BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER RIGHT CHANGE PETITION HEARING	))))

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

BYRON SHER AUDITORIUM

1001 I STREET

SECOND FLOOR

SACRAMENTO CALIFORNIA

PART 2

Tuesday, February 27, 2018

9:30 A.M.

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Pages 1 - 242

Reported By: Deborah Fuqua, CSR No. 1248

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APPEARANCES:

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present

Tam Doduc, Co-Hearing Officer:
Felicia Marcus, Chair and Co-Hearing Officer:
Dorene D'Adamo, Board Member

Staff Present

Andrew Deeringer, Staff Attorney
Conny Mitterhofer, Senior Water Resources Control Engr.
Jean McCue, Staff
Hwasoang Jin, Staff

For California Department of Water Resources

Tripp Mizell, Senior Attorney

Duane Morris, LLP
By: Jolie-Anne Ansley, Attorney at Law

U.S. Department of the Interior, Bureau of Reclamation, and Fish and Wildlife Service
Amy Aufdemberge, Assistant Regional Solicitor

State Water Contractors

Stefanie Morris
Adam Kear
Becky Sheehan

Cities of Folsom and Roseville, San Juan Water District, and Sacramento Suburban Water District
Ryan Bezerra

(Continued)

APPEARANCES (continued)

South Delta Parties
John Herrick
Dean Ruiz

California Sportfishing Protection Alliance, California Water Impact Network, AquAlliance
Michael Jackson
Chris Shutes

Tehama-Colusa Canal Authority & water service contractors in its area - and Sacramento Valley Group
Meredith Nikkel

Local Agencies of the North Delta
Osha Meserve

Contra Costa County and Contra Costa County Water Agency
Kurtis Keller

County of Solano
Dan Wolk

Deirdre Des Jardins
Deirdre Des Jardins

County of San Joaquin, San Joaquin County Flood Control and Water Conservation District and Mokelumne River Water and Power Authority
Thomas H. Keeling

I N D E X

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Tuesday, February 27, 2018 9:30 a.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: Good morning, everyone. Please take your seat. Welcome back to the Coastal Hearing Room, and welcome back to California WaterFix Water Right Change Petition Hearing.

I am Tam Doduc. To my right is Board Chair and Co-Hearing Officer Felicia Marcus. To the Chair's right is Board Member DeeDee D'Amado. To my left are Andrew Deeringer, Conny Mitterhofer, Jean McCue and Hwasoang Jin. Thank you.

We're being assisted today by Mr. Hunt, Mr. Baker. Our court reporter, Debbie, is now part of the team as well.

Couple of usual announcements. Please, by now you should know the exit closest to you, but if you don't, find it. In the event of an emergency, an alarm will sound. We will evacuate by taking the stairs, not the elevators, down to the first floor and gather in the park where, unfortunately, there is no hail on the ground today. If you're not able to use the stairs, please flag down one of the staff or anyone wearing -- I believe it's fluorescent orange caps or vests, and you will be directed to a protected area.

Second announcement, as always, this is being recorded and webcasted, so please provide your comments into the microphone. And please begin by identifying yourself and your affiliation.

Our court reporter is here, and if you wish to have a copy of the transcript earlier than when we would make it available, please make your arrangements with her directly.

Finally, and most importantly, please put all your noise-making devices to silent, vibrate, do not disturb. Even if you think it is that way, please take a moment and check. I was playing some video of the hailstorm last night, so let me make sure I turned my sound off.

Any housekeeping matter before we begin? I believe we -- I do not see Mr. Herrick.

Oh, I see Mr. Herrick now.

So we do have our line-up of cross-examination today. Going by the estimates that were provided yesterday from various parties intending to conduct cross-examination, I think we might be looking at the completion of cross-examination of this panel sometime on Thursday or early Friday, depending on the extent, if any, of redirect and re-cross.

It is my hope, but I'm not making any

promises, that we can get through this panel this week. That might mean a couple of long days; today, tomorrow and Thursday. Today, tomorrow and Thursday, yes. We'll see how it goes.

But so far all the cross-examination has been very efficient, very productive. I appreciate that very much. I expect that Mr. Herrick and Mr. Ruiz will continue that fine tradition and perhaps even do better.

On that note, no pressure, Mr. Herrick, you may begin.

HARRY OHLENDORF, MIKE BRYAN,
ELLEN PREECE, AARON MILLER,
MARIN GREENWOOD, RICK WILDER,
ERIK REYES, TARA SMITH,
EN CHING HSU, MARIANNE GUERIN
NANCY PARKER, KRISTIN WHITE,

called as witnesses by the Petitioner,

having been previously duly sworn,

were examined and testified as

hereinafter set forth:

MR. HERRICK: Thank you, Madam Chair, Board Members. John Herrick and Dean Ruiz for South Delta Water Agency parties. I will be asking questions of Ms. Smith and Mr. Miller. For Ms. Smith, I'll be asking questions about their analysis of water levels and changes in EC in the channel waters and a few

questions on operations and the adaptive management mentioned by Mr. Miller.

And then Mr. Ruiz will --

MR. RUIZ: I have a few questions for Mr. Reyes, many of which were addressed -- or at least in part -- yesterday, questions pertaining to the time steps in the models, a couple questions on river flow projections, a couple questions on the water supply delivery data he presented and maybe a question on total Delta export curtailment assumptions.

MR. HERRICK: So with that, the only intro I'll give is that, with Ms. Smith, we're going over issues that were touched upon in Part 1. So I've tried to truncate as much as possible, but there are some things that aren't established based upon this new testimony, so.

CROSS-EXAMINATION BY MR. HERRICK

MR. HERRICK: So with that, Ms. Smith, if we could pull up DWR-1028, 1028, please, and go to Slide No. 13.

Then while that's coming up, Ms. Smith, one of the analyses you did deals with the effects of a Head of Old River barrier under the California WaterFix project; is that correct?

WITNESS SMITH: Yes.

MR. HERRICK: And before we get to the barrier itself, the San Joaquin River flows north towards Stockton, and Head of Old River branches off of that somewhere in San Joaquin County, correct -- excuse me -- Old River branches off of that?

WITNESS SMITH: Old River branches off the San Joaquin, yes.

MR. HERRICK: And can we say, under any normal conditions, about what the split is there of the flow of the River? Does half go down the San Joaquin main stem and half go to Old River or something similar to that?

WITNESS SMITH: It's dependant on, I think, the hydrology and the export rates. I wouldn't do a kind of a standard normal split, so.

MR. HERRICK: Okay. I don't want to pin you down, but it's something like 60/40 or 40/60 or 55/45, typically?

WITNESS SMITH: I'd heard 60/40 previously. I've looked at it, but I don't -- I wouldn't want to be pinned down to that, especially since hydrology changes, so.

MR. HERRICK: And now we're on Page or Slide 13 of DWR-1028.

And do you see the column under H3 there?

WITNESS SMITH: Yes, I do.

MR. HERRICK: And the reason I point to that is, when you go to CWF H3+, that's the same as H3, correct? It's the same as --

WITNESS SMITH: That's correct. For --

MR. HERRICK: Sorry.

WITNESS SMITH: -- South Delta exports, yes. Are you talking about the first -- the first row of that?

MR. HERRICK: No, I'm talking about the third row, the Head of Old River barrier.

WITNESS SMITH: Right. Oh, I'm sorry. Yes, that's the same as the -- sorry. I was looking at the H3 column.

MR. HERRICK: And under that H3 column for the Head of Old River line, it describes the -- I'll say initial starting conditions under the California WaterFix scenario for the Head of Old River barrier; is that correct?

WITNESS SMITH: Yes, it does.

MR. HERRICK: And you can see in there sometimes it says 100 percent open and sometimes 50 percent, sometimes 100 percent. It describes in various months when and the amount of flow being let through it, correct?

WITNESS SMITH: That's correct.

MR. HERRICK: Now, when it says 50 percent -- say, about the second line there, it says "October 50 percent," does that mean 50 percent of what would have gone down the river, or does that mean 50 percent of the total San Joaquin River is being allowed to go there?

WITNESS SMITH: It's 50 percent of the flow going into there.

MR. HERRICK: And then you can see farther down it says, "Before the D1641 pulse, HOR gate opening. During the 1641 pulse for two weeks, HOR gate closed," right?

WITNESS SMITH: Yes, that's what it says.

MR. HERRICK: And so the pulse flow under D1641, is that referring to the winter pulse flow or the spring pulse flow?

WITNESS SMITH: The -- before the D1641 pulse, it would be the pulse during that time period.

MR. HERRICK: Okay. And there's a fishery pulse flow in April through May, correct, and then there's a fall pulse flow sometime in November, correct?

WITNESS SMITH: Yes. It's going to be during that time period, so.

MR. HERRICK: Which one is this two weeks' closure, the fall or the spring?

WITNESS SMITH: It would be the fall, and I'll verify that with Mr. Reyes. That's what it states anyway, so -- but I'll -- but if --

MR. HERRICK: I believe that's correct. I'm just --

WITNESS SMITH: Yeah, yeah.

MR. HERRICK: Now, in your modeling presentation, your testimony, have you presented any analysis of the effects of downstream water levels from the HOR barrier during this two-week time frame the barrier is closed completely?

WITNESS SMITH: It's included in the modeling simulations of the water levels that I showed in the monthly average are -- include that closure if it's there.

MR. HERRICK: So somewhere in the monthly averages we could find the data for that, but you haven't broken it out specifically to show any particular two-week period in any particular water year what the effects of that two-week closure would be on water levels?

WITNESS SMITH: Not in my testimony.

MR. HERRICK: It's in the modeling somewhere?

WITNESS SMITH: It is in the modeling somewhere.

MR. HERRICK: Now, closing the HOR barrier completely, as this proposes, will cause effects to water levels immediately downstream of the barrier; is that correct?

WITNESS SMITH: If you were closing the barrier, yes, I would expect some water level differences downstream on Old River -- at head, right? That's what you're referring to? Okay.

MR. HERRICK: And generally speaking, that's because, when the tide goes out with the barrier there, there's no water flowing in as the tide goes out from that side. So it decreases faster than it would if the barrier weren't there, the water levels, I mean; is that correct?

WITNESS SMITH: It's just a difference in head between the two. I'm not going to go into any -- you know, the tidal aspects of it.

MR. HERRICK: And during the November -- I assume this is November generally, correct, and any varying according to adaptive management? We're talking about November, correct?

THE WITNESS: Yes.

MR. HERRICK: Now, are there any diversions

that go on in November that might be affected by this lowering of water levels in the area that you know of?

WITNESS SMITH: I'm not aware of -- I'm not aware of anything. That's not my expertise.

MR. HERRICK: Is there any DWR witness, to your knowledge, that would be able to make conclusions or opinions on the effects of a water level lowering by the head gate -- by the head barrier on local diversions?

WITNESS SMITH: Well, you know, I just said that I wasn't an expert on the specific local diversions, but we do estimate it within our model. So I misspoke a little bit.

MR. HERRICK: Yes, my question went to whether or not there was a witness who could make a conclusion on the effects of that lowering on diversions -- local diversions.

MR. MIZELL: Objection, this question goes outside the scope of Part 2. In fact, DWR is precluded from putting on witnesses about the impact to legal users of water in Part 2 in our case in chief.

If we were to put on witnesses to answer Mr. Herrick's question, that would have to be through rebuttal, as per the Board's ruling.

CO-HEARING OFFICER DODUC: I'm confused

because we are allowing Mr. Herrick and other parties to touch upon Part 1 issues, to the extent that it relates to testimony from a witness in Part 2.

So are you saying --

MR. MIZELL: I agree, but his question is asking if DWR is putting on a witness that can answer questions about injury to legal users of water, the implication being, if the witness is not up here to answer those questions, our case in chief isn't complete.

We are not allowed to put on a witness at this time to answer his question. We would have to do that through rebuttal.

CO-HEARING OFFICER DODUC: Mr. Herrick, would you like to rephrase your question?

MR. HERRICK: Yeah. I'm not trying to set someone up. I'm trying to establish what is and isn't, for some reason, being presented.

CO-HEARING OFFICER DODUC: I understand.

MR. HERRICK: I'll just move on.

Ms. Smith, the model used to calculate, I'll say, changes in water level from the operation of the Head of Old River barrier is DSM-2, correct?

WITNESS SMITH: That is correct.

MR. HERRICK: And DSM-2, besides many others

things, includes inputs that characterize channel profiles of the area; is that correct?

WITNESS SMITH: Could you clarify what you mean by "channel profiles"?

MR. HERRICK: The DSM-2 model includes data inputted that describe the various channels through which the water's calculated to flow, correct?

WITNESS SMITH: Are you talking about water level or geometry or bathymetry?

MR. HERRICK: The channel cross-sections, the geometry of the channel.

WITNESS SMITH: Yes, that's correct.

MR. HERRICK: And what is the most recent channel cross-section data in the DSM-2 that you used?

WITNESS SMITH: I can't say at this time. I'd have to go look at the data to look at what -- because there are different -- there's several different years that we utilize for the model. So I'd have to go look at it to -- to check that.

MR. HERRICK: And the -- the I'll say the reliability of any modeling results depends of course upon whether or not the model has accurate data; is that correct?

WITNESS SMITH: I think -- I think it always depends on the question you're asking the model. So

the -- so depending on what question you're asking the model, whether or not that model is appropriate to do a particular task, yes, you're looking at the data in terms of what goes into it.

MR. HERRICK: And the model, say, calculates the -- the effects of an incoming tide up Old River at any particular channel reach, correct? That's one of the things it does. And from that, it calculates stage or water quality or temperature, those various things, correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And so if the DSM-2 model has a channel in Old River cross-section that, say, is 40 feet across and 10 feet deep, that would cause the model to produce one set of results. But if the channel was 40 feet across and 4 feet deep, you'd get a different set of results, correct?

WITNESS SMITH: Potentially.

MR. HERRICK: So it would be important to have the most recent data on the conditions in the South Delta in order for us to get DSM-2 results that are reliable; would that be correct?

WITNESS SMITH: No, not necessarily.

MR. HERRICK: Okay. Are you aware of any water level problems experienced this past December in

the South Delta?

WITNESS SMITH: I've heard of water levels problems. I don't remember if it was the December. But I -- I'm not as -- I'm not up to date on what the issues were.

MR. HERRICK: And I don't mean to test you, so I won't describe anything that you don't know. But do you know any of the specifics of this issue of water levels that you have some knowledge of? Do you have any specifics?

WITNESS SMITH: No. I can't think of any right now. I may be mixing them up with something that happened several months ago or last year.

MR. HERRICK: And in your modeling of the effects of the Head of Old River barrier, did you calculate any volume changes in local channels resulting from the California WaterFix operation of the head barrier?

WITNESS SMITH: I did not calculate any volume changes.

MR. HERRICK: Would those numbers be -- would volume numbers be in the modeling that was produced or that people can access?

WITNESS SMITH: You can calculate volume numbers from the information produced.

MR. HERRICK: And those volumes would be dependent upon what the model has for the various cross-sections in the channels, correct?

WITNESS SMITH: Of course, that's part of the model.

MR. HERRICK: Okay. So let's go back to your testimony, which is DWR-1015, 1-0-1-5. And just as an introductory, Ms. Smith, your modeling results and your testimony deal with changes -- part of it deals with changes in the EC of the water in the channels of the South Delta, correct?

WITNESS SMITH: That's correct.

MR. HERRICK: Among other places. I'm just dealing with South Delta.

And did you draw any conclusions with regard to any changes resulting from the California WaterFix scenario with regard to soil salinity of local lands?

WITNESS SMITH: Could you repeat that question again?

MR. HERRICK: In your analysis of the effects of the EC of the channel water in the South Delta, did you draw any conclusions with regard to how those changes might affect soil salinity on the lands in the South Delta?

WITNESS SMITH: No. I just looked at the EC

within the channels.

MR. HERRICK: I'm just establishing.

And did you look at any effects of any of those changes on plant growth?

