOOT: That's really helpful. Okay.

Anybody else? Comments? Questions?

MR. CONANT: So I guess it would be appropriate for the next meeting to have our Office of Emergency

Services sign onto this meeting as well; correct?

MR. CROWFOOT: That's a good question. I think it kind of brings us --

MR. CONANT: If you're not a member of the community, but you can do it as a citizen; correct?

MR. CROWFOOT: They would certainly be welcome to join the meeting. And maybe for Tina and Nick, I suggest that we put on the -- you know, as an action item, identify a way to integrate CalOES in the discussion just around the integration of state OES, and county OES, and DWR. It sounds like it's happening. And it's good. We just want to make sure that everybody understands how it's happening, et cetera. So we'll figure out whether it's a regular invitation or we do a presentation.

Does that make sense?

MS. CURRY: Yeah, that sounds good.

MR. CROWFOOT: Great.

And I noticed that Dr. Storesund's hand is up as well.

MR. STORESUND: Yeah, if I can make a quick comment.

As part of the original notice of intent, I was able to get a letter of support from Butte County OES. I'm still looking for an engagement or some letter from

Glenn-Colusa, Yuba, those sorts of counties, the Office of Emergency Services saying, "Hey, if these maps are made available, we would consider including them in our county local hazard mitigation plans until the next update."

I don't think that's been directed specifically at the commission. But if you know folks at these Offices of Emergency Services, I'd love to connect with them and include them in the effort.

MR. CROWFOOT: Great. Really good suggestion.

I want to move us along in just a bit because we want to make sure we have ample time for public comment, but also want to make sure every one has a opportunity to ask questions or share any other thoughts.

All right. Then let's move on.

MR. NIELSEN: Sorry. This is kind of a conclusive observation. And no decision being made at all today but a consideration for the commission. This has been so successful for those of us who are participating. What I'm wondering:

Would it be helpful to have some kind of a communication to let the broad public, through a prefaced conference of some of us, of the commissioners, to give them an update of the existence of this

commission and the progress it's making on their behalf? It's just so significant what we're doing. It's just a thought. Ponder it and we can talk about it in the future.

MR. CROWFOOT: Yeah, I like that. And make sure there's an opportunity later in the year as we have that draft report from the commission whether we want to actually use it as a moment to mark a milestone. Obviously, the work never stops. And I think that's the point of the commission. But to your point, identify what has been accomplished over the last couple of years and where we're at.

So Nick, if you can include that suggestion on your tracker. And we'll be back at the next meeting and how we would address that.

MR. SAFFOLD: Sure Secretary.

MR. NIELSEN: Great.

MR. CROWFOOT: Then let's move on to Lori from CalOES and Dave Sarkisian from DWR to talk to us about public safety partnerships. Give us the lay of the land in terms of what's actually happening on this front germane to what we just talked about. And they'll be covering the emergency action plans, and inundation maps, and what we've learned in the process since 2017.

So over to you Lori and Dave.

MR. NEZHURA: Thanks Secretary. And thanks everybody for the robust conversation. So hopefully, what we discussed today can help kind of inform that conversation we just had.

My name is Lori Nezhura. And I'm the Deputy Director of Planning, Preparedness, and Prevention at CalOES. Let's just jump right in.

Next slide.

And just a little bit of a history lesson. Most of you are very familiar with this. In 2017, SB 92 was passed making changes to government code and water code related to dam safety planning and inundation mapping. So my part of the presentation will be on the emergency action plans.

Next slide. My apologies. Please go back.

These are the changes that were made in the water code. So owners of state-regulated jurisdiction dams must now submit EAPs, emergency action plans, to CalOES and the Division of Safety of Dams. It's classified as an extremely high or significant hazard dam. So that's a good portion of all the dams in the State of California. And I'll lay them out in another slide.

Those EAPs must include the DSOD-approved inundation maps. And the statute also provides

deadlines for submission. CalOES review time lines are also given.

What that means is when an EAP is submitted to CalOES, an initial EAP, we are given 60 days to turn around our review and get that back to the owner. And that would then conclude with either an approved EAP or with recommended changes. And then each subsequent time a draft EAP is resubmitted, we have 30 days at CalOES to turn that around with our review and recommendations or approval.

And once an EAP is approved, then owners must update it at a minimum of every 10 years. There are other instances in which it might be updated sooner than that depending on whether or not the inundation maps have changed or there's been changes to the dam itself.

Next slide.

So government code is where it discusses what should be in the EAP. And first and foremost, I'd like to point out that it must be developed in consulting with local public safety agencies. And I'll talk a little bit more about that in a few moments.

It must adhere to FEMA's guidelines. So that means that there are six main elements of an EAP that we have listed here: Emergency notification flowcharts, their preparedness or their surveillance activities,

response process, responsibilities of not only the dam owner but also the individuals and agencies, and the impacted areas. It must include approved inundation maps. And then there's additional information that is recommended to be put into appendices.

And then following the approval of an EAP, dam owners must conduct annual notification exercises with the local public safety agencies identified in the EAP.

Next slide.

So though these numbers can change as dam classifications occasionally change, here's kind of the breakdown of the California jurisdictional dam: 264 extremely high, 440 high classification, 171 significant, and 367 low. This is as of March 1st of this year. And the statute does not require low classification dams to submit EAPs, although occasionally, they do. And we'll go through the review process with them and provide recommendations for them as well.

Next slide.

Now let's look at a couple of the key purposes of the EAPs. First of all, that it identifies potential emergency conditions. So I think early on, we had discusses about sunny day failures. But there's various scenarios that are included within the EAP. And then it

also talked about specific actions that need to be followed to minimize property damage or loss of life. It is based on, as I said before, approved inundation maps. And so these maps will show those areas that would be impacted by inundation. And therefore, it informs evacuation in case of a dam emergency.

Next slide.

So this is where one of the key purposes then is the collaboration with the downstream public safety agencies. So we provide guidance on this area more than any other in our review of EAPs. We require the dam owner to reach out to local law enforcement, fire, and OES, and then state and federal organizations.

The consistent ones are listed here: The National Weather Service, Department of Water Resources through the DSOD and their Flood Operations Center, and then CalOES 24:7 Warning Center.

And there's a variety of ways that they can do this outreach: They can hold workshops, work groups, phone calls, through email. And then we do recommend that they do it early on in the process. But after they've already developed kind of a core or a first draft so that they have something to share with these groups, something for them to review, provide comment on, and inform, and expand.

Next slide.

And then the dam owners can incorporate the result of their outreach into their plan through a variety of means. They do have to actually show CalOES, through the approval process, that they have conducted these meetings or that they have received this feedback from each of the public safety agencies that's in any one of those downstream-impacted jurisdictions.

They can provide us narratives about which agencies were consulted and what their contributions are. They can provide us actual agendas and sign-in rosters, minutes, et cetera from particular meetings. And then within the EAP, they include the agency's role, like their responsibilities, and the response, and any of these potential failure scenarios.

Next slide.

And one of the ways that one of the parties that is informed through these meetings is the notification flowcharts. And it will identify who is to be notified of a dam safety incident and prioritizes the order.

Part of our process is to ensure that the flowcharts represent the quickest possible notifications and include automated systems, such as you would find in various law enforcement agencies, as well as personal

phone calls. And so we make sure that the scope of any one individual or any one office is limited to maybe four to eight phone calls so that those phone calls can happen in rapid succession.

The flowcharts show the order. So it literally says, "This will be the first phone call, the office will be the second," et cetera. And it prioritizes the initial or the first potentially impacted jurisdictions, and then goes down the list with those that have more time or are a little bit further down on the notification flowchart.

In some of the smaller, privately owned dams, they may only have say four or five households that are in the downstream inundation area. And I've actually seen their notification charts include those four or five households. Of course, for the larger populations, the notification chart includes really is limited to just the response agencies in those jurisdictions giving them the responsibility then to reach out to the public.

Next slide.

I would like to say here in conclusion that the Oroville Dam EAP -- and I actually have a copy of it right here -- I don't know if you can -- darn, I can't see it. That's the disadvantage of the virtual. It's about 8 inches thick. It was approved in 2019 of

February. And Oroville Dam has conducted annual notification exercises as required. And they've held EAP seminars in October 2020 and a seminar with Thermalito dams on September 2021.