WITNESS SMITH: No. Not as part of my analysis, no.

MR. HERRICK: And did you look at any potential effects on crop production?

WITNESS SMITH: No, not as part of my analysis.

MR. HERRICK: Now, one of your conclusions I believe -- correct me if I'm wrong -- is that the changes in water quality, the EC changes, do not result in violations of D1641 standards; is that correct?

WITNESS SMITH: I believe so.

MS. ANSLEY: And that gets back to the issue of whether or not the model is used in a predictive manner or a comparative manner; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And in your analysis and your bar charts that you provided, are you asserting that these are comparative analyses, or are you asserting that these are predictive of water quality levels resulting from the WaterFix?

WITNESS SMITH: Are we back to water levels,

then, or are we talking about EC?

MR. HERRICK: Water quality.

WITNESS SMITH: Water quality. Okay.

Could you restate the question?

MR. HERRICK: Are you -- is your presentation, including the bar charts you provided with changes in EC, is that telling us the comparative difference between the No Action and the California WaterFix, or is it predicting what the water quality would be in those channels at any time?

WITNESS SMITH: It is not predicting what is going to be in the channels at any time. It is a comparative analysis.

MR. HERRICK: So from the bar charts, we can't tell whether or not a water quality standard would be violated, could we, if it's just a comparative?

WITNESS SMITH: That is correct.

MR. HERRICK: Now, your bar charts, which are on Page -- beginning on Page -- excuse me -- 21, with regard to water quality, those are 16-year monthly averages; is that correct?

WITNESS SMITH: That is correct.

MR. HERRICK: The reason I ask that -- I'm not being picky or anything, but I believe earlier in some other testimony there was some of the fishery modeling

or other modeling. You actually did the longer -- is it 82- or 89-year period; is that correct?

WITNESS SMITH: 82-year. Yes, I believe that's correct.

MR. HERRICK: This is just a 16-year period, which is what years?

WITNESS SMITH: I believe it's 1976 to '91. I might be wrong. Could be '75, but...

MR. HERRICK: Okay. Let's go to Page 23, which has the bar charts for Old River at Tracy Road and San Joaquin River at Brandt Bridge, please.

And you see those bar charts, Ms. Smith?

WITNESS SMITH: Yes, I do.

MR. HERRICK: Now, one of the other -- excuse me. Do you know that there is a water quality monitor -- appliance location at Middle River near Old River?

WITNESS SMITH: Yes, I do.

MR. HERRICK: Is there a reason that you did not present the data for that station?

WITNESS SMITH: Not particularly. I think we were just doing locations throughout to generally demonstrate differences for public interest and to give context where it fits in between H3 and H4.

MR. HERRICK: Okay. Let's start with

Figure EC5, which is the Old River, Tracy Road.

And do you see that on the chart on the screen there?

WITNESS SMITH: Yes.

MR. HERRICK: Now, in October -- let me back up. There are one, two, three, four -- five bars on each -- for each month; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And the fourth bar is the California WaterFix H3+ scenario; is that correct?

WITNESS SMITH: That's correct, in the magenta.

MR. HERRICK: Magenta means nothing to me.

WITNESS SMITH: Oh, that's right. I realize you're colorblind.

MR. HERRICK: You're supposed to change all these just for me.

Anyway, in the first bar is the No Action Alternative.

WITNESS SMITH: That's correct.

MR. HERRICK: And so in October, we see that the WaterFix scenario has some level higher of EC than the No Action; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And same things for November,

slightly higher, whatever that number might be, but it's higher for the No Action WaterFix than it is for the No Action; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And in December, for all intents and purposes, the bars show the same number, it looks like, but whether that's exactly correct --

WITNESS SMITH: That's correct.

MR. HERRICK: And then in January again the WaterFix is higher, is that correct, than the No Action?

WITNESS SMITH: That's correct.

MR. HERRICK: And in February the WaterFix is higher than the No Action?

WITNESS SMITH: Yes. Very slightly, yes.

MR. HERRICK: And in March, the WaterFix is higher than the No Action?

WITNESS SMITH: Yes, again, very slightly.

MR. HERRICK: And in April, the WaterFix scenario is higher than the No Action?

WITNESS SMITH: Yes, very slightly.

MR. HERRICK: And then May, it appears that they're pretty close to the same; is that correct?

WITNESS SMITH: Yes.

MR. HERRICK: Whether or not there's a slight

difference, it looks like they're the same.

And in June, it looks like the WaterFix is lower EC than the No Action; is that correct?

WITNESS SMITH: Yes, that's correct.

MR. HERRICK: And in July, same thing. Looks like the WaterFix scenario is a little lower than the No Action; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And in August, it's hard to tell. I would say they're the same. Perhaps the WaterFix is slightly lower than the No Action but pretty close to the same?

WITNESS SMITH: Yeah, I'd say slightly.

MR. HERRICK: And that looks about the same for September, too, there, right? They're together. Perhaps the WaterFix is a little higher; is that correct?

WITNESS SMITH: That's correct.

MR. HERRICK: Now, those are 16-year averages.

Do you know whether or not the effects on any beneficial use can be judged by a 16-year average?

WITNESS SMITH: I think it gives a general idea of what the effects are. I -- I did look at the other effects. I did look at the compliance graphs for these, although they're within the data that was

provided, not within the written -- these written testimony graphs. And the compliance graphs are in line. The -- the No Action Alternative and California WaterFix are in line with each other.

MR. HERRICK: Are your compliance graphs you're talking about, are those predictive model results, or are they comparative model results?

WITNESS SMITH: They're -- it's comparative.

MR. HERRICK: So it's not really predicting whether or not there'll be a violation?

WITNESS SMITH: That's correct.

MR. HERRICK: So in each of these 16-year average bars, since it's an average, then we would expect that there -- some years it's higher, some -- some months -- excuse me -- it's higher; some, it's lower; is that correct?

WITNESS SMITH: Yes, that's correct.

MR. HERRICK: Did you examine any year in any month when there was a violation of a water quality standard in South Delta and then looked to see what the WaterFix predicted would happen in that month to that violation?

WITNESS SMITH: Well, as we're not predicting, I looked at the results of the modeling for each year, and the -- in terms of the compliance for the WaterFix

and the No Action Alternative they were very close together, if, not right on top of each other.

MR. HERRICK: Okay. But we do have months where the WaterFix has a worse water quality predicted -- or, excuse me -- comparatively predicted than the No Action, correct?

WITNESS SMITH: That is correct, even though it's fairly slight, yes.

MR. HERRICK: So let me give you a hypothetical. Say in November, let's say, we have the hypothetical is there's a -- the standard is just being met. So it's 1.0 EC at a particular station. And the California WaterFix says on average it will be a little higher than that.

Does your testimony allow us to see how much higher than the standard the California WaterFix would cause the water quality to be?

MR. MIZELL: Objection, assumes facts not in evidence, incomplete hypothetical.

CO-HEARING OFFICER DODUC: Yes, you do have that as a hypothetical question.

MR. HERRICK: I thought that was a pretty complete hypothetical.

CO-HEARING OFFICER DODUC: Overruled.

WITNESS SMITH: The modeling data that is

looked at has that information in it.

Could you repeat your question if I missed anything on it?

MR. HERRICK: Yeah. I want to say the hypothetical was we're in November --

WITNESS SMITH: Yes.

MR. HERRICK: -- and the water quality is right at the standard, 1.0 EC.

WITNESS SMITH: Mm-hmm.

MR. HERRICK: So what I'm asking is does your presentation -- or does the data -- not your presentation.

Does the data allow us to go into it and see if the California WaterFix would cause that water quality number to rise so that we're now in violation of the standard?

WITNESS SMITH: Yes, if --

MS. AUFDEMBERGE: Objection. He hasn't established that the would be a violation. There's a causation phrase --

CO-HEARING OFFICER DODUC: Overruled.

Okay. Let's not quibble over terminology. I am not an attorney. Essentially, I understand Mr. Herrick's question to be asking where in the data, if there exists information in the data where he can

make that analysis. That's all he's asking of Ms. Hart -- of Ms. Smith. Nor the terms "violations," "non-compliance," whatever that's causing you heartburn.

Mr. Herrick, is my understanding correct? You are just asking whether there is information in the data, in the model, in what was submitted for you or anyone else to make that determination?

MR. HERRICK: That is correct. And I'll change it to just simply "exceedance," if that's better. But I'm just trying to find out, first, if the data contains that; and, second, if your testimony contains that.

So the first question is does the modeling data you or you and your team have produced allow one to go in to see how much, if any, the California WaterFix scenario might result in an increased EC at any particular location in the South Delta?

WITNESS SMITH: Yes, it does for the specific locations where the objectives are met, not necessarily at every single channel location but where the objectives have been in place.

MR. HERRICK: And that's a good caveat.

Does the -- the data does have other places. You're just saying it wouldn't necessarily be every

single, you know, square inch or something?

WITNESS SMITH: I don't believe that we have that information. We didn't ask for that output in the model that was released. So we have it at the objective locations, including the Middle River location that you were asking about earlier.

MR. HERRICK: Now, is there a reason why that sort of data was not broken out by you and presented here in order for us to examine when or if potential adverse effects from the California WaterFix will occur?

WITNESS SMITH: Well, primarily on my part it was because a lot of that had already been covered in Part 1, and this is just giving, you know, some additional information to give context of where the -- the project, as we're presenting, falls within what we had presented before.

MR. HERRICK: But would you agree that Part 1 didn't do that breakout that I just talked about? There was no presentation about how a WaterFix scenario would specifically raise or not raise an EC in any particular location in any particular year, correct?

MR. MIZELL: Objection. Again, Mr. Herrick is trying to get the witness to explain why the Department did not present evidence on injury to legal users of

water in their case in chief in Part 2. It's because it was precluded from doing so by virtue of the scope of Part 2. This question is inappropriate.

MR. HERRICK: Actually, that's not correct.

Her answer stated that she didn't do it here because they did it in Part 1. That's what I understood. And I was just trying to jog her memory that they did not do it in Part 1 to see if she would change her answer. She may not, but --

WITNESS SMITH: Could you explain what we didn't do in Part 1 again and ask me the question?

MR. HERRICK: How much time do I have?

Well, let me put it this way, whether there's an objection or not.

In Part 1, did the presentation by you with Dr. Nader-Tehrani include the breakout of particular years showing how any particular WaterFix scenario might raise the EC to or above the standards in any particular year, like I said?

WITNESS SMITH: There were. And those particular years were included in the probability of compliance graphs.

MR. HERRICK: Yes, and my question was whether they were broken out or not. I know you did the exceedance graphs and I know you did 16-year averages.

I'm asking if it was broken out.

WITNESS SMITH: The information was within the modeling data that was put forward. I don't recall if it was in Dr. Nader-Tehrani's written testimony or oral testimony.

MR. HERRICK: Now, these scenarios are based upon the description somewhere of what the California WaterFix H3+ operational criteria are, correct?

WITNESS SMITH: Can you state that again, please?

MR. HERRICK: Well, the -- the California WaterFix scenario is based upon the described criteria of the operations under that scenario, correct?

WITNESS SMITH: Yes, as described by Mr. Reyes.

MR. HERRICK: And I'm not here to test you on adaptive management, but we understand there's an adaptive management portion of this project that will advise changes in -- potential changes in operations, correct?

WITNESS SMITH: I would defer that to either Mr. Miller or one of the biologists, that question.

MR. HERRICK: And I'm not getting into that. I'll stay in the model with you.

THE WITNESS: Okay.

MR. HERRICK: So I understand that. I'll -- if I need to, I'll ask one of the other witnesses.

WITNESS SMITH: Okay.

MR. HERRICK: So any of the operations that you've modeled here for the California WaterFix H3 might change if adaptive management recommends alterations in operations, correct?

WITNESS SMITH: Potentially, if that's what's going to happen.

MR. HERRICK: What I'm leading to is should we, as the public, still rely on the B1 and B2 scenarios for modeling results as an indication of the range that adaptive management might change these California WaterFix scenarios?

WITNESS SMITH: I -- I cannot answer that particular question within my expertise that I'm presenting today.

MR. HERRICK: So you don't know whether or not presentation of effects under B1 may or may not be ultimately California Water Fix effects, correct?

WITNESS SMITH: I cannot testify to that.

MR. HERRICK: Okay. Let me quickly go back to -- I'm almost done. Let me quickly go back to the water levels issue. I missed a point. I'm sorry.

In your analysis you provide on Pages 30

through 32, your exceedance -- I'll say plots for stage -- for effects on water levels, correct?

WITNESS SMITH: That's correct.

MR. HERRICK: And is there a reason why you didn't produce bar charts of specific months' or years' effects on water levels; rather, you just did the exceedance plots?

WITNESS SMITH: I figured that would provide more -- most information.

MR. HERRICK: And I see your last figure is W-5 on Page 32. And it's minimum stage at Old River at Tracy Road; that's correct, isn't it?

WITNESS SMITH: That's correct.

MR. HERRICK: Now, is there a reason why you didn't provide any data for areas closer to the Head of Old River barrier?

WITNESS SMITH: I figured this was representative of the South Delta to see what the impacts were.

MR. HERRICK: Are you -- I'm not trying to challenge you. Are you aware of the areas where there are commonly water level problems in the South Delta?

WITNESS SMITH: I am aware of some of the areas where there is water levels problems in the South Delta.

MR. HERRICK: Is one of those areas the upper portions of Middle River?

WITNESS SMITH: Potentially, yes.

MR. HERRICK: And is that upper portion of Middle River closer to the Head of Old River barrier than Old River, Tracy Road?

WITNESS SMITH: Are you talking about, like, Old River at Middle River? Is that what you're talking about, stream portion?

MR. HERRICK: Let's make it Middle River Undine, which is, say, a mile downstream from the head of Middle River. That's closer to the head of Old River than Tracy Boulevard at Old River; isn't it?

WITNESS SMITH: I would agree that that is closer to the head of Old River.

MR. HERRICK: Like, five miles closer?

WITNESS SMITH: I don't have the mileage.

MR. HERRICK: In hindsight, would it have been better to show water level effects at areas closer to the Head of Old River barrier?

WITNESS SMITH: Not necessarily. I think this gives a fairly good indication of the general trend of what the impacts are going to be or effect -- or differences are going to be. I can't say what the impacts are, actually.

MR. HERRICK: Would you expect the impacts of the head barrier to be more pronounced closer to it than farther away to it?

WITNESS SMITH: I think it depends on -- I normally would think that it would be -- effects or differences would be a little bit bigger closer to it, but since we're going into another river channel, I'd have to look at the data a little bit more to say for sure.

MR. HERRICK: I just didn't hear the last part. You said something to the river channel. I didn't catch that.

WITNESS SMITH: So normally I would expect that there would be greater differences in a head -- or in water levels nearer to the Old River head barrier. However, since we're going into Middle River, which is a different channel, I would need to verify that by looking at the data.

MR. HERRICK: But the Middle River channel we're talking about is downstream of the head barrier, correct?

WITNESS SMITH: That's correct, from what you described.

MR. HERRICK: Thank you. Let me ask Mr. Miller some questions. And I'm making sure I don't

not call somebody "Doctor" who's a doctor.

So, Mr. Miller, on Page 4 of your testimony which is DWR-1011 -- and I'll be quick here, since I'm -- do you have your testimony in front of you?

WITNESS MILLER: I do.

MR. HERRICK: And on Page 4, you begin talking about -- it's under the "Interagency Coordination."

Do you see that?

WITNESS MILLER: Yes.

MR. HERRICK: You mention the WOMT, W-O-M-T -- I'll say "group"; is that correct?

WITNESS MILLER: Team.

MR. HERRICK: Now, that's one of the groups that evaluate real-time conditions or predictive conditions and exports and make decisions about what operational activity should occur; is that correct generally?

WITNESS MILLER: This is the team that primarily focuses on operations that are specific to fish operations.

MR. HERRICK: And I've gotten lost along the way, so correct me quickly if I'm wrong.

Is there also a CALFED Ops groups still going on?

WITNESS MILLER: Yes.

MR. HERRICK: And there's a Delta Smelt Group going on?

WITNESS MILLER: Yes. The Delta Smelt Working Group provides their assessment to WOMT.

MR. HERRICK: And yesterday I heard there's a DOSS group. Is that D-O-O-S or D-O-S-S?

WITNESS MILLER: DOSS, Delta Operations for Salmonids and Sturgeon.

MR. HERRICK: Are there other groups going on? Didn't there used to be a DAT Group, D-A-T? Is that still going?

WITNESS MILLER: Yes, that's still going.

MR. HERRICK: So all those groups are, to some degree, evaluating issues involved with exports and fisheries and feeding that information where?

WITNESS MILLER: It depends on the group. So the -- maybe it's better if we pull up the Final EIR/EIS that has a listing of various different groups.

Would that be helpful?

MR. HERRICK: Not to me, but if you'd like to.

What I'm getting at is we've got -- what is that? -- six or seven or eight groups, without misstating it? I mean, there's a large -- there's a certain number of groups that are looking at these issues, correct?

WITNESS MILLER: There's a large number of groups, yes.

MR. HERRICK: Who is the ultimate decision-maker as to whether or not a project operation should change based upon fishery information or fishery groups' recommendations?

WITNESS MILLER: So the fishery-related decisions are -- go through the WOMT.

MR. HERRICK: The question is who makes the decision?

WITNESS PARKER: Oh, that -- it depends on the decision. Are you asking about, say, an OMR determination?

MR. HERRICK: So are you suggesting that different people in the WOMT make different decisions, or does the group itself make a decision when an issue arises?

WITNESS MILLER: For example, decisions on OMR related to, say, Delta smelt, those assessments come from the Delta Smelt Working Group and are provided to Fish and Wildlife Service Management and California Department of Fish and -- California Department of Fish and Wildlife Management. And those groups are -- those agencies are part of the WOMT.

So the decision on the actual level would come

from the fishery agencies, and that would be discussed at WOMT.

MR. HERRICK: So the fisheries agencies direct DWR and/or the Bureau to change their operations based upon the subgroups' information or decisions; is that right?

MR. MIZELL: Objection, misstates the witness's testimony. He was specifically talking about WOMT.

CO-HEARING OFFICER DODUC: Mr. Herrick was asking for a clarification. And it is a misstatement. And if it's incorrect, then Mr. Miller can say so.

MR. HERRICK: Yeah, I don't mean to trick you. I'm really trying to find out how this works because it's my understanding that there's some sort of consensus at WOMT rather than the fishery agencies having the deciding vote or whatever, decision, depending on the circumstances.

But you please tell me how you think any of the decisions at WOMT are made, whether one group controls in one aspect and one controls another or it's a consensus or something else. But if you could please tell me your understanding?

WITNESS MILLER: Well, if we use the OMR as an example, which is a fishery protection measure, that

determination is typically made by the fishery agencies. It is brought to WOMT, and that determination is discussed. But the project's agencies, Reclamation and DWR, also have biologists that are evaluating this criteria and are part of the Delta Smelt Working Group Team. And if there are differences, then that is discussed.

Ultimately, the -- if there is a -- ultimately the directors of the various different divisions would be responsible for making those decisions. So if the WOMT can't decide on what to operate to, then it's elevated to those directors.

Typically, it is -- those determinations by Fish and Wildlife, in this example, are acted upon.

MR. HERRICK: Okay. So how long has this process been going on?

WITNESS MILLER: What process?

MR. HERRICK: WOMT. You just described a process whereby, as an example, the OMR, Old Middle River, issue gets, you know, recommendations made, goes to the WOMT. There's a discussion. If they don't agree, it goes to the department heads or something.

How long has this been going -- this process been done?

WITNESS MILLER: I believe WOMT has been

established since around 2000.

MR. HERRICK: That seem about right.

So since 2000, we've been operating under an adaptive management program to consider fishery impacts and needs in relation to exports, correct?

WITNESS MILLER: Well, this should not be confused with the adaptive management program. The adaptive management program is something that evaluates the science and then essentially creates criteria.

And Dr. Earle can discuss or explain that in much greater detail than I. I was just focusing in on -- the reason I provided it in my testimony was to differentiate adaptive management program from real-time operations. So in real-time operations --

MR. HERRICK: So it's your view that the process that leads to a WOMT decision is not adaptive management? Aren't the fishery agencies looking at the science and the facts and making recommendations as to what they think will protect fish?

WITNESS MILLER: So the criteria I keep using the -- let's use the Fish and Wildlife Service Biological Opinion as an example here. That opinion lists the criteria of OMR between negative 1250 and negative 5,000. So that -- that range was developed for the Biological Opinion. I'm not exactly sure how

they went about developing that range.

But then, in real-time operations, the fishery agency groups, the working teams, the working groups, they evaluate the various different levels of OMR and the potential impact to the various fish. In this case, we're talking about Delta smelt.

So then that assessment is given to the lead agencies and WOMT. And then -- so, I don't think that's the same as the adaptive management program because adaptive -- if they had used adaptive management in the development of that criteria, we would be still operating within that range developed by that -- whatever they used.

MR. HERRICK: Didn't we have a CALFED adaptive management program ongoing for the past 10 or 15 years?

WITNESS MILLER: I'm not aware of that.

MR. HERRICK: Okay. On Page 11 of your testimony, if you can pull that up. On Line -- beginning on Line 17. And the beginning of the paragraph, you talk about the March outflow,

But on Line 17, you say, "The exports will not be lowered below 1500 cfs to meet the daily outflow target."

Do you see that?

WITNESS MILLER: Yes.

MR. HERRICK: And so are you telling us that the projects will not lower exports below 1500 even if that's what's necessary to meet the Biological Opinion mandates for outflow?

WITNESS MILLER: Which outflow are you talking about? Are you talking about the --

MR. HERRICK: Well, it appears that you were talking about the March outflow.

WITNESS MILLER: I'm talking about the -- the outflow as part of the California WaterFix H3+ spring outflow target.

MR. HERRICK: Okay.

WITNESS MILLER: Which is different than, say, the D1641 outflow requirement.

MR. HERRICK: Okay. But no offense; that's not responsive. I'm asking you if this means that the projects are saying they will not lower exports to meet the spring outflow target even if that would meet the spring outflow target.

Is that what that says? Is the answer yes?

MR. MIZELL: Objection --

MR. HERRICK: I apologize. I withdraw that snide comment.

MR. MIZELL: Objection. No offense, but the question you said, you used the word "Biological

Opinions," which is different than the ITP, which is what Mr. Miller was talking about. So if he's confused, it's because you, again, confused the terminology in your question.

MR. HERRICK: My original question did say "Biological Opinion."

So what outflow are we talking about in your paragraph here that begins on Line 14 on Page 11? Which outflow requirement or mandate or obligation?

WITNESS MILLER: So this is the California WaterFix H3+ proposed spring outflow target.

MR. HERRICK: And is that based upon an incidental take permit, a biological opinion, or a water right, or something else?

WITNESS MILLER: So the example I used in this particular case was defined in the Incidental Take Permit application.

MR. HERRICK: So if we're operating under California WaterFix, that would be a binding obligation pursuant to the Incidental Take Permit, correct, that spring outflow?

WITNESS MILLER: Yes. However, the way it's defined is that that target would be met by only reducing exports down to 1500 cfs.

MR. HERRICK: Right. Then we get back to my

original question, which is, so, if reducing exports below that would meet an unmet Incidental Take Permit outflow target, you're telling us you wouldn't -- the projects would not do that; is that correct?

MR. MIZELL: Objection, misstates facts in evidence. The ITP does not require anything below 1500. Mr. Herrick implies that it does. Mr. Miller has already answered the question, so it's repetitive. But if he wants to continue to seek clarification, I would request that he not misstate the ITP in doing so.

CO-HEARING OFFICER DODUC: Mr. Herrick?

MR. HERRICK: Well, the witness just told me that the outflow requirement or outflow criteria in the California WaterFix scenario is determined by the Incidental Take Permit. Then I asked him if that is an obligation of the permit, and he said "yes."

So if there's some nuance here that I don't understand, that's fine. But I'm asking him, if that is the requirement, a certain outflow in the Incidental Take Permit, is this telling us that the projects won't meet that if it requires going below 1500 cfs in exports?

MR. MIZELL: Objection --

CO-HEARING OFFICER DODUC: Acknowledging, Mr. Herrick, what Mr. Mizell said about the Incidental

Take Permit condition of exports not being lower than 1500 cfs, are you asking if they would violate the Incidental Take Permit export condition?

MR. HERRICK: Yes.

CO-HEARING OFFICER DODUC: Okay.

Would you?

We've totally confused him now.

WITNESS MILLER: I wonder if it would help --

MR. HERRICK: Let me ask it this way.

WITNESS MILLER: I wonder if it would be helpful if we pulled up a letter that Ms. Nikkel used on last Thursday that really shed some light on this. And it was a clarification letter from the Department of Fish and Wildlife to Department of Water Resources.

Can we do that?

CO-HEARING OFFICER DODUC: Yes, I mean, at this point, I would need some clarification. So yes, let's pull that up.

Do you have a specific number?

WITNESS MILLER: I'm not sure what -- it is one of Ms. Nikkel's exhibits.

CO-HEARING OFFICER DODUC: Ms. Nikkel, can you help us out?

MS. NIKKEL: Yes. I believe it's SWRCB-107, if memory serves. Yes. And if you go to the bottom,

below where it says Attachment 9, there's a link to an October 18th memo.

CO-HEARING OFFICER DODUC: Thank you, Ms. Nikkel.

WITNESS MILLER: Thank you.

And so, if we can go to the second page. And there -- so this is a clarification memo from Department of Fish and Wildlife to DWR describing how the ITP criteria should be met.

And there, in the second part of that, we see there about halfway down, they talk about Table B meeting its targets -- "to be met to the extent export cuts down to a minimum 1500 cfs can achieve them."

"Modeling that evaluated these operations demonstrated that the targets would not be met in every year or month, but showed that using the targets as an operational criteria as described here and in Conditional of Approval" -- all of that stuff.

Does that answer your question?

MR. HERRICK: Kind of.

So the Incidental Take Permit itself says that, in order to meet the outflow targets, you don't have to drop below 1500 cfs; is that correct?

WITNESS MILLER: We would -- right. We'd just need to drop down to 1500 cfs, unless there was

something else controlling the exports, to meet the intent of that for the spring outflow target.

MR. HERRICK: Okay. So I'm not going to get a yes or no.

CO-HEARING OFFICER DODUC: I'm sorry. Let me try this.

Mr. Miller, as a matter of operations, would you extend export cuts down to a minimum of 1500 cfs and that's it?

WITNESS MILLER: If it was only the spring outflow target controlling operations, we would drop down to 1500 cfs, if that target was not being met.

CO-HEARING OFFICER DODUC: And that's it; that's where you will stay, 1500 cfs?

WITNESS MILLER: Yes.

MR. HERRICK: And the projects don't have any other operational opportunities to meet that target other than the export cuts? In other words, would they potentially reduce upstream water to meet that rather than fall below 1500?

WITNESS MILLER: We would not be required to make upstream release changes.

MR. HERRICK: But as I read your testimony, as soon as the target is met, then exports can go back up, right, if that's what's controlling?

WITNESS MILLER: That's right.

MR. HERRICK: So the fish don't get the full target if it requires less than 1500, but as soon as the target's met, then exports can increase; is that correct?

WITNESS MILLER: Yes. But as described in this memo, that isn't expected. And the modeling -- it's the modeling that was in support of it.

I think that is -- that would be in the third paragraph here, "This clarification is supported by and consistent with modeling underlying the ITP effects analysis. The modeling underlying the effects analysis indicates that reducing exports from the South and North Delta facilities in an attempt to meet a monthly average target can attain outflows consistent with the recent conditions and thereby achieve the biological objective set forth in Condition of Approval 9.9.4.3."

MR. HERRICK: Doesn't that just mean that yes, if you did drop below, you might be able to meet the target? I don't know how that answered question. Did it?

WITNESS MILLER: Oh, I thought you were referring to fish.

MR. HERRICK: All right. I'll leave it at that. I'll let the fishery groups delve down into the

rest of it, and I'll turn it over to Mr. Ruiz.

CROSS-EXAMINATION BY MR. RUIZ

MR. RUIZ: Good morning, Mr. Reyes. I just have a few questions on a couple of topics that I highlighted earlier.

If we can pull up DWR-1016, Mr. Reyes's testimony.

Going to Page 4, beginning at about Line 3, you say in there -- or actually, it's beginning at Line 6, "The sensitivity analysis showed that overall operations including upstream storage, river flows, and water supply deliveries remain similar."

I know we went through some of that yesterday.

My question I just want to be clear on is your opinions or your testimony with regard to that are based on long-term monthly and annual averages over the study period, correct?

WITNESS REYES: I mean, just mirroring what the publication said, that we looked at the results to the -- in a monthly setting, at least from a CalSim perspective that, yes, they are largely the same.

MR. RUIZ: But it's your understanding that the publication you're referring to is -- that that publication, I think you also referred to it as a sensitivity analysis. And I think the publication

you're talking about is "Developments After Publication, Proposed Final EIR"?

Is that what you're referring to?

WITNESS REYES: Yes. It's Exhibit SWRCB-108.

MR. RUIZ: And it's your understanding that that publication was based on long-term monthly and annual averages?

WITNESS REYES: Yeah.

MR. RUIZ: You have an understanding of the time steps available in the modeling. And the CalSim model, does it run shorter time steps than monthly or annual?

WITNESS REYES: It does. And if you go back a page on my testimony to Page 2 -- Page 3, sorry. Up near the top, beginning of the line, starting Line 2 where I say, "Part 1 of the hearing also included extensive testimony on the appropriate comparative use of modeling results compared for various California WaterFix analyses, and those cautions from that Part 1 remain relevant for Part 2."

And what that was trying to cover was -- you're talking about time steps. And this goes even to, I think, some of what Mr. Herrick was -- I thought what he was maybe implying was talking about an expectation of a changed condition. And seemed like it

was talking about in reference to maybe a single time step or a single month or whatever it may be.

And the modeling I don't think, in a comparative analysis, should be looked at that way. We're looking at a changed condition. We're trying to show what a changed condition is. And that's why we show, often, frequency and average results over periods.

You know, what does the EC for the month of -- the simulated month of 1981 March mean when there's another change in it from WaterFix? You know, that particular day, that particular month, I don't think the difference there is what we're looking at. We're looking at a changed condition over a period of time. Is it more injurious or is there, you know, a degradation of volume or a change in flows, change in storage? That's what we're looking at.

It's -- you know, I don't think the modeling was meant to look at comparisons of time steps, which -- time-to-time matching. That's not how the model was meant to be used in this case.

MR. RUIZ: You mentioned what could be considered and what you might look at in terms of what might be injurious.

Would -- based on that statement, would in

your view an impact over a two-week period of time see a significant reduction in flows, for example, into the Sacramento River from the Delta over a two-week or three-week period of time, say, a reduction as much as 6,000 cfs? Would you consider that injurious?

MR. REYES: A reduction from what? That's the question. So, you know, the flows fluctuate over time. And -- in the Delta, and that's been experienced.

And so are we changing the frequency of the flows to some low level, if that's what -- your circumstance. And that's really, to me, the question that needs to be answered, not, "In Model Simulation Month 12 of Year 1977, is it lower in this case than that case?"

You know, it's really do we change the condition over -- over the modeling -- or over the simulation period.

MR. RUIZ: Right. I appreciate that.

And I see throughout your testimony and others' testimony on the panel that the term "similar" is used a lot.

So it's your view that, overall, the operations are similar over the study period, correct?

WITNESS REYES: Yes.

MR. RUIZ: But would you agree or disagree

that an impact based on operations can occur over a much shorter period of time, and that maybe 1977 or 2017 or over a certain period of a week or two could be injurious?

WITNESS REYES: Again, I would ask how did you measure that impact?