I will leave you with this: In the emergency planning world, we have a saying that the planning process is the number one benefit of publishing a plan. And that is as true for dam EAPs as it is for any emergency plan. And California is safer for the work that has been put into all of these documents.

I'll stop there. Open for any questions later on or now, whichever you prefer Secretary.

MR. CROWFOOT: Appreciate it Lori, your work, and the really cogent presentation.

Let's hear from Dave and get through this presentation and then open up for questions.

MR. SARKISIAN: Great. Thank you. So yeah, let's advance to the next slide. And I'll try and work through these quickly.

As you all know, these inundation maps illustrate flooding that could result from a hypothetical failure of a dam. And they're included in the EAP just for that purpose to inform not only ourselves, the owner, but downstream public safety agencies of the limitations of the inundation. And they

really are the foundation of the EAP communicating what the hazard looks like.

So prior to 2017, of course, we did have an EAP, we have had inundation maps, and they were driven by the FERC requirements. We also did some other mapping efforts besides that required for that EAP to inform ourselves. Those included in 2015, hypothetical gate failure inundation maps for Oroville and Thermalito Diversion Dam.

And so, as Lori mentioned, there's all sorts of scenarios that could be considered for inundation mapping. And so we've done a little bit of this internally over the years to better inform ourselves.

Next slide please.

With Senate Bill 92 in 2017, that certainly raised the bar in terms of inundation mapping and EAP requirements. As Lori mentioned, Division of Safety Dams approves the inundation maps. So for us, just like any other dam owner, the State Water Project developed our maps and submitted them to DSOD for review. Thereafter, once approved, submitted our EAPs to CalOES.

And that really significant change through the legislation was incorporation of the critical appurtenant structures. So in the case of Oroville, that was the emergency spillway, flood control outlet,

Parish Camp Saddle Dam, and Bidwell Bar Canyon Saddle Dam. All Oroville facilities that can be the origin of an uncontrolled release.

And so that really led to the growth of the EAP, the 8-inch binder. It is now largely all those maps. The other key thing, as was referred to earlier, inundation maps that are approved are on a publicly available website hosted by DSOD.

Next slide.

You know, the mapping done today is far better than it was even 10 years ago. And I think with the regulations, it's really helped standardized what needs to be in the mapping. Not only that, but for a single scenario, different map sets are created: One for the initial wave arrival time where one foot of water arrives.

So if that information is key, you can refer to that set of maps for maximum depth. You can also get maximum velocity information which is important for life safety. And all of this deflood time and all this information is intended to inform our public safety agency partners of the hazard and really help them plan evacuations.

Kind of bottom right here. With the legend, you can see the kind of information that's on the maps,

really geared towards the public safety agencies to understand what's at risk.

Next slide.

We've also been working on our Thermalito facilities. And so for Diversion Dam fair weather failure as well as radial gate failures. And also, the forebay dam and afterbay dam. And each of these facilities have DSOD-approved inundation maps that are, again, publicly available.

Next.

We also did some work in 2017 very similar to what Dr. Storesund was describing. We call them incremental flow inundation maps. And we did that to get a better understanding of downstream channel capacity.

One of the assumptions that we had in that series of maps is that downstream levees would overtop but would not fail. And we really did that to simplify the study. So obviously, one can choose a multitude of levee breach locations. And we looked at two different hydrograph patterns and developed maps at those flows that you can see there, anywhere from 100k to 400k.

And from that mapping, this question, which is kind of of interest to many: What's the capacity right here in the City of Oroville? And that image here is

for the 250,000 cfs flow down the Feather River. And that's pretty well contained within the bounds of the river heading down through the main part of the city.

Next slide.

So just in summary, the legislation has really enhanced public safety and awareness in terms of dam-related flood hazards. Something to keep in mind, there are numerous inputs, numerous parameters to consider in the hydraulic modeling. So each inundation map is kind of unique and applies to a specific scenario. So it's very important that our partners understand what scenario is being depicted in each map.

Also, these models that were used to generate the fair weather failure maps required for the EAPs, they can be leveraged, as Dr. Storesund mentioned, to answer other questions and other scenarios. And one of the pieces of feedback we've had from our partners is that the GIS shapefiles from these maps are very useful. That they take those and overlay them with their GIS layers at the different Offices of Emergency Services. And so that's been of great benefit to generate those with these new maps.