MR. RUIZ: Well, let's measure it as a reduction of flows over a three-week period from the Delta and the Sacramento River into the Delta.

WITNESS REYES: Reduction of flows from what? How did you set your baseline to say that something was reduced?

MR. RUIZ: I'm using your testimony. I'm using -- you're indicating that it's a similar approach. You're saying that there's similarity with regard to river flows, water supply deliveries, et cetera.

I'm asking you. You're basing that over the life of the study period. I'm saying would you agree that there could be injuries over a shorter period of time relative to the No Action Alternative? Is that what your testimony is based on, comparing the No Action --

WITNESS REYES: I guess what I'm saying is this notion of a shorter period of time, if you're

comparing it time step to time step, then I think that's the wrong comparison to make.

So it's just, you know, those low periods are there. I mean, any low flows, like, for instance, in the -- the plot that Ms. Smith had shown earlier on water levels, it's a frequency plot, and those low times are in there. They just don't happen to maybe line up exactly with the -- the No Action case and the WaterFix case.

So maybe the lowest flows -- lowest levels you see is, I don't know; let's say 12 feet. I don't even know if that number makes sense. But let's say it's 12 feet in one case in a certain time step. And then -- this is for the No Action case. And you see that same 12 feet in a different time step in WaterFix, and the frequency is the same.

To me that's not any -- you know, there's no injury caused by WaterFix in that type of scenario.

MR. RUIZ: I appreciate your conclusion there.

Let's take -- well, let me ask you, then. You said the lower -- I think you said -- I'll paraphrase -- the lowest levels are in there. I guess you mean in the modeling.

WITNESS REYES: Yes.

MR. RUIZ: So are you aware of -- let me just

ask you what are the periods of time or what are the months within the modeling that show the greatest reduction of inflow from the Sacramento River to the Delta? Do you know that?

MS. ANSLEY: Objection. This is Jolie-Ann Ansley --

CO-HEARING OFFICER DODUC: I can't hear you, Ms. Ansley. Perhaps you might want to use the microphone at the podium here?

MS. ANSLEY: Of course. I apologize.

Jolie-Ann Ansley, Department of Water Resources. I'm almost forgetting my objection, but I believe that was vague and ambiguous as to time and place. He's asking about months. Is it over the entire 82-year simulation? But that was a very broad and vague and ambiguous question.

If you could clarify, that would be great.

CO-HEARING OFFICER DODUC: I thought it was intended to be a broad, general question.

But Mr. Ruiz?

MR. RUIZ: It was intended to be a broad question. It was, since he said that the low levels or the low points are in the modeling or in the analysis, I'm asking him, then, what's his knowledge of the lowest -- for example, the lowest period, the lowest

time when there is the most reduction in inflow from the Sacramento River to the Delta within the model for a one-month period.

CO-HEARING OFFICER DODUC: Overruled.

Are you able to answer, Mr. Reyes?

WITNESS REYES: I think that goes back to what I've been saying before when you talk about a one-month period. I'm not going to answer that question because, again, it's more about the frequency of change that I'm -- that's what I'm talking about, and I think that's the way these models should be used for this hearing process.

MR. RUIZ: So you think that's the way a model should be used in the way that you used them. But the low points, if you will, the largest levels of reduction are in the model somewhere is what you're saying? You just didn't present that testimony?

WITNESS REYES: Yeah -- all the modeling data is comprehensive. It's all there. And not that I didn't present it but, you know, that wasn't what we were addressing for this.

I mean, we can pull it up, but -- you know, at some point if it's necessary. But if you have a specific question about inflows, you know, that could be answered, I guess, but...

MR. RUIZ: Well, I do. I do. My specific question is, take any July or take a -- asking you for a July over the time of the model, what is the largest decrease in inflows from the Sacramento River to the Delta in any July over the study period?

MR. MIZELL: I'm going to object as asked and answered. Mr. Reyes has said four times now that's not the appropriate use of the model, in his mind.

Mr. Ruiz and Mr. Herrick are perfectly able to put on a case in chief in which they pull those data out of the model and present them in a manner that they feel is appropriate. At this point, it's asked and answered.

CO-HEARING OFFICER DODUC: I'm going to have to sustain that, Mr. Ruiz, although I appreciate your line of questioning.

MR. RUIZ: Let's -- Mr. Reyes, let's look at your PowerPoint, which is at --

CO-HEARING OFFICER DODUC: I don't miss the gong at all.

MR. RUIZ: -- 1028.

CO-HEARING OFFICER DODUC: Mr. Ruiz, another five, ten minutes?

MR. RUIZ: Five minutes.

CO-HEARING OFFICER DODUC: All right.

MR. RUIZ: 1028, Mr. Reyes, slide 56. I'm trying to understand this slide. This is presenting -- it's my understanding this is presenting long-term averages for CWF H3+ as regards to South of Delta diversions for the CVP and SWP; is that correct?

WITNESS REYES: CVP Service Contractors, and SWP deliveries, yes, South of Delta.

MR. RUIZ: And this is -- just correct me. This shows South of Delta diversions -- deliveries, I'm sorry -- of 3.529 million acre-feet over the -- for the long-term average, right?

WITNESS REYES: For California WaterFix H3+, 3.529-, yes.

MR. RUIZ: Okay. And it indicates approximately 200,000 acre-feet more South of Delta deliveries relative to the No Action, right?

WITNESS REYES: That's correct.

MR. RUIZ: Now, does this chart -- this chart doesn't distinguish between CVP and SWP deliveries, does it?

WITNESS REYES: They're added together.

MR. RUIZ: Why aren't they broken down separately?

WITNESS REYES: No particular reason. I think that is just a view of what we would call "service

contracts" which are subject to CVP and SWP operations, more than, let's say, something -- somebody like an Exchange Contractor.

MR. RUIZ: Okay. And do you have any analysis or did you -- can you tell me where we could find the breakdown for the proportionate analysis of deliveries to the CVP and SWP contractors?

WITNESS REYES: There are variables in the modeling that you can extract the individual breakdown of these.

WITNESS WHITE: Hi, this is Kristin White with Reclamation. If I could add, we didn't feel it was appropriate to break up the CVP and SWP South of Delta deliveries because the mechanism of how those increase the water supply due to the California WaterFix would be split between the projects has not been identified. That's something we'll be working with DWR over the next decade or however long it takes to construct the project to finalize.

MR. RUIZ: Thank you.

Just referring back to your testimony at 1016, the testimony you referred to earlier on Page 4, you indicated that there was a sensitivity analysis done, correct?

WITNESS REYES: Yes. In Item 6 on Page 4, I

talk about the sensitivity analysis.

MR. RUIZ: What's your understanding or definition of a sensitivity analysis?

WITNESS REYES: It's generally you take -- take the model or a model and make changes. And ideally, you want to make, like, one change to really zero in on the effect of that one change. And you run the model with that one change and compare results to see what, if anything, changed because of your change in assumptions, you know, whether it be a change in your outflow requirement or a change in your export capacity.

So in this sensitivity analysis, the changes are, you know, the changes that were described as the changes between BA H3+ and Cal WaterFix H3+. And it really amounted to about two changes here. So it's not ideal, but it's not bad.

And then it compared -- like they said, it compared upstream storage, river flows, water supply, deliveries. And all that remains simple -- remains similar between the two, looking at it from a -- like I said earlier, look at it from a comparative perspective of looking at the frequency of changes.

MR. RUIZ: So just so I understand, I think you said ideally or typically sensitivity analysis

looks at just changing one variable. This looked at several variables or a couple variables.

WITNESS REYES: Just two. But I mean, you could do sensitivity on more than one. But I'm just saying if you really want to isolate a change, the cause of a change, you would want to just make that one change to see what the -- what the driver was of any changes that you're seeing or any responses you're seeing to that change.

MR. RUIZ: And this actually just did an analysis comparing the three different scenarios, right?

WITNESS REYES: Well, further looking at the BA H3+ and the Cal WaterFix H3+ and comparing those to the No Action.

MR. RUIZ: I don't have any further questions.

CO-HEARING OFFICER DODUC: Thank you both. Let me check with the court reporter.

Are you okay for another 20 minutes or --

THE REPORTER: Yes, I can go.

CO-HEARING OFFICER DODUC: All right. Then, Mr. Keeling, you are up. And we'll take a break when Mr. Keeling has completed his cross-examination.

And as Mr. Keeling is coming up, I'm confirming that was Group 21. 22 already did their

cross-examination in concert with Group 13.

Group 23?

(No response)

CO-HEARING OFFICER DODUC: All right.

So, yes, we are up to Mr. Keeling, Group 24.

And after Mr. Keeling, we will go to Ms. Meserve.

MR. KEELING: Good morning. Tom Keeling on behalf of the San Joaquin County protestants. I have questions for most of the panelists at a 30- or 40,000-feet level, just trying to make sure I understand the scope of the testimony.

CO-HEARING OFFICER DODUC: Okay.

CROSS-EXAMINATION BY MR. KEELING

MR. KEELING: And I'll begin with Dr. Greenwood.

Dr. Greenwood, good morning.

WITNESS GREENWOOD: Good morning.

MR. KEELING: In DWR-1012, which is your written testimony, you express your opinions about the proposed project's impact on various listed and unlisted species of fish in the Delta; is that correct?

WITNESS GREENWOOD: Yes.

MR. KEELING: For the purpose of forming the opinions set forth in DWR-1012, my understanding is

that you relied on the operational scenario described as CWF H3+ that is set forth in the Final EIR and related documents.

Am I correct in that understanding?

WITNESS GREENWOOD: I'm forming the opinion regarding CWF H3+, as I mentioned earlier in the Part 2 of the hearing. I used various modeled operational scenarios as well as other information to form my opinions regarding CWF H3+.

MR. KEELING: Well, in forming the opinions in DWR-1012, did you analyze any project other than what has been referred to as CWF H3+?

WITNESS GREENWOOD: No. My focus is on CWF H3+.

MR. KEELING: And CWF H3+ includes three new North Delta intakes, does it not?

WITNESS GREENWOOD: Yes.

MR. KEELING: And CWF H3+ includes two tunnels, does it not?

WITNESS GREENWOOD: Yes, I believe so.

MR. KEELING: Have you been asked by anyone at DWR to render an opinion concerning the proposed project's impact on species of fish in the Delta under any operational scenario other than CWF H3+?

WITNESS GREENWOOD: In which context are you

asking about an opinion regarding CWF H3+? I have worked on -- as I mentioned in my written testimony, I've worked on California WaterFix Bay Delta Conservation Plan since 2011, and so there were various operational scenarios that we considered during that time.

MR. KEELING: Well, I appreciate that, and I'll clarify. For purposes of your testimony in Part 2, that is the testimony in DWR-1012, were you asked by anyone at DWR to render an opinion considering the proposed project's impacts on fish under any operational scenario other than CWF H3+?

WITNESS GREENWOOD: This is just all based on CWF H3+.

MR. KEELING: Have you been asked by anyone since submitting the testimony set forth in DWR-1012 to prepare an opinion or form an opinion about the proposed project's impact on fish under an operational scenario other than CWF H3+?

MS. ANSLEY: Objection. That was asked and answered just now, what is the distinction.

CO-HEARING OFFICER DODUC: The distinction -- Mr. Keeling, I'll let you respond.

MR. KEELING: The distinction is the prior question had to do with forming his testimony as

embodied in DWR-1012. The second question had to do with what he's been asked to do since submitting that exhibit.

CO-HEARING OFFICER DODUC: That was my understanding of the distinction, Ms. Ansley.

Do you wish to modify your objection?

MS. ANSLEY: I do. I wish to object that this is beyond the scope of Part 2, the proposed project is CWF H3+. This is his testimony regarding that project. There is no other proposed project before the Board.

CO-HEARING OFFICER DODUC: Mr. Keeling?

MR. KEELING: You could certainly tell me that.

CO-HEARING OFFICER DODUC: Overruled.

Dr. Greenwood?

WITNESS GREENWOOD: Sorry. Could you repeat it one more time just so I can be clear and I can answer the question as asked?

MR. KEELING: Since submitting your testimony in DWR-1012, have you been asked by anyone at DWR to render an opinion concerning the proposed project's impact on species of fish in the Delta under any other operational scenario, that is, other than CWF H3+?

MR. MIZELL: I'm going to renew the objection Mr. Ansley just voiced.

The ruling prior to the start of Part 2 told him the answers to these questions. Dr. Greenwood is presenting on CWF H3+ in this part of the -- in this part of the hearing. And Part 3, should we change the project, is where these questions are more appropriately addressed.

It is inappropriate to go against the ruling that defined the scope of this part of the hearing, and that's what these questions are going into.

CO-HEARING OFFICER DODUC: Mr. Keeling --

MR. KEELING: That's the same --

CO-HEARING OFFICER DODUC: -- what is the purpose of this line of questioning?

MR. KEELING: That's the same objection you just overruled.

CO-HEARING OFFICER DODUC: What is the purpose of this line of questioning?

MR. KEELING: The purpose is very clear, I think, you have inadvertently asked for a speech. You are going to get one.

CO-HEARING OFFICER DODUC: Actually, no.

MR. KEELING: Okay. I want to make sure that at no later time we're going to hear, as we've heard so many times in the last two years, another bait-and-switch and sleight-of-hand where somebody

says, oh no --

CO-HEARING OFFICER DODUC: Mr. Keeling?

MR. KEELING: Well --

CO-HEARING OFFICER DODUC: Let me stop your speech and redirect you to this witness, his testimony, and your line of questioning; for what purpose with respect to his testimony, not to the world as we know it or the project as we, you know, characterize but to his testimony.

MR. KEELING: I want to eliminate any possibility that this testimony will later be cited as testimony pertaining to the project that we believe they've already chosen, which is not the project he's been testifying to; that's all. And I want to do the same for every witness on this panel.

CO-HEARING OFFICER DODUC: That was so convoluted, my mind is still spinning.

But I will -- let me give you a little bit of leeway and interpret your response as a similar line of questioning that was pursued earlier by Mr. Obeji in terms of testing the veracity with this witness with respect to the testimony that he presented in Part 2.

MR. KEELING: I'm not here to test Mr. Miller's veracity.

CO-HEARING OFFICER DODUC: Dr. Greenwood --

MR. KEELING: Or Dr. Greenwood or anyone. I'm here to make sure that the testimony presented to this board by this panel is not later cited in support of another project.

And this partly goes to the larger discussion. For example, in the February 9 letter to this board from DWR, it appeared to me that DWR is saying that after this board renders a decision they might tell you about some other project; not before but after.

That does nobody any good. Are we going to recommence this hearing? I want to make sure that when this here -- when the project is announced to be a single-tunnel, two-intake project, nobody stands up and says, "Well, we think the same testimony that was already presented to the Board still applies." That's all I want to make sure of.

CO-HEARING OFFICER DODUC: Mr. Keeling, anyone may argue anything, but it will still the Board's determination as to what order we issue, what we approve, what condition we put on that approval. And just because you're pursuing a line of questioning, you do understand that, while it doesn't preclude anyone from making any arguments in the future; and, two, the Board still reserve our right to, obviously, take things under consideration and issue a decision we deem

to be appropriate.

MR. KEELING: Well --

CO-HEARING OFFICER DODUC: I appreciate your intent.

MR. KEELING: Argument is one thing, but these folks, these witnesses' understanding of what project it is they're testifying about, that's a factual issue, and I think I'm entitled to get that.

CO-HEARING OFFICER DODUC: All right. Let's hear, Ms. Ansley, your objection.

MS. ANSLEY: I'd like to add an objection that it would be speculative at this time to ask the witness to apply the testimony they're giving here today, which is highly technical in most of these cases, to make a decision on whether that does or does not apply to some not-yet-specified project.

CO-HEARING OFFICER DODUC: That's not what he's asking, Ms. Ansley.

MS. ANSLEY: He's not asking whether Dr. Greenwood would apply the testimony written here today for CWF H3+ to a future project?

CO-HEARING OFFICER DODUC: That's not what he's asking.

MR. KEELING: Obviously not.

CO-HEARING OFFICER DODUC: All right.

CO-HEARING OFFICER DODUC: Mr. Jackson, before you weigh in, I am about to allow Mr. Keeling to pursue his line of questioning.

Do you need to weigh in?

MR. JACKSON: No, not yet.

CO-HEARING OFFICER DODUC: Okay. Mr. Keeling, you may proceed with a little bit of leeway.

MR. KEELING: Dr. Wilder, in DWR-1013 which is your written testimony, you express your opinions about the proposed project's impact on various Delta fisheries; is that correct?

CO-HEARING OFFICER DODUC: Are you starting all over again?

MR. KEELING: I'm going to go through each witness with the same litany. I told you I was -- I told you at the beginning.

CO-HEARING OFFICER DODUC: No, no. I'm sorry. It sounds like you were starting over -- or did you move on to the next one?

MR. KEELING: I'm moving on to Dr. Wilder.

CO-HEARING OFFICER DODUC: Okay. Well, then never mind. Thank you. I thought I heard that question already.

MR. KEELING: You know, you said you'd give me a little leeway, and I interpreted "little" to mean you

didn't like my last question.

WITNESS WILDER: I'd just like to clarify that my written testimony is DWR-1013-signed.

MR. KEELING: Yes. Thank you.

WITNESS WILDER: And could you please repeat the question?

MR. KEELING: That exhibit, DWR-1013-signed, does express your opinion about the proposed project's impact on various Delta fisheries; am I right about that?

WITNESS WILDER: No. It pertains to upstream fisheries only. Dr. Greenwood's testimony looks at Delta fisheries.

MR. KEELING: Thank you for that clarification.

For the purpose of forming the opinions set forth in DWR-1013, you relied on the CWF H3+ project; is that correct?

WITNESS WILDER: Yes, that's correct.

MR. KEELING: In forming the opinions in DWR-1013, did you analyze any project other than CWF H3+?

THE WITNESS: Only as listed in my testimony looking at H3, H4 and BA H3+.

MR. KEELING: And each of those involve three

North Delta intakes, do they not?

WITNESS WILDER: Yes.

MR. KEELING: And each of those involved two tunnels; is that correct?

WITNESS WILDER: Yes.

MR. KEELING: Were you ever asked to evaluate a project that had only two intakes in the North Delta?

WITNESS WILDER: I believe during the Final EIR -- I'm sorry -- the EIR/EIS process that one of the alternatives, at least one of the alternatives had two intakes. I don't remember specifically which alternatives.

MR. KEELING: That wasn't my question. My question was were you asked to evaluate any project that had only two intakes at the North Delta?

WITNESS WILDER: Yes. I did the analysis of those alternatives.

MR. KEELING: But that's not the analysis in DWR-1013-signed, is it?

WITNESS WILDER: No. I'm only speaking today on what was H3 and H4 in the Final EIR/EIS

MR. KEELING: Thank you.

Mr. Miller, your opinions concerning State Water Project operations and real-time decision-making are set forth in DWR-1011; is that correct?

WITNESS MILLER: That's correct.

MR. KEELING: And for the purpose of forming the opinions set forth in DWR-1011, you relied on the scenario known as CWF H3+; am I correct in that?

WITNESS MILLER: That's correct.

MR. KEELING: In forming those opinions in DWR-1011, did you analyze any project other than CWF H3+?

WITNESS MILLER: Yes. I analyzed a lot of different projects. I think Mr. Leahigh's H3 scenario, for example, which was in part of -- it was in Part 1.

MR. KEELING: Did you analyze any project that had more -- had fewer than three intakes at the North Delta?

WITNESS MILLER: You're referring to, like, H3+ staged?

MR. KEELING: I'm not allowed to refer to that, am I? I'm referring to any project you were asked to evaluate that had fewer than three intakes in the North Delta.

WITNESS MILLER: I looked at the California WaterFix H3+ staged.

MR. KEELING: When did do you that?

WITNESS MILLER: Right around the time that Ms. Nemeth talked about -- did her policy statement.

MR. KEELING: Could it be sometime in January?

WITNESS MILLER: I guess it was at the beginning of this -- start of this hearing, this Part 2.

MR. KEELING: Who asked you to look at that staged -- H3+ stage project?

MR. MIZELL: Objection, relevance.

CO-HEARING OFFICER DODUC: Mr. Keeling?

MR. KEELING: Well, I want to know who's asking Mr. Miller to do this analysis and why.

CO-HEARING OFFICER DODUC: Mr. Mizell?

MR. MIZELL: That was his question. I still haven't heard how it's relevant. Any number of supervisors that are above Aaron Miller could ask him to analyze any number of alternatives for their own information. And I'm not sure why the level or person who asked him to do the work has any relevance as to the California WaterFix H3+ that we're talking about.

CO-HEARING OFFICER DODUC: Mr. Jackson?

MR. JACKSON: Part of the relevance -- and I'm coming up here now so that I don't have to do it later with everyone or make a record. There's two purposes for these questions, as far as I can see. One of them is to make a complete record so that we don't end up with a -- a different approval on a different project

without an opportunity to have hearing on that project. That's number one.

Number two is it is relevant in the sense that the EIR, which has been cited as a staged EIR, rejected that review and the staged operation as infeasible.

And so, obviously, this evidence that's being put on doesn't relate to the infeasible alternative. It might relate to a new one, but it doesn't relate in the past to their decision to declare it infeasible.

And so finding out whether or not the infeasible alternative has come back is something that we need to do once so that everybody doesn't have to do it. So I -- I believe it's relevant.

CO-HEARING OFFICER DODUC: Okay. Let's do this. Since this was something that I thought we might address later, but since it's come up several times, let's go ahead and have this discussion. And let me address or at least try to get clarification on Mr. Jackson's first point about having the opportunity to examine, conduct cross-examination, explore the staged implementation, should it be the direction that petitioners mover towards.

In our last ruling, I believe it was the February 21st ruling, we included in our ruling statements that I thought was very clear in terms of

our intention for this hearing. And it seems to me like, you know, either we're missing something or there is a misinterpretation of our ruling.

So let me read to you a paragraph of that ruling.

It is on Page 5 of the ruling, and it comes after we explain that should there be a staged implementation of the WaterFix project, that we would convene a Part 3, and petitioners would be required to submit whatever information that is relevant to that stage implementation and make the appropriate witnesses be available for cross-examination. Parties would be allowed the opportunity to conduct your questioning and, as appropriate, conduct further case in chief and rebuttal as necessary. That would be a Part 3.

After that, we added this paragraph: "Absent Part 3 as described above, the State Water Board would lack an adequate basis in the administrative record to approve changes to Petitioners' water rights consistent with staged implementation of the WaterFix project. Such staged implementation would fall beyond the scope of any changes that the Board might approve based upon the Part 1 and Part 2 record alone."

Now, I think I can say it is our intention that that paragraph and the paragraphs preceding that,

one, guarantees all parties the opportunity to cross-examination, to ask questions of Petitioners should they proceed with a stage approach; and, two, that we've made very clear that, should we issue an order based solely on Parts 1 and 2 of this hearing as it is currently organized, we would lack -- and I quote again -- "an adequate basis in the administrative record to approve changes consistent with stage implementation of the WaterFix" process -- "project, and that such stage implementation is beyond the scope of any changes we might approve."

Mr. Keeling.

MR. KEELING: I appreciate that clarification, and I think it was well timed on your part. I think that allows me to truncate this a little bit.

CO-HEARING OFFICER DODUC: Are there any questions with respect to -- I would encourage everyone to again read very carefully our February 21st ruling, particularly the section pertaining to stage implementation on Page 5 of that ruling.

Any questions?

MR. JACKSON: I read the ruling a number of times. The question that appears to me even in what you said is, is there a potential before the decision is made that the change in point of diversion is

granted on the basis of a sing- -- a three-diversion, two-tunnel project? And then all of a sudden it's a different project with an already authorized point of diversion.

CO-HEARING OFFICER DODUC: I -- obviously, I cannot predetermine the outcome of this hearing. But I will read again that stage implementation would be beyond the scope of any order we would issue based on Part 1 and 2 alone.

MR. JACKSON: It's -- I guess it's a holdover from the fact that it seems to me that there was a mistake made by boards many years ago when they did agree on point of diversion for the Peripheral Canal, and that point of diversion has sat out there for years and was argued as an attempt to make it an existing point of diversion at the beginning of this hearing. I'm just --

CO-HEARING OFFICER DODUC: That's way beyond my time.

MR. JACKSON: Well, no. And I'm not --

CO-HEARING OFFICER DODUC: Mr. Jackson, let me -- let me --

MR. JACKSON: This is a change in point of diversion, not necessarily a project.

CO-HEARING OFFICER DODUC: It's a change in

point of diversion, but all the data that's been supported so far in Parts 1 and 2 for that change of point in diversion is based on a project that consists of the two tunnels and the three points of diversion being constructed and implemented concurrently.

That's my understanding of the project, which DWR, Petitioners, have assured us in writing that they have not changed that in their petition. And that is the petition that is before us. And should we grant approval, the scope of our approval would be limited to the record that is before us and information in that record.

And should -- I'm not saying that DWR do this. But any bait-and-switch attempt would have to be brought -- anything they do would have to be consistent with the water right permits and any approval of that water rights permits, and any approval, I will state again, must be within the scope of the record of Part 1 and 2 that is established before us, absent a Part 3.

MR. JACKSON: Thank you for the guidance.

CO-HEARING OFFICER DODUC: Ms. Meserve?

MS. MESERVE: Osha Meserve the landowner parties. I think part of the discomfort that the protestants are having -- and I don't want the bog you down on this. I know that --

CO-HEARING OFFICER DODUC: No, please do, because I'm genuinely perplexed. So, please.

MS. MESERVE: And I think it was brought up yesterday and in the filing that was made the night before by Ms. Des Jardins is that the language actually offered by DWR didn't necessarily match what was in the order issued by the Hearing Officers, in that the language in the letter written by DWR and in the pleading that responded to the NRDC motion basically said if we decide to change it later and people want to sue us, they can go ahead. And so that's a lot different than the procedure that you're laying out.

And I think what we're concerned about is what happens if the petition is granted and then DWR does, you know, try to make a change and say that it's within the scope, because they actually haven't promised to come back to the Board in the manner that the ruling assumes they would.

And they may well argue, and I know you can't prevent them from arguing that, but it makes us very uncomfortable and fearful. And I think Mr. Jackson's reference to the past is quite important because that's actually part of the -- you know, what was the underlying objections to the adequacy of the petition right all the way back to 2015, was that we're talking

about a change in a point of diversion that never existed.

So this is -- you know, this is why we are so concerned about this.

CO-HEARING OFFICER DODUC: Thank you. I appreciate that. And again, I cannot predetermine the outcome of this hearing. The only assurance I can provide is, one, we are very clear in our ruling letter the conditions under which we would issue any approval based on the record of Part 1 and Part 2. And I would hope that you would put more credence in our ruling letter than a press release of the Department.

Ms. Womack.

MS. WOMACK: Suzanne Womack, Clifton Court LP.

I just wanted clarification because it seems like when I bring something up in Part 2, it's, oh, well that was discussed in Part 1. So after 1 and 2, if Part 3 does come about and I get to come back, I don't want to hear that, well, that was -- that happened in 1 and 2. This is a completely different matter, and I don't trust either for my own reasons.

I signed on for a 5,000 cfs take at Clifton Court. That's what our farm signed on for during the winter, and it sure has changed a lot. So I want to be sure I can represent our farm for Part 3 completely

without being told, oh, no, that was already decided.

CO-HEARING OFFICER DODUC: Part 3, Ms. Womack --

MS. WOMACK: If it happens.

CO-HEARING OFFICER DODUC: If it happens, we will be defining that later. Remember, we also have the possibility of having -- it may not called Part 3, but after the completion of Part 2, if there are any remaining issues that still need to be addressed, regardless of whether or not there is a stage implementation, it's possible that we might revisit those issues. So I'm not ruling out that, but I'm saying to you that we have not defined Part 3. We don't know yet what's going to happen after the completion of Part 2.

MS. WOMACK: Thank you.

CO-HEARING OFFICER DODUC: Uh-oh, I see something that triggers Ms. Meserve to come back up.

MS. MESERVE: Excuse me. I'd just like to verify. I'm not referring to a press release; I'm referring to the filing.

CO-HEARING OFFICER DODUC: I understand.

MS. MESERVE: Yeah. Just -- I mean --

CO-HEARING OFFICER DODUC: I was referring to the fact that their release was at 4:45 on whatever

day, was what triggered all of this.

And, Ms. Meserve, our ruling is a legal ruling from the Hearing Officer pertaining to this hearing, and I think we made it very clear without understanding the petition before us and our understanding of our obligations based on the record that is before us.

MS. MESERVE: Yes. May I just clarify for the record, though, that I'm referring to the filing of DWR on February 9th signed by Mr. Mizell, Page 3, Line 8 through 12, which says, "And should DWR move forward with that option upon obtaining a change to its permit, they are commencing the planning work now to anticipate the inevitable albeit meritless claims that main stage implementation is not within the scope of a certified EIR or any regulatory permits including the permit sought in this hearing."

And that is the statement to which I'm referring.

CO-HEARING OFFICER DODUC: Thank you, Ms. Meserve. And I hope you enjoyed your vacation, your holiday with your family, because if you had been here on the first day that we resumed, you would have heard me question Mr. Mizell and ask him to make sure and to reiterate his understanding that we expect him, upon a decision by the Department, to pursue staged

implementation to meet those three requirements in our ruling letter, notify us, not through an e-mail forwarding a press release and a memo directed to another party; two, to provide the supplemental EIR, EIR supplement, whatever you want to call it, and all other supporting document for such stage implementation; three, to make his witnesses available for cross-examination by the other parties.

And it is my understanding, my recollection, although it seems like a lifetime ago, was that Mr. Mizell confirmed his understanding of those three requirements.

Mr. Mizell, is that correct?

MR. MIZELL: That is correct. And our striving to also follow your directions in your ruling.

CO-HEARING OFFICER DODUC: Thank you.

MS. NIKKEL: I have a clarification of that last direction regarding making witness available, and I think this goes to the relevance of the line of questioning that Mr. Keeling was offering to these witnesses, is whether these particular witnesses and the opinions that they are offering today, whether they will available to address any potential changes that could come about as the result of a supplemental EIR.

CO-HEARING OFFICER DODUC: As a result of

stage implementation. To the extent that their testimony is relevant to stage implementation or whatever else we decide will be Part 3, I would expect Petitioners to make available any witnesses that meets within the scope of Part 3 as we will define Part 3 to be.

MS. NIKKEL: But that doesn't necessarily mean these particular witnesses; is that right?

CO-HEARING OFFICER DODUC: If they have testimony and information relevant to stage implementation or whatever other issue we decide to visit in Part 3.

MS. NIKKEL: Thank you.

CO-HEARING OFFICER DODUC: I would expect at some point we will be asking parties for requests, recommendations, suggestions for a Part 3 scope, and even if we don't suggest it, I'm sure someone will be making those requests anyway. So at that point we will determine what is necessary within the scope of Part 3, and I would expect Petitioners and other parties to produce witnesses and make witnesses available to address the appropriate scope of Part 3.

MS. NIKKEL: Thank you.

CO-HEARING OFFICER DODUC: I cannot predict what that will be. All right.

Are we done with this topic?

MR. KEELING: Well, in light of the colloquies that did cut into my time a little bit.

What I suggest is I will streamline this line of questioning for the remainder of the witnesses. I do have a question for Mr. Miller other than this, but it's an adaptive management question.

CO-HEARING OFFICER DODUC: Thank you.

MR. KEELING: I would suggest that the court reporter needs a break.

CO-HEARING OFFICER DODUC: Yes. We will do that, but before, we just do this.