And so with that, I'll pass it back. Thank you.

MR. CROWFOOT: Dave, thanks to you and Lori.

That's a lot of important content. And you guys did a great job summarizing it.

And again, that your presentations will be available on the website as well as on the recording and questions from our commission as it relates to either presentation.

MR. CONNELLY: Quick one: The Feather River, that 250,000 cfs, I don't think that map is accurate. We've had less than that. And just below where this map is, it back-flooded over Feather River Boulevard clear back into our sewer plants. So I don't know if it's just not showing it or it's -- I don't know. It's just not right. That's why we need to lower the levee downstream where it bends back.

MR. SARKISIAN: So we can certainly look into that. And maybe it was off the map there perhaps at least off --

MR. CONNELLY: David, I appreciate your demeanor and how proficient you are.

Yeah, it could be just below that. But I got a feeling it floods more to the east than the one you're showing there.

MR. SARKISIAN: Okay. And that sort of grounded truth thing is absolutely the kind of information we need. Sometimes, all it takes is a

culvert to pass water to a new area. And also, we can do more work there certainly if there's some experiences and history there that we need to collect.

MR. CROWFOOT: Okay. Oh, you changed your name. I'll call you by your married name, Ms. Northern.

MS. NORTHERN: Thank you.

I just wanted to say thank you to Mr. Sarkisian, David because that link that you provided with the maps, I will pass that onto -- you know, I run a Facebook page about the dam. And I do have a lot of followers there. I can post it on that and get it out to more people. So I do appreciate you adding that into your slides. Sometimes, it's just easier to find things on Facebook than to try and search through internet pages yourself.

And then I wanted to just clarify with Lori. The new legislation requires EAPs for dams that are hazardous -- sorry, I was looking for it in my notes there. It's hazardous, or extremely high, high, and significant.

What does Oroville Dam rate on those levels? Is it extremely high, high, or significant? Does anybody know? And it doesn't have to be specifically Lori to answer that.

MR. NEZHURA: Yes, thank you for that question.

It is extremely high.

MS. NORTHERN: Okay. I thought so.

MR. CROWFOOT: That's helpful.

I want to recognize you and thank you for helping make the information accessible on Facebook. And, I mean, that's huge and greatly appreciated.

I think DWR has been making real progress in terms of trying to provide information that a nonexpert can understand. But huge thanks for going one step further.

MS. NORTHERN: Yeah, no problem. Thank you.

MR. CROWFOOT: Good. I know we want to get to public comment. And I don't see anybody else with hands raised at this point.

So I'm going to turn it back to you, Nick, and ask you to repeat the instructions for those that want to provide comment at this time.

MR. SAFFOLD: Yeah, thank you Secretary.

Yeah, so we're going to take questions and comments from the public now. Again, for those on the Zoom platform, you can raise your hand by clicking the hand icon to speak. And for those on the phone, press "Pound, two" to indicate that you'd like to speak. Please note that if you're on the phone, you may have to manually unmute your phone call as well.

So why don't we get started. Yeah, the first hand raised is Tony Davis.

Tony, you should be able to unmute yourself now.

MR. DAVIS: Tony Davis here up in Paradise.

I just have a couple of questions. Obviously, going through this drought has been tough on everyone, not just ourselves here. And I just had a couple of questions. We're doing some -- it looks like extension of Loafer Ramp over there on the other end of lake.

Has there been any conversation or open dialogue on possibly extending our ramp? Or there's kind of a foot trail that we refer to as the Goat Trail at about 730 elevation. That is dirt, gravel. I know that there was potentially a project that was supposed to be completed previously. I haven't really heard too much about it. I was just kind of opening a dialogue on something on this side of the lake.

MR. CROWFOOT: Tony, I appreciate that.

We have Matt Teague or somebody from State Parks that can answer that. Just see if you have any other questions before I turn to someone on the commission.

MR. DAVIS: I did have one more question.

Looking at the Oroville Dam outflow/inflow

chart. It was a quick question, one I get asked by customers all the time. As far as the inflow/outflow, I see it looks like we're kind of pulsing that outflow -- I see 8,000 at 6:00 p.m. last night, 13,000 at 7:00 p.m.