I will ask that all other parties who are conducting cross-examination to come in Part 2, please keep in mind the lengthy discussion we just had. There was a reason why I stopped to have that discussion. There is no intention of bait-and-switch by Hearing Officer Marcus and I. What we said in our ruling letter is what we mean with respect to stage implementation with respect to Part 3, with respect to ensuring that all parties will have the chance to conduct cross-examination to ask questions, to get into the details should stage implementation become something that is part of the official record before us, officially part of the petition that is before us.

All right.

With that, we need a break, and we are taking a break until 11:35.

(Recess taken)

CO-HEARING OFFICER DODUC: All right. Everyone, please take your seats. It is 11:35. We're going to resume with Mr. Keeling, and then when Mr. Keeling's done, we will turn to Ms. Meserve.

Ms. Meserve, you requested two hours. I would like to take a lunch break. So anywhere between 12:30 and 12:45 when you determine it's a good break point, we'll do that.

When we return in the afternoon, we will get to the County of Solano and then Mr. Jackson and CSPA Group 35 -- I'm sorry -- Mr. Jackson and Mr. Schultz -- Mr. Shutes, sorry. And you know what? We will call that a day. And that might incentivize Group 31 to move a little bit faster.

So with that, Mr. Keeling, we will now return to you. And I don't know whether to thank you or not for the discussion we had, but I guess I will go ahead and thank you. Hopefully, it cleared the air a little bit.

MR. KEELING: Thank you very much.

And, Mr. Reyes, your testimony, DWR-1016, this

testimony which you express your opinions about operations associated with modeling and key modeling results; is that correct?

WITNESS REYES: That's correct

MR. KEELING: For the purpose of forming the opinions set forth in DWR-1016, you relied on the operational scenario known as CWF H3+; is that correct?

WITNESS REYES: That's correct.

MR. KEELING: In forming the opinions set forth the DWR-1016, did you analyze any project other than CWF H3+?

WITNESS REYES: I looked at BA H3+, H3, H4, and the No Action Alternative as well as Cal WaterFix H3+.

MR. KEELING: As well as what?

WITNESS REYES: Cal WaterFix H3+.

MR. KEELING: Did you examine any project for purposes of DWR-1016 that involved fewer than three intakes at the North Delta?

WITNESS REYES: No, I did not.

MR. KEELING: Did you look at any project that involved fewer than two tunnels?

WITNESS REYES: In the CalSim modeling world, the tunnels' numbers don't really matter. It's a capacity thing. So I would say yes and no. I don't

know. It's -- it's a capacity, really, that we look at. It's not to the level of hydrodynamics that the two tunnels would matter.

So it's -- you could think of it as one tunnel, two tunnels, three tunnels. It doesn't matter.

MR. KEELING: I appreciate that, but I wasn't asking your opinion about how it might affect the model. I was asking did you examine any proposed project with fewer than two tunnels for purposes of your testimony set forth in DWR-1016?

WITNESS REYES: No, not for 1016.

MR. KEELING: Were you asked at any time to examine a project with fewer than two tunnels?

WITNESS REYES: Fewer than two tunnels? I can't recall, but I know in the -- as part of the EIR, you know, there was at least ten alternatives listed in the EIR, and some of them had low capacities. Like, I believe there was, like, a 6,000 cfs capacity alternative with two intakes. And I recall working on that.

MR. KEELING: Thank you.

Ms. Smith, in DWR-1015, which is your written testimony, you expressed your opinions about the proposed project's impact on water quality in the Delta; is that correct?

WITNESS SMITH: That's correct, and is related to EC, yes.

MR. KEELING: Thank you.

For the purpose of forming the opinions set forth in DWR-1015, you relied on the operational scenario known as CWF HP H3+; is that correct?

WITNESS SMITH: That is correct.

MR. KEELING: In forming the opinions set forth in DWR-1015, did you analyze any project other than CWF H3+?

WITNESS SMITH: I analyzed the project with different operating criteria as expressed by H3, H4, and BA H3+, but no final project that -- besides California WaterFix H3+.

MR. KEELING: And none of those others involved fewer than three intakes in the North Delta?

WITNESS SMITH: Not as a final project, no.

MR. KEELING: And none involved fewer than two tunnels; is that correct?

WITNESS SMITH: Not as a final project, that's correct.

MR. KEELING: Dr. Guerin, am I mispronouncing your name? I apologize.

WITNESS GUERIN: Close enough.

MR. KEELING: Thank you.

In DWR-1020, which is your written testimony, you express your opinions about DSM2-QUAL and its use in connection with the proposed project; is that correct?

WITNESS GUERIN: I don't think exactly correct.

MR. KEELING: Go ahead and correct me.

WITNESS GUERIN: I expressed that it's appropriate to use for California WaterFix, but I don't think particularly for CWF, the scenario denoted CWF H3+.

MR. KEELING: Well, what do you mean, then, by California WaterFix?

WITNESS GUERIN: By California WaterFix, my understanding is that this is the -- sort of the entirety of the information that's contained in all of the testimony in Parts 1 and 2. But I -- I could be wrong because I've only been brought back into the process very recently and when I was part of it, it was called something else.

MR. KEELING: The Bay Delta Conservation Plan?

WITNESS GUERIN: Yes.

MR. KEELING: Well, what I'm -- to get a -- you say it's for purposes of California WaterFix, but you understand that that's a proposed project, right?

WITNESS GUERIN: I understand that the scenario called CWF H3+ is the proposed project. That could be just a difference in terminology because as a modeler I think of it in terms of scenarios.

MR. KEELING: Well, for purposes of preparing DWR-1020, did you rely on any operational scenario at all?

WITNESS GUERIN: BA, NAA, and BA H3+. So that's the biological assessments.

MR. KEELING: Other than NAA, did any of those involve more than -- or excuse me -- fewer than three intakes, new intakes in the North Delta?

WITNESS GUERIN: No.

MR. KEELING: Did any of those involve fewer than two tunnels?

WITNESS GUERIN: No.

MR. KEELING: Have you at any time been asked to render an opinion or been asked to form an opinion about a project with fewer than three intakes at the North Delta?

WITNESS GUERIN: No.

MR. KEELING: Thank you.

Dr. Bryan, my old friend, I haven't seen you since last year.

WITNESS BRYAN: Nice to see you as well.

MR. KEELING: In DWR-1013, which is your written testimony, you express your opinions about the proposed project's effects with respect to the frequency and magnitude of cyanobacterial blooms in the Delta; is that correct?

WITNESS BRYAN: Just maybe I heard it wrong, but I thought you said 1013?

MR. KEELING: 1017. You are correct. I'm just testing you.

For purposes of forming the opinions set forth in DWR-1017, you relied on the California WaterFix operational scenario known as CWF H3+; is that correct?

WITNESS BRYAN: That is correct.

MR. KEELING: In forming the opinions set forth in DWR-1017, did you analyze any project other than CWF H3+?

WITNESS BRYAN: Yeah. That testimony built upon Alternative 4A, operational scenario H3, H4. The graphics in my technical report, which is DWR-1035, that supports DWR-1017. Those graphics of exceedance plots the velocities, also included the BA H3+ as well as the No Action Alternative.

MR. KEELING: I appreciate the clarification. But none of those other scenarios involve fewer than three intakes in the North Delta; am I correct about

that?

WITNESS BRYAN: That's correct.

MR. KEELING: And none involved fewer than two tunnels, correct?

WITNESS BRYAN: Right.

MR. KEELING: And none of those was a staged implementation; is that correct?

THE WITNESS: That's correct.

CO-HEARING OFFICER DODUC: How many more witnesses do you have left?

MR. KEELING: They go on forever, but I think I can finish in seven minutes.

CO-HEARING OFFICER DODUC: Let's shoot for five.

MR. KEELING: If I had asked for ten, would I get seven?

CO-HEARING OFFICER DODUC: No

MR. KEELING: All right. Dr. Ohlendorf, in DWR-1019, which is your written testimony, you express opinions about selenium bioaccumulation models and their use in the proceeding; is that correct?

WITNESS OHLENDORF: Yes.

MR. KEELING: For the purpose of forming opinions set forth in DWR-1019, what California WaterFix operational scenario did you rely on?

WITNESS OHLENDORF: The development and calibration of the bioaccumulation modeling did not rely on those assumptions. It used data from year 2000, 2005 and 2007; fish monitoring data; and water monitoring -- or water modeling that was completed to calibrate that model. It was not specific to that project but used prior-year water year data.

MR. KEELING: Do I understand your response correctly to mean that basically your opinion stands alone without referencing the WaterFix project?

WITNESS OHLENDORF: It's not evaluating the project. It is using the DSM-2 fingerprint modeling and the existing historical data for inflow concentrations and the available fish data to calibrate a model that predicts the concentration that was observed in the fish.

MR. KEELING: So your opinion in 1019, DWR-1019, is not tethered to CWF H3+ or any other operational scenario?

WITNESS OHLENDORF: It's not specific to that, no. It's the model itself.

MR. KEELING: I appreciate that. Thank you.

Dr. Hsu, in DWR-1021, your written testimony, you testified that you were able to answer technical questions regarding the usefulness, accuracy,

functioning and applicability of the HEC5Q and reclamation temperature models; is that correct?

WITNESS HSU: Yes.

MR. KEELING: The purpose of conducting that work and putting yourself in a position to be able to answer those questions, did you analyze any operational scenario in particular?

WITNESS HSU: I was more involved in the ECP studies.

MR. KEELING: Did you -- for purposes of DWR-1021, is your -- did you prepare it in reliance upon CWF H3+?

WITNESS HSU: My testimony will be most similar to Dr. Ohlendorf earlier. I'm also testify for the model itself.

MR. KEELING: Did -- at any time when you were preparing to put yourself in a position to answer these technical questions, were you asked to analyze a scenario involving fewer than three North Delta intakes?

WITNESS HSU: Not particularly. Depends on what was involved in the ECP study. My position is more a technical person, so usually I got a hydrology which has been predicted in CalSim. So basically I use that in running the temperature model. So not really

have multiple knowledge on what those hydrology would determine.

MR. KEELING: I appreciate it. Thank you.

WITNESS HSU: Thank you.

MR. KEELING: Dr. Preece, in DWR-1013, your written testimony, you testified that you contributed significantly to preparation of the microcystis analysis presented in DWR-651, DWR-653, and DWR-1017; is that correct?

WITNESS PREECE: That's correct.

MR. KEELING: In performing that task as described in DWR-1018, what California WaterFix operational scenario did you rely on?

WITNESS PREECE: CWF H3+.

MR. KEELING: In performing that work, did you analyze any project other than CWF H3+?

WITNESS PREECE: I only analyzed CWF H3+.

MR. KEELING: Three minutes.

CO-HEARING OFFICER DODUC: Quickly, quickly.

MR. KEELING: Ms. White, in DOI-40, which is your written testimony, you testify that you're able to answer technical questions regarding the use of CalSim II to model and analyze Central Valley Project operations and how complements of the modeling may be operationalized within the Central Valley Project; is

that correct?

WITNESS WHITE: Yes, I believe that's word for word what my testimony says.

MR. KEELING: For the purpose of forming -- of doing the work that went into DOI-40, what California WaterFix operational scenario you did rely on?

WITNESS WHITE: In the time that I've been developing -- I guess, making the statement that I'm available for questions on modeling operations, I reviewed a number of different scenarios. I was more involved with the BA H3+ -- BA H3+ scenario and H3 and H4. I'm aware of CWF H3+, and I reviewed that along with Mr. Miller's testimony, but was not heavily involved in developing that, if that answers your question.

MR. KEELING: It does, and I appreciate it.

Were you asked to analyze any project that would operate with less -- fewer than two new intakes -- fewer than three new intakes, rather, in the North Delta?

WITNESS WHITE: Can you clarify? Are you referring to in development of my testimony?

MR. KEELING: Well, in preparing to be able to answer technical questions for this proceeding, were you asked to do any analysis of a project that had

fewer than three new North Delta intakes?

WITNESS WHITE: In the development of my testimony, no. If you're asking was I asked if I had any thoughts on DWR's public announcement, sure. Yeah, I was asked if I had thoughts on that.

MR. KEELING: That's not my question, but again --

WITNESS WHITE: Maybe I'm not following your question.

MR. KEELING: My question was limited to what it is you said you were prepared to do in DOI-40.

WITNESS WHITE: So when I developed, DOI-40, my testimony, no, I had not analyzed, nor was I asked to analyze any analysis that had fewer than three tunnels or, more specifically, getting to Mr. Reyes' point, less than 9,000 cfs capacity.

MR. KEELING: But you said fewer than three new intakes --

WITNESS WHITE: I'm sorry. Less than 9,000 cfs capacity.

MR. KEELING: Okay. Since submitting DOI-40, have you been asked to do an analysis of a project with fewer than three new intakes?

WITNESS WHITE: I have been asked rather informally what -- what the results that DWR posted in

our public release looked like, by my own department.

MR. KEELING: By the Department of the Interior?

WITNESS WHITE: Correct.

MR. KEELING: Who asked you to do that?

WITNESS WHITE: Mainly my upper management.

MR. MIZELL: Objection --

CO-HEARING OFFICER DODUC: Objection is sustained.

I did give you leeway, Mr. Keeling, even though I considered this pretty irrelevant at this point, given our ruling about Phase, Part 3, and about the constraints upon which any approval we might issue. And I'm doing so with the expectation that no one else will revisit this irrelevant topic.

MR. KEELING: And I would like to return for just one question to Mr. Miller.

Mr. Miller, you know, Mr. Hunt, it might be helpful, or Mr. Baker, if we had his testimony, which is DWR-1011, Page 3. Mr. Miller, this may be repetitive, and I apologize. You touched on this not only in your testimony which we have in front of us; you touched on it yesterday in response to a question from Mr. Herrick out in Rancho Cordova, I guess this morning in response to a question from Mr. Herrick.

And I believe you mentioned this yesterday as well out in Rancho Cordova.

But I'm still trying to understand, in a way that's tangible not abstract, the difference that you describe on Page 3 starting at Line 13 going through Line 23.

And if we can get that up.

Between real-time operations and adaptive management, I know you consider this important because you went to some lengths to make that distinction in your written testimony. You went to some lengths yesterday to explain it, and you explained it again today.

Can you give me an example -- I'm a little confused by, for example, use of the term "criteria," adaptive management being used to develop or alter criteria. Can you go through that again, that distinct so even a layperson like me could understand it?

WITNESS MILLER: Well, I'm not an expert on adaptive -- the adaptive management program. That would be Dr. Earle in the next panel.

But I was trying to make a distinction between real-time operations and the adaptive management program. So real-time operations is how the project operators go about meeting criteria. So this criteria

could be D1641. It could be the criteria laid out in the biological opinions.

Now, the adaptive management program, Dr. Earle would be a better subject to discuss the details of that.

But in general, the adaptive management program is my -- as I as I understand it, is a process of gathering data and developing criteria or gathering data and assessing current criteria and potentially modifying that criteria.

MR. KEELING: So the term "criteria" that you've used in the description would include such things as compliance with D1641; is that correct?

WITNESS MILLER: I'm not sure if I --

MR. KEELING: What do you mean by "criteria."

WITNESS MILLER: Well, for example, an out -- it is a ruling, a regulatory requirement.

MR. KEELING: Okay. So if we had, say, a flow requirement or an outflow or a limitation on exports or a water quality requirement in D1641? Is that what you mean by "criteria"?

MR. MIZELL: Objection, asked and answered.

CO-HEARING OFFICER DODUC: I thinks he's just seeking clarification.

Mr. Miller, you may answer.

WITNESS MILLER: I may be not understanding the confusion between criteria, regulation, objectives. I kind of use them all interchangeably. So legally, I don't know if there's a significant difference.

So my -- my understanding with the adaptive management program is it's going to be focusing mostly on biological criteria similar to what is listed in the -- and I used an example earlier with Mr. Herrick of the Fish and Wildlife Service biological opinions where the criteria were negative 1250 to negative 5,000. But then in real-time operations, that's when the actual specific criteria is determined.