Are we just kind of testing that power plant? Or what's the reasoning for that if you don't mind me asking?

MR. CROWFOOT: Thanks so much Tony.

So maybe Karla or one of her team members on the second question actually. Let's do that first around what's the purpose or reasoning behind the different flows at different times? What drives that?

MS. NEMETH: What drives that are downstream water quality requirements that the department needs to meet. Part of what we're doing with this temporary urgency change petition in front of the Water Board, and I think they have committed to issuing something, I think right around the first week in April. What that will effectively do is enable DWR to reduce the amount of diversions from the lake in order to preserve storage.

But John Leahigh can add anything there that I've missed.

John?

MR. LEAHIGH: Yeah, thanks Karla.

So if we're talking about the time frame of changes, days and weeks, what Director Nemeth mentioned is exactly point on. My interpretation of possibly what the question was also is on the website.

We have outflow that's based on an hourly basis. And those would be changes in outflow contained within the Oroville Complex itself, which is driven by needs for power production from Hyatt Powerplant. So you will often see large variation in the outflow through the course of the day, but that has to do with the power generation function of the dam.

MR. CROWFOOT: And that's really helpful. And the way I describe sort of the longer term flow needs is that there needs to be enough water flowing in the rivers below the dams to ensure a certain level of water quality.

And the Oroville Complex, and DWR, and the State Water Project is regulated by a sister agency called the Water Board. And so, as Karla notes, while the dam really exists there for flood safety as well as water supply, it also has to have enough flow coming out of it to maintain certain environmental standards. So that, as Karla pointed out, drives how much water goes out on sort of a longer term, a daily, a weekly basis.

And John, appreciate the rationale for kind of

the hourly differences around the needs to produce power at different times of day.

And then over to -- I think it's Supervisor Teague from State Parks.

Can you talk about Tony's question regarding the boat ramp on that side of the lake or any sort of efforts around trying to provide some access?

MR. TEAGUE: Yeah. Tony, thanks for the comment.

I would have to refer to local DWR. I don't know if Director Nemeth has anybody to answer that. It's a project that DWR is underway that starts construction. And I will defer to the last update on that construction project.

MS. NEMETH: Yeah, can you give us a quick update.

MR. YARBROUGH: So thank you for the question.

We're really focused on the work at Loafer and extending that ramp down. But down at Lime Saddle, what we're looking to do is improve the foot paths. So we do have a plan in the works to make some foot access improvements at Lime Saddle that will be happening later in the summer as we're able to take advantage of these really low lake elevations. So that's the work we have in line for Lime Saddle.

MR. CROWFOOT: Thanks John. And maybe you can identify for Tony someone's email if he has more questions on specifically that project.

Let's move to the next person if we could.

MR. PEARCE: Michael Bessette.

Michael, you should be able to unmute yourself.

MR. BESSETTE: Good morning everyone. Michael Bessette. I'm the Director for the Butte Flood Control Agency.

I want to thank you all for the presentation this morning. It's been very helpful and informative. But I want to go back to Rune Storesund's request for the inundation studies. He's proposing through CalOES. And then we had the presentation from CalOES on the emergency action plan and the inundation maps that are already produced by the department or the state.

And I'm wondering, my question is: The information already out there that Rune is looking for, that would really benefit the downstream folks to understand what the inundation maps look like under various flow scenarios.

MR. CROWFOOT: I really appreciate you connecting those dots. And I should have done that. It's a great question.

DWR probably is best positioned to answer that.

MS. NEMETH: Yeah, and I would ask Mr. Sarkisian to do that.

MR. SARKISIAN: Sure.

I think we've got the start of what Dr. Storesund is seeking to produce. We've got some maps that are in the magnitude of what he's proposed, and of course, the model which would make sense to leverage. And so I think we've got a part of it but not all of it. I think he's got a broader scope than what we've accomplished thus far.

MR. CROWFOOT: Is that helpful to answer your question Mike?

MR. BESSETTE: Yes, it is. Thank you very much.

MR. CROWFOOT: Thank you.

Next person.

MR. PEARCE: The next hand raised is Robert Bateman.

MR. BATEMAN: Yes, I have a couple of questions: One to do with licensing, and the other with the release maps or inundation maps.

You know, I stood on the levees in Oroville in '97, and the water was very close to the top. And I think the maximum outflow then was something like 165,000 cubic feet per second. But I can't believe that

225, it's not -- the map isn't quite different from what I understood in what was shown. I don't know whether that sounds -- if it is accurate, but I reinforce Commissioner Connelly's comments about questioning that map regarding Oroville.

Secondly, regarding the licensing, what is the justification for issuing a one-year, unconditional license for over -- what? -- 12 years now? And if therefore, the original ALP, alternative licensing process, is still the basis for relicensing. Thank you.

MR. CROWFOOT: Thanks so much Robert.

Would that be a question for DWR?

MS. NEMETH: It is.

We can provide an update as to what we've heard from FERC on our license. As everyone knows, it's now been quite a long time since the department completed that process and completed all the permitting necessary for that license. FERC has not granted it yet. We are ever hopeful that they will be able to do that. And what happens is that in the interim, to keep us operating, they just grant these one-year temporary licenses.

So Ted or John Yarbrough, do you have any recent update from FERC as to when we think they're going to get to a decision?

MR. CRADDOCK: So we do check in with FERC periodically. One of the challenges in getting a specific timeline from FERC is that they do have ex parte requirements. And so they're not able to talk to us specifically regarding their internal process and timing for issuing the license. And so we continue to, I guess, request interest in completing the process, but they have their process that they need to go through. And so we don't have a lot of details on timing because of the ex parte rules that they follow.

MR. CROWFOOT: It sounds like we're all curious as to when this can happen.

Well, thanks so much Robert.

James, can we move on to the next raised hand.

MR. PEARCE: Yes. The next raised hand is just somebody named Jackie.

Jackie unmute yourself if you can. Say your full name. That will be helpful.

MR. MICHAEL S.: Hello? Can you hear me?

MR. CROWFOOT: We can.

MR. MICHAEL S.: Great. My name is Michael S. I'm talking to you under Jackie's login here at Lime Saddle.

I want to thank you folks for having this meeting and communicating some important information.

I would like to advocate as a concerned boat owner and recreational boat user here at Lime Saddle to try to give us some usability to the extent possible this summer.

And I think I heard some appetite for that under the banner of this emergency action that you're taking, if I understood it correctly. I think I missed a little bit of it, but it came up a couple of times. And it appeared that the intent of that is to preserve more of the water in Oroville this summer.

Did I understand that correctly?

MR. CROWFOOT: Hey, thank you Michael.

Yes, I know that Karla -- we're working to keep as much water behind the dam as possible for the purposes of water supply given the worsening drought. And Michael, I get your point around making the case for boat access up there on Lime Saddle.

Karla or team, anybody can comment on that. But maybe more importantly, Nick could maybe try to identify someone that Michael -- and I think it was Tony before -- can connect with just to make their case and to see if there's anything that can be done around boat access on that side of the reservoir.

So Nick, I don't know if, by the end of the meeting here, you can identify somebody to be able to do

that? Or somebody can come online and identify who would be best?

MR. MICHAEL S.: Yeah, that would be very helpful. And I know I've looked at DWR's most updated graph forecasting the level. And it looks like it would take us up to just under 800.

Is that still the forecast at this point in mid May?

MR. CROWFOOT: John, maybe you would be the guy to answer that.

MR. LEAHIGH: Yeah, so this is John Leahigh again.

The information we possess is the best available that we have currently, but we will be periodically updating that information. As you know, Oroville being part of the larger system of reservoirs between the Central Valley Project and the State Water Project and the dynamics of whether or not an approval of our petition request in front of the board, all of these are factors that play into where the storage is and projections land.

But yes, the information we have posted is the latest that's available.

MR. CROWFOOT: Yeah, I'll just say it's super complicated because DWR would like permission from the

regulator on the water quality to store more above the dam. But it needs permission, and it has to be based on a bunch of different considerations. So it's hard to predict, it sounds like, what the exact level will be.

DWR or State Parks, who best from you for Michael to contact if he has other questions?

MS. NEMETH: I think DWR. That's John Yarbrough.