MR. KEELING: In the sentence beginning at Line 16 on Page 3 of your testimony --

CO-HEARING OFFICER DODUC: Are you expanding on your cross-examination, Mr. Keeling?

MR. KEELING: I'm trying to understand what "criteria" means here, and I have just one last question.

That sentence reads, "Adaptive management is a process by which the regulatory agencies incorporate evolving science by collecting information, developing criteria, observing the results, and then, if appropriate, adjusting the criteria to provide for more complete protection of listed species."

Do you see that sentence?

WITNESS MILLER: Yes.

MR. KEELING: Is that last part, "to provide for more complete protection of listed species," is that exclusive, or might this process be going on for other reasons? For example to meet community needs, human needs?

WITNESS MILLER: That's going beyond my expertise. So I would probably refer to Dr. Earle in Panel 3.

MR. KEELING: Thank you very much, and that's all I have.

CO-HEARING OFFICER DODUC: Ms. Meserve, you have an option. Do you wish to begin your cross-examination now and take a break at about 12:30, or do you wish to resume after lunch?

MS. MESERVE: I would prefer after lunch if it's okay with everyone else.

CO-HEARING OFFICER DODUC: I don't know. All right. Only because Ms. Meserve has just returned from holiday to join us and brought snow with her.

We will return at 1:00 o'clock.

(Whereupon, the luncheon recess was taken at 12:03 p.m.)

AFTERNOON SESSION

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(Whereupon, all parties having been duly noted for the record, the proceedings resumed at 1:00 p.m.)

CO-HEARING OFFICER DODUC: Welcome back, everybody. It is 1:00 o'clock. We resume with cross-examination by Ms. Meserve.

Ms. Meserve, will you please start by identifying the witnesses you'll be conducting cross-examination with, and list of topic areas.

MS. MESERVE: Good afternoon. Osha Meserve for LAND, et al., Group 19.

This afternoon I'll have questions for -- I should have marked down the doctors versus misters. But Mr. Wilder? Sorry. I can't see that far.

CO-HEARING OFFICER DODUC: Okay. So Dr. Wilder.

MS. MESERVE: Dr. Wilder --

CO-HEARING OFFICER DODUC: Yes.

MS. MESERVE: -- regarding population level changes, fish issues. And then Dr. Greenwood regarding sediment, presence of fish, entrainment, flows, DCC operations. Also I have questions for Mr. Miller regarding the operation of the project around fish

presence. Also for Mr. Reyes, regarding the uses of the modeling and the inflow-to-export ratio. And then for Ms. Smith regarding the range of operations in CWF H3+ and the modeling under the 16-year period. And then for Dr. Bryan regarding the HABs formation, temperatures, and sediment issues.

CO-HEARING OFFICER DODUC: All right.

MS. MESERVE: I don't think I gave it in the right order, so bear with me.

CROSS-EXAMINATION BY MS. MESERVE

MS. MESERVE: I'm going to start with Mr. Miller. And then just in general, your testimony, Mr. Miller, relates to how the project might be operated. And you provide examples, for instance, in the specific water year of how it would be operated.

And my question is do you think that the project would be operated to capture flow -- more flow in wetter periods and reduces exports in drier periods, from an operational standpoint?

WITNESS MILLER: So the example I provided was looking at the California WaterFix H3+ criteria and how that would have been applied in 2016.

MS. MESERVE: Is there anything in the CWF H3+ operational criteria that dictates that more water is taken in wet years and less water in dry years?

WITNESS MILLER: Can you ask that again?

MS. MESERVE: Is there -- you've referred to the CWF H3+ criteria. And I'm asking if there's anything within that operational scenario that would dictate that more water would be diverted in wet years and less water in dry years.

WITNESS MILLER: The -- the criteria -- yeah, it's more based on flows. So there's not really a linkage in terms of the criteria with water year types.

MS. MESERVE: So when you say it's linked to flows, are you talking about monthly average flows or --

WITNESS MILLER: Maybe can we bring up my -- my PowerPoint, or maybe we can just look at it.

MS. MESERVE: That would be DWR-1025?

WITNESS MILLER: Yes, DWR-1025. And why don't we look at Slide No. 9. And so this -- this is showing the historical operations from 2016 and then a conceptual California WaterFix H3+ operation. So the historical operations are in the solid lines, and the conceptual operation is in the dotted lines. And so where you see the dotted lines deviate from the solid line, that is generally when the flows are -- the WaterFix is operating to divert additional water.

MS. MESERVE: Okay. So this is really looking

at what the pulse flow protections would be, right, which is really just your couple of -- you're ramping up to whatever the maximum allowable diversion would be; is that correct?

WITNESS MILLER: Well, this specific slide is showing the pulse protection actions in the shaded area. But generally, it look at the lines on the plot that is showing the implementation of the California WaterFix H3+ criteria. And the resulting operation, when the dotted line is above the solid line, the California WaterFix is able to divert additional water from those higher flows.

MS. MESERVE: But there's nothing within Slide 9 or elsewhere that you're aware of in H3+ -- CWF H3+ that dictates more water diverted during wet years and less water in dry years; is there?

A. I'm not sure if I understand the question.

MS. MESERVE: Just to provide a tiny bit more background, this project has been described as implementing a big gulp/little sip-type concept in promotional materials I will say. So I'm just testing that against the actual operations that you've described here.

CO-HEARING OFFICER DODUC: As applied to CWF H3+.

MS. MESERVE: Yes.

WITNESS MILLER: Well, so we can actually have high flows during dry years. If we take this year that I have up on the -- on the screen, it was actually a below normal year. And it -- there's opportunities to capture additional water in that year. It has the years -- even in a really dry year, you might have a -- a period where you have higher flows that could be captured.

MS. MESERVE: And would capturing those flows tend to flatten out the natural hydrograph of the river system?

WITNESS MILLER: Well, the northern diversions have bypass rules. And I don't have a references off the top of my head, but the ability to divert is based on how much flow is being -- is going past the northern diversions. So I don't think there's a point to where it would be flattened. But...

MS. MESERVE: Wouldn't the hydrograph be flattened to the point the State -- for instance, DWR-515 which was the modeling parameters in Part 1, at least -- allows for diversions?

MR. MIZELL: Objection, assumes facts not in evidence. Ms. Meserve is using the term "flattened hydrograph." It hasn't been demonstrated that CWF H3+

flattens the hydrograph.

CO-HEARING OFFICER DODUC: Ms. Meserve, care to rephrase?

MS. MESERVE: Well, I guess I have a preliminary question. I wasn't trying to put words in the witness's mouth. I'm just trying to understand what the operations are proposed.

So is DWR-515, which was the modeling assumptions and showed the bypass flows you just referenced, is that still the references we should be looking at for bypass flows?

WITNESS MILLER: Can we bring up DWR-515?

MS. MESERVE: Or if another person on the panel knows the answer to that --

WITNESS MILLER: Regarding modeling, it would probably be either Mr. Reyes or Ms. Smith.

MR. REYES: Yes. So DWR-515 contained an operation -- I'm sorry -- an assumptions matrix for the different assumptions for the model. And it included the bypass requirements. And they're the same as was also listed in my exhibit DWR-1068. And the assumptions for the bypass rules have not change between Part 1 and Part 2.

MS. MESERVE: Thank you. You said that was 558 was the other references?

WITNESS REYES: 1068.

MS. MESERVE: 1068. Okay. Okay.

I'd like to go now to some questions I have regarding your testimony, Mr. Miller, on Page 8, Lines 14 through 21.

MR. MIZELL: If I may request a clarification before we move on back to Mr. Miller?

Mr. Reyes, I believe you meant to reference 1069, not 1068.

WITNESS REYES: Sorry.

MS. MESERVE: So going back to Mr. Miller's testimony, which is DWR-1011, on Page 8, Lines 14 through 21, you discussed the trigger for changing operations would be five fish caught in the Knight's Landing fish screw trap; is that correct? So that would be Line 14. So that would trigger the pulse flow protections?

WITNESS MILLER: Yeah. When the Knight's Landing catch index indicates five or more fish per day, that would trigger a pulse -- fish pulse protection action.

MS. MESERVE: Which would be similar to what we were looking at in your PowerPoint, 1025, Slide 9 in terms of letting those pulses go by before you ramped up to full diversions; is that correct?

WITNESS MILLER: The fish pulse protection actions limit the diversions to 900 cfs until the knight's Landing catch index indicates a less than five fish for five consecutive days or until the bypass flows on the Sacramento going past the intakes are exceeding 35,000 cfs.

MS. MESERVE: And that is for the period of October to June; is that correct?

WITNESS MILLER: I don't remember when it starts.

Maybe, Dr. Greenwood, do you remember when it starts?

WITNESS GREENWOOD: I don't remember offhand, actually.

MS. MESERVE: Well, we're talking about a pulse flow protection. And so, yeah, my question has to do with is this something that happens all year long. Or is this just for part of the year?

WITNESS MILLER: It would be for part of the year.

MS. MESERVE: And you're not sure, as you sit here today, what part of the year it is?

WITNESS MILLER: It's -- I couldn't say for sure, but it is probably somewhere in our -- in our Final EIR/EIS. I could look through it.

MS. MESERVE: We could come back to that point if you'd like to.

Now, could we have -- I have an exhibit that I made called LAND-217 that I provided to the projectionist. If we could take a look at --

CO-HEARING OFFICER DODUC: And as this is being pulled up, Ms. Meserve, you could help me with something. If I remember correctly, we made an exception for you because you did not file an original notice of intent to participate in Part 2, if I remember correctly; it's he been a while.

But to the extent that issues in Part 2 may, in your opinion, tie to injury to users in Part 1, you were allowed to conduct cross-examination based on that. So help me make the linkage, please.

MS. MESERVE: Yes. Well, LAND has a protest in both Part 1 and Part 2. There were three parties I represented, Bogle, Elliot, and Diablo in there. So for those -- I believe what ruling you're referring to said that, with respect to those particular protestants, I was allowed to ask questions pertaining to Part 1 in Part 2 even though they hadn't noticed for Part 2. So they were really a subset.

CO-HEARING OFFICER DODUC: But LAND is really a participant in Part 2?

MS. MESERVE: LAND is both, yes.

CO-HEARING OFFICER DODUC: Okay. That refreshes my memory. We've got too many maps.

MS. MESERVE: Yes, I know.

So this is a map I took off of Google to try to just illustrate the Knight's Landing. So I've put an arrow up where -- I think around where that screw trap may be. And I've also marked on the map where the American River and also where -- I'm sorry the colors aren't great -- but where the Feather River comes in.

Now -- did I do a bad job?

That helps. Now, Mr. Miller, you're somewhat familiar with the hydrology of the area, I imagine. And doesn't the Feather River and also the American River join the Sacramento River downstream of the Knight's Landing screw trap area?

WITNESS MILLER: Yes, it does. However, the Knight's Landing catch index was used because it is an active monitoring location. And so with the California WaterFix monitoring, it would be further downstream certainly.

But since I was just providing an example of how that criteria could be operationalized and implemented in 2016, I had to use something that -- a location where we're actively monitoring today.

MS. MESERVE: And is there a location in any of the permits, such as the ITP or the DO, that requires additional screw trap locations in a different location?

WITNESS MILLER: I think that was identified -- the need was identified to determine that location. I don't know if Mr. Greenwood is able to speak on that.

WITNESS GREENWOOD: Yeah, I don't believe that there's any specific location that's identified. However, the potential need for additional monitoring locations in addition to the Knight's Landing catch index location has been described and, for example, in the National Marine Fishery Service Biological Opinion. But I don't believe there's anything specified.

MS. MESERVE: So, Dr. Greenwood, you're saying that there is a references to needing additional locations, but there's no additional location specified at this time?

WITNESS GREENWOOD: Yes, I believe there's -- it's acknowledged that there may be the need for additional potential monitoring locations, but there aren't -- there isn't any specificity as to where that -- those monitoring locations would be.

MS. MESERVE: And are either Mr. Miller or Dr. Greenwood familiar with the ITP permit term

regarding the fish index?

WITNESS GREENWOOD: Sorry. Can you repeat that? Somebody sneezed just as you were saying the critical part of that.

MS. MESERVE: Sorry. I guess I should have made an excerpt of this, but let me -- just to make it a little easier, if we could pull up the SWRCB-107, which is the ITP issue by DFW. And on Page 191 of that document, if you were to search maybe for "Knight's Landing" -- are you aware, Dr. Greenwood, that only the Knight's Landing catch index is referenced here?

WITNESS GUERIN: That sounds familiar, yes.

MS. ANSLEY: So at least in the State-issued permit, there is no indication of other locations that would be downstream of these other major rivers carrying fish that may pass the proposed diversions; am I correct?

WITNESS GREENWOOD: Yes, I believe that that permit doesn't specify any other locations.

MS. MESERVE: And wouldn't you expect, Dr. Greenwood, that there would be various types of salmon coming through those other river systems downstream of the Knight's Landing screw strap?

WITNESS GREENWOOD: Yes, there would be.

MS. MESERVE: And, yes, I was just referring

to -- already confirmed, but you tell that first bullet was the one I was referring to from the ITP.

So under at least implementing the ITP, how would, under real-time operations, Mr. Miller, you know that there were fish -- salmon coming from these other river systems?

WITNESS MILLER: Well, we would follow the whatever criteria was developed for protecting those pulses. Initially, it is using the Knight's Landing catch index. However, as Dr. Greenwood indicated, the NMFS Biological Opinion indicates a need to have additional monitoring

MS. MESERVE: Is there a requirement to fund those additional monitoring locations within the permit that you're he aware of?

WITNESS MILLER: I'm not aware.

MS. MESERVE: And, Mr. Miller, are you aware what species of fish are optimized for catching in screw traps? Is it salmon?

WITNESS MILLER: Oh, I would have to defer that to either Dr. Wilder or Dr. Greenwood.

WITNESS GREENWOOD: Some way juvenile salmonids, particularly Chinook salmon, are consistently caught. Other species are caught as well, but generally the focus of the screw trap operations is

for juveniles, salmonids in particular, Chinook salmon.

MS. MESERVE: And Dr. Greenwood, in your testimony, you address several different species of fish that you were looking at whether they were reasonably protected. So there are quite a -- are there other fish that you don't believe would be caught in this screw trap?

WITNESS GREENWOOD: Yes, I think that there would be some species that wouldn't necessarily be as well collected as juvenile salmonids.

MS. MESERVE: So what would be the indication for an operator such as Mr. Miller that operations should change due to other fish species if they wouldn't be caught in the screw trap?

MR. MIZELL: Objection, assumes facts not in evidence. There's been no condition brought forth by Ms. Meserve that there are flow protective measures necessary for other species of fish. What the testimony goes to is the conditions that have been built into the BiOps and the ITP, which are for salmonid protection.

There's no evidence that any other species require that sort of protection. And unless Mrs. Meserve can quote the evidence, the question assumes facts not in evidence at this time.

CO-HEARING OFFICER DODUC: Ms. Meserve.

MS. MESERVE: That's fine. I'll ask a question about flow then. I understand.

CO-HEARING OFFICER DODUC: Okay.

MS. MESERVE: So then Dr. Greenwood, can you confirm what Mr. Mizell just testified, that there aren't any other flow protective measures for any other fish besides the salmonids?

WITNESS GREENWOOD: Specific to the North of Delta, the South of Delta?

MS. MESERVE: Specific to the operation of the proposed North Delta diversions.

WITNESS GREENWOOD: The criteria that are -- that are specifically described are focused on listed salmonids, listed Chinook salmon in particular. Although I believe, with the general coincidence and the timing of other unlisted runs that they will also be reasonably protected, as is the conclusion in the NMFS Biological Opinion on the CWF.

MS. MESERVE: So if the fish which you had -- I lost my thought.

There's maybe eight fish species or so that you looked at in your testimony. I don't remember what it is. And what are the protections for the non-salmonids then, if it's not flow?

MS. MESERVE: Some of the other species do have specific criteria, flow-related criteria that would affect operations of the whole project, not just the North but also the South Delta. So, for example, longfin smelt have the spring outflow criteria that we've been discussing. Delta smelt have fall outflow criteria that I mention in my testimony.