And I will say the way that we think about balancing all of these needs when we have drought and the way in which we seek to preserve recreational opportunities is to essentially construct these boat ramps so that they continue to be functional as lake levels drop. We do know, over time, we're going to have more extreme conditions in California. And so we view that as a really important investment, kind of a -- for lack of a better phrasing -- a climate reinvestment in our recreation commitments up at Oroville. And John can fill you in on where we are with the timing for similar projects over at Lime Saddle.

And I would just observe -- you know, again, we're all very interested in when we get that darn license from FERC because a lot of what we do is tied up into that license, especially when it's within FERC boundaries, and unlocks a lot of funding for us to do

it. And we've been trying to lean in and do everything we can in advance of actually securing the license. But that is going to help us. But John Yarbrough is the contact for the department.

MR. CROWFOOT: Great.

John, can you come on real quick and give your number.

MR. YARBROUGH: Sure. The number is (916)803-9203. One more time. (916)803-9203.

MR. CROWFOOT: Excellent. Mike, thanks for coming on with those questions.

MR. TEAGUE: I would also offer my number for any questions he had related to fee collection for our facilities. Best number is (530)538-2210.

MR. CROWFOOT: Great. And that is Matt Teague from State Parks. Excellent.

Next hand James.

MR. PEARCE: Next hand is from Matt Mentink.

Matt, you should be able to unmute yourself.

MR. MENTINK: Great discussions today. Inundation maps. Office of Emergency Services.

I'd like to change the narrative a little bit here on all that discussion on inundation maps and property loss, human life loss, and look at maybe proposing recommending a study on the direct economic

impact of evacuation.

Maybe we only have a 140,000 running down the river, and we issue a mandatory evacuation. We had that in 2017. And there's probably some litigation still pending on that, so I don't want to dive too deep into it. But if you have 188,000 people, half of them earning $25 an hour. You know, that's $75 million -- excuse me -- $57 million. The cost of evacuating two per car, another $5.6 million lost in sales tax. Those are direct effects on the downstream communities. Then there's indirect effects like zoning, building, insurance, property value.

I propose that we create a cost of evaluation of the economic impact of evacuating so that we can then use that as we start moving into a FIRO water operation manual. The beauty about FIRO is that we're going to be able to send more water down south than what we're currently doing. We'll break away from mandatory 20 percent storage and go to a floating needle based upon these new airplanes flying over and taking snow surveys.

Our science will get better. And there will be that temptation to play it close to the edge. That we're going to build this confidence, "Oh, our accuracy is 95 percent right now." And then we'll miss, and

we'll move into 95 or 140,000 releases, cause mandatory evacuations, and the downstream community will take a $75 million hit on a three-day evacuation.

$75 million may not seem like a lot compared to what we spend on the spillway or what have you. But $75 million is what Alameda and Santa Clara pay for their water on an average annual basis.

So let's just not look at property loss and life loss. Let's look at economic impact every time a Water Control Manual decision throws us into an evacuation. And it's the money and time spent could be appreciated.

No need for an answer right now. I think that belongs on the recommendation log. Thank you.

MR. CROWFOOT: Matt, thank you. Point taken. And that's something I know that the folks are listening too, and will consider, and that we can also follow up on.

I know we're getting to noon. And I promised everybody that you would get to your next meeting on time. But, obviously, getting through this important public comment is critical. So I'm here as long as I need to be and recognize that we might have some commission members that have to drop on the way.

With that said, James, over to you.

MR. PEARCE: Next caller is a caller with the last digit of 4277.

If you could announce yourself and unmute yourself please.

MR. DOSSEY: Caller 4277. Thank you. This is Kevin Dossey, retired DWR Oroville division employee.

Can you hear me okay?

MR. CROWFOOT: Sure can.

MR. DOSSEY: Great. Just a comment on the forecast of lake levels.

I know the question was: Is it still predicted to get to near 800? There was an update posted on the OCAC website or through the operations office update three days ago that shows the lake only rising about to elevation 747 or so, about what it is today, kind of hovering in there, and then starting to drop.

And that's a 90 percent exceedance anyways, not looking as good as it did a month ago. And with the drought in March, it may not even look that good. But that is kind of the bottom line on that. It is looking more bleak than it was a month ago. So maximum won't get over 750. And on that note, it shows the lake level dropping off.

And this question is related to public safety, the access for fire, and rescue squads getting on the

lake, up on the boat ramps. The lake level forecast shows it would be dropping below 660 by the end of July. That's four months away. And there would be no concrete boat ramp access to get on the lake for rescues or, obviously, for recreational launching too. So my question is related to all that.

Has there been any discussion with going ahead to extend Bidwell Stage 3? I submitted an email to John Yarbrough at DWR about the 2008 FERC order that amended the recreation plan to include, under the current license, the extension of Bidwell all the way to elevation 640. And then in 2016, FERC was notified by DWR about the partial completion of that boat ramp at Bidwell. And they stated that it would likely be finished at the next low water opportunity, low lake level opportunity. And I understand that's been postponed until we're getting a new license or FERC is issuing a new license for Lake Oroville. And I just wondered how that will fly with FERC given that the FERC order in '08 amended the direct plan, and that it is a current license requirement.

Is there any progress or forward motion? And before you answer, or John, or someone from DWR answers, I'd like to point out that in 2008 when that project was started, there was no approval to go forth with the

project until about April of '08. So all of the surveys, permitting, designing, and construction got done with about an April start date. So I think with designs in place, there will be plenty of time when this decision was made to not postpone that project and go forth with it. Thank you.

MR. CROWFOOT: Got it. Thank you.

John, thoughts?

MR. YARBROUGH: Sure. As we talked about in previous meetings, so our focus this time will be on completing the work at the Loafer Ramp. So we have the permits, the ability to get in and complete that work there. So that's really where we'll be focusing.

Over at Bidwell, we are looking, if we do as the lake drops down, based on the survey down there, that will be an important step to feed into the permits to extend the ramp at Bidwell. It is still our plan to do that. It's not our plan to do that this year since we're focusing on Loafer.

MR. CROWFOOT: Probably not the ideal answer. But I appreciate your honest answer. It's helpful to control expectations on that James.

MR. PEARCE: Michael is wanting to make a comment.

MR. CROWFOOT: I'm going to let you jump on for

comment. But I'm going to ask that everybody understands that it's really important to respect everybody's time.

MR. MICHAEL S.: Sure. Can you hear me?

MR. CROWFOOT: Yeah, I can.

MR. MICHAEL S.: I just want to give a quick follow up. This is an important session because of the communication element between the public, and government, et cetera. I just wanted to draw your attention to a Facebook group called "California Water for Food and People Movement."

And the reason I bring this up is that it's 21,000, roughly, of your constituents that voice their concern, significant concerns about water management. And it's beyond just the Oroville scope rather. But I think it's a very important thing to the extent that your organizations want to have a very good, updated representation of significant concerns these constituents have in a lot of areas of water. And please look at it.

Please understand, you'll get a better idea on a daily basis of where our hearts and minds are on many of these very important and complex issues. So I just wanted to bring that up with you. Thanks for the follow up. Appreciate your time.

MR. CROWFOOT: Got it. "California Water for Food and People" on Facebook. I noted it.

James?

MR. PEARCE: That was the last hand raised.

MR. CROWFOOT: Well, listen, thanks for everybody's patience on the commission. I think it's really important to try to get those questions answered. And I'm really gratified that folks that are impacted by the lake came onto the meeting to ask those questions. So big thanks there.

As Senator Nielsen said, and certainly Assemblymember Gallagher, this is the function of this commission. So appreciate folks staying on a little bit longer.

MR. SAFFOLD: We'll be back together in late July. And in the meantime, you'll have all the materials that we talked about and shared today on the website.

Huge thanks to you all. And have a good and safe weekend and a good rest of your spring and early summer until we're next together. Take care.

(Meeting concluded at 12:06 p.m.)

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That the foregoing proceedings were taken before me at the time and place herein set forth; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; further, that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney of any of the parties.

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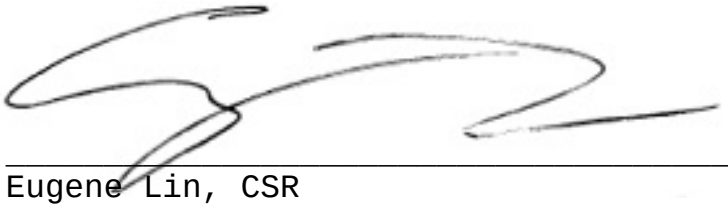

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