And so considering all of those things together, while certain species may not strictly have criteria focused on those species, with the overall operational constraints for various species, it's my opinion that there will be reasonable protection based on the -- based on the modeling results that I've looked at.

MS. MESERVE: Just to finish up with the fish trap, does -- Mr. Miller, are you aware, since you mentioned a fish trap -- maybe this ends up being a Dr. Greenwood question -- of what the trapping efficiency is for the Knight's Landing screw trap?

WITNESS MILLER: No, I don't know -- I'm not aware of what the fish trap efficiency is at Knight's Landing catch index.

MS. MESERVE: Dr. Greenwood, are you aware?

WITNESS GREENWOOD: I'm not aware of a specific value.

MS. MESERVE: So isn't the efficiency important because that's showing you the ratio that's trying to determine -- or to extrapolate the ratio of the number of fish in an entire system versus how many are being caught in the screw trap?

WITNESS GREENWOOD: It's being used as an indicator of pulses of fish moving downstream. I wouldn't necessarily -- I wouldn't characterize it as trying to represent the overall population. It's trying to indicate when relatively large pulses are moving downstream.

MS. MESERVE: But would it be fair to say that it's a rather blunt tool in trying to determine numbers of fish?

WITNESS GREENWOOD: I'm not sure what you mean by numbers of fish in this context.

MS. MESERVE: I believe your testimony discusses how there would be -- we would operate, given actual conditions in the river. And so what I'm asking about is how good of an indicator is a screw trap of actual conditions in the river?

WITNESS GREENWOOD: Actual conditions in the river?

MS. MESERVE: With respect to the presence of fish.

WITNESS GREENWOOD: I think it's a good indicator of the presence of fish and the relative abundance of fish, how they vary day by day, relative abundance being more abundant on this day compared to this previous day, an increase over several days indicating a pulse of fish is moving downstream.

So as far as the efficiency, the question is more is it a reasonable indicator of movement patterns, pulses of fish moving downstream in order to protect those pulses. This is an indicator that's currently used under the existing biological opinions. And, as we see here in the ITP permit as an example, it's proposed initially, at least, to be used as an indicator for changing operations of the North Delta diversions.

So while it may not be something that's used to estimate absolute population size, it is, I believe, a good indicator of transient abundance presence in the river and therefore whether or not we needed to change operations.

MS. MESERVE: And that would be for salmonids only, correct?

WITNESS GREENWOOD: Salmonids are the focal species for the operational criteria, yes.

MS. MESERVE: So do either the green or white

sturgeon ever get caught by the screw trap?

WITNESS GREENWOOD: I believe they -- I believe they do. But I don't believe there's any specific monitoring associated with those species. I don't know that they're caught in great numbers.

MS. MESERVE: If a green sturgeon was caught in the screw trap under the operations, there wouldn't be any change in operations of the North Delta diversions as a result of that; is that correct?

WITNESS GREENWOOD: Not as currently proposed.

MS. MESERVE: Now could we go back to the LAND-217 figure I had.

If -- once the -- I guess going back to Mr. Miller, since this is from his testimony, once -- if, say, the five salmon were caught, then how quickly could you react to that in order to protect the salmon?

WITNESS MILLER: It would depended on how quickly those numbers are reported. So I think part of that would be how often the screw trap is monitored. And that's something that's done by, I believe, DFW.

MS. MESERVE: Is there a requirement that it be monitored 24 hours a day?

WITNESS MILLER: Well, the trap is in place, and I don't think there's anyone sitting there observing it 24 hours a day. I'm not actually sure

exactly how these work, but my assumption is they sit and collect data, and they have to check that data.

MS. MESERVE: Doesn't that person have to go --

Could we scroll up on this picture a little bit? Actually, I have a picture of one That is -- I think it's -- it's not on there?

MS. ANSLEY: Hearing Officer Doduc? We'd like to offer an objection.

Mr. Miller is here to talk about ITP operations, and some of these questions merge over into questions that are -- he's already said he's not familiar necessarily with the operation of screw traps or screw trap efficiencies. So questions such as this about -- I can understand the reporting question. But in terms of how the screw trap operates, I don't think that that -- this is something he's already said is not exactly in his wheelhouse

WITNESS GREENWOOD: I might be able to respond, if it's helpful.

CO-HEARING OFFICER DODUC: Dr. Greenwood, you are familiar with this and could answer Ms. Meserve's question?

WITNESS GREENWOOD: Possibly. If the question gets re-asked, I'll try.

MS. MESERVE: That would be fine. What I'm trying to understand is we've been told in the various testimonies that there would be this real-time operation. And I'm trying to understand, what does that mean? They have this little net up here, and they're hoping some fish -- or hoping not that some fish go in there. And then they're going to do something different. I'm trying to figure out how that works.

WITNESS GREENWOOD: So during the main juvenile salmonid, dash, spring migration season, the rotary screw traps are checked, as I understand it, basically daily. And they are, as you noted, sitting in the river, sampling, depending on whether they're working -- or not "working," but sometimes there's debris that gets into the traps; they need to be cleaned. But otherwise, they're sampling.

They have counters on them so they can essentially get, I believe, the number of revolutions. So they can tell how much flow has gone through. So on a daily basis, they produce data on catch per unit of effort, the amount of time that they fished.

So basically, each day, an update is sent out with the daily numbers for that day. Sometimes there might be a gap of two days. But generally, during the

main-spring migration season, where it's important to be providing operators for the management teams with information, they're checked daily.

And so those indices, for example, the Knight's Landing Catch Index, is something that's being provided on a daily basis, one-year daily basis, based on the fish being caught. So somebody from the Department of Fish and Wildlife is going out and checking those traps every day or nearly every day.

MS. MESERVE: Now, from my count, I looked to see that the Knight's Landing screw trap was at River Mile 88. And the first proposed intake, No. 2, is at Clarksburg, which is River Mile 39. So how long would it take, you pick the type of salmon, to go the 48 miles down river?

WITNESS GREENWOOD: I couldn't -- I'd have to look it up.

MS. MESERVE: You don't know? The reason I'm asking is I'm wondering if maybe they get checked once a day and then -- or maybe not, or once every two days and then there's this large number of salmon perhaps that are coming down the river and are getting caught, and then how long does it take between that indication to get down to an operator such as Mr. Miller to do something different? And is it in time to be helpful

to the fish?

WITNESS GREENWOOD: Right. I think that the timing -- the timing may vary depending on the amount of flow that's in the river. So travel time can differ depending on the velocity of the river flow, I guess. Those things are related. But it can be on the order of several days as far as my memory serves.

So from the -- from Knight's Landing down to the North Delta could be several days.

MS. MESERVE: Would it be possible that the pulse flows shown in Figure 9 of Mr. Miller's testimony might not be provided in time for that particular grouping of fish?

WITNESS GREENWOOD: Pulse protection flows?

MS. MESERVE: Yes.

WITNESS GREENWOOD: Well, I think there's going to be a period -- and this is required under the permits -- where the efficacy of this system of monitoring and then assessing how fish are moving downstream into a variety of -- under a variety of river conditions, there will be a testing period for the intakes before the flow operations of the intakes begins. So factors such as I think the travel time from Knight's Landing would be important considerations.

And also there will be studies that the -- the studies that I mentioned during my summary testimony of things such as impingement of fish on the screens or entrainment, for example, that will inform, I think, questions such as this where there may be some uncertainty regarding -- I mean, I -- there is information. I just don't recall it off the top of my head as far as typical travel times.

But I think more of that can be refined during this testing period that I mentioned that's required under the various permits.

WITNESS MILLER: And if I may add, I think the -- one of the exhibits does indicate that we would work that into our planned operations within 24 hours of notification.

MS. MESERVE: That the five screw trap index had been met?

So in terms of the studies, Dr. Greenwood, wouldn't you have to try to get an idea of how many fish were above the new intakes as well as how many fish passed beneath the new intakes in order to know how many fish the new intakes killed?

WITNESS GREENWOOD: Yes. And that will be -- that is specifically one of the studies that I described in my summary testimony, my written

testimony.

MS. MESERVE: Do those studies rely solely on screw traps for -- to determine abundance?

WITNESS GREENWOOD: No, not necessarily. There are different method that could be used. Acoustic telemetry, so essentially putting acoustic tags into fish and assessing their survival. Through the -- so the North Delta -- the reach for the North Delta diversions has a -- I guess biological criteria of survival through that -- and this is something from the Internet.

The survival through the reach must not be less than 95 percent of the pre-project as a baseline survival for that reach. And then the overall through-Delta survival must not be less than the pre-project.

And so things like trawling have been used in through-Delta survival studies, but as I mentioned more recently acoustic tagging studies have been done to assess the through-Delta survival or survival through the particular reaches.

MS. MESERVE: Are you aware, Dr. Greenwood, of the accuracy of those studies that we could expect?

WITNESS GREENWOOD: I'm not sure in terms of accuracy what specific -- how you're defining

"accuracy."

MS. MESERVE: If the permit term is a 95 percent survival, what I'm wondering is how do we determine whether that has been met given the vagaries of sampling?

A. I mean, for these types of acoustic tagging studies, there's statistical methods that are applied to the data, the detections of fish, essentially, that provide estimates of survival in reaches. But they also account for the detect- -- any example of acoustic tagging, which, as I mentioned, has been used quite a lot recently, they try to account for the detectionability of the different receivers.

So the acoustic tags give out signals. Those tags don't always get detected by the detectors. But accounting for all of the fish that have gone by and subsequently may be detected at the further downstream detectors, they are able to incorporate the detection efficiency of the receivers into their overall estimates of through-Delta survival.

So this is how I think that's one example, I guess, of the sorts of things that are considered when -- that could be considered as far as assessing the 95 percent.

MS. MESERVE: And then with respect to fish

that don't have a special status in terms of listing, state or federal, then there wouldn't be any survival requirement; is that correct?

WITNESS GREENWOOD: The -- I think the -- for the list-specific survival requirements, those are I think focused -- the ones I mentioned are focused on the listed winter-run and spring-run. So it's not -- it's not including -- not the unlisted fish. But the -- given the timing of these different species of -- sorry -- of the listed species for which there would be assessment, there was, as I mentioned, a temporal overlap from which I think it could be inferred regarding the effects on these other unlisted fish.

MS. MESERVE: But, again, the listed fish reaction is simply to allow the flows to go by. There is no complete shutdown of the pumps that would be contemplated, right?

WITNESS GREENWOOD: The -- those triggers that we looked at from the ITP are data they show reductions to low level. So no more than 300 cfs at each intake.

Whether or not there would actually -- whether or not there may be no diversion I think might depend on other -- other factors as well that could be a real-time operational decision depending on whether,

for some reason, it wasn't necessary or desirable to divert at the North Delta diversions.

So I wouldn't say that it's not possible that there would be no diversions; it could be possible that there would be no diversions.

MS. MESERVE: But what's described as the -- is the slowing down to a total of 900 cfs, right? There isn't an operational scenario we've been shown that goes to zero, I don't think, going back to DWR --

WITNESS GREENWOOD: Right. Not specifically in relation to those criteria, I don't believe.

MS. MESERVE: Now with respect to some of those other non-listed fish, some of those might be important to -- as tribal resources like the lamprey, for instance; is that correct?

WITNESS GREENWOOD: I'm not sure.

MS. MESERVE: And looking across all of the different species that you considered, would it be fair to say that there's always some kind of species in the river?

WITNESS GREENWOOD: Sorry. Did you say all the species that I was considering?

MS. MESERVE: Yes.

WITNESS GREENWOOD: And which part of the river? Near the North Delta diversions or --

MS. MESERVE: So I would be referring to the part of the river adjacent to the proposed North Delta diversions.

WITNESS GREENWOOD: There could be.

MS. MESERVE: In other words, you had mentioned there's quite a bit of overlap between the presence, which is discussed in Appendix 11-A of the Final EIR.

WITNESS GREENWOOD: Quite a lot of overlap between the presence of?

MS. MESERVE: All the various species you considered in your testimony.

WITNESS GREENWOOD: Are you talking about spacial overlap, temporal overlap?

MS. MESERVE: Temporal overlap, yes, and spacial.

WITNESS GREENWOOD: I'm a little confused now. Temporal overlap between all of the different species or --

MS. MESERVE: Right. So I can go through a couple of them.

So for the Delta smelt, for instance, which are listed, they're every month, except juveniles, May through August, right? So they're pretty much all year?

WITNESS GREENWOOD: Every month, May through August?

MS. MESERVE: Except May through August, there's no juveniles. I'm just going off of what was in 11-A.

WITNESS GREENWOOD: I think it would be helpful if we could look at the specific thing that you're referring to. I'm not quite sure.

MS. MESERVE: I'm not sure if it's helpful. It is such a long exhibit. I should perhaps move on and see if I have additional time to go back to this idea.

Okay. Let's -- I'll skip over that part.

Now, how would the extent -- we talked a little bit about this. But you've said there would be these future studies to determine the extent of entrainment, Dr. Greenwood?

WITNESS GREENWOOD: Yes, they're required.

MS. MESERVE: And is it true that these studies are experimental for all species?

WITNESS GREENWOOD: Experimental? I'm not sure what you mean "experimental." They're essentially monitoring.

MS. MESERVE: That the extent -- determining the extent of entrainment would be experimental.

MS. ANSLEY: Objection, vague and ambiguous as to "experimental." I mean, is there a specific study or something that she's trying to cite that shows that it's not effective maybe, the monitoring?

MS. MESERVE: Well, yeah. I'm looking at --

If you can blow up LAND-221. I was looking at Table 11-15 of the Final EIR. I did manage to pull out that one table, find just the one page. I don't have the right page.

In the prior table, it says that there is -- that the -- there is not a linear relationship. So it's at the North Delta intakes on that second to right one.

That's the study they would be doing, but isn't it true that those are experimental? I guess I would need to show you that page.

MS. ANSLEY: I'm sorry --

CO-HEARING OFFICER DODUC: What do you mean by "experimental"?

MS. MESERVE: "Experimental" meaning that it is uncertain, the studies are uncertain.

If we could go to the Final EIR, which I believe is SWRCB-102. And I apologize I didn't excerpt the right table. And it's going to be Chapter 11, and then it's going to be Page 223, and it's Table 11-14.

Okay.

And then this is just showing the limitations of the different studies that I believe Dr. Greenwood was mentioning in his testimony would be undertaken.

WITNESS GREENWOOD: No. Can I -- sorry. Can I jump in?

CO-HEARING OFFICER DODUC: Go ahead.

WITNESS GREENWOOD: These are the methods used in the effects analysis to analyze entrainment. These aren't the studies that would actually be done during the implementation of CWF H3+.

MS. MESERVE: And so would you have different methods available to you that would not be experimental then?

WITNESS GREENWOOD: I'm still struggling with how -- what "experimental" means. Can you remind me what you were saying "experimental" is?

CO-HEARING OFFICER DODUC: Are you trying to ascertain, Ms. Meserve, what those studies might be if not --

MS. MESERVE: Right. That's my question is that it's going to be somewhat similar to existing conditions where we're trying to understand what fish are in the system and then what impact the different diversions are having on them.

So I believe that there's probably not going to be some brand-new invention, you know, between now and whenever this would be constructed. So I would deduce that it would still be experimental, as these methods here are described as experimental.

CO-HEARING OFFICER DODUC: Well, rather than -- because I don't want to hear another objection on the use of different words. Rather than focusing on the word "experimental," perhaps Dr. Greenwood, if you know, could you answer Ms. Meserve's questions regarding these future studies?

WITNESS GREENWOOD: Okay. I think I understand now what context "experimental" is being used.

So, for example, new methods that haven't been used before? Is that experimental? Like trying something that hasn't been done before to ascertain the effects of, for example, the North Delta diversions? Is that the context for "experimental"?

MS. MESERVE: I was actually quoting from the table, which was referring to one of these existing methods as being "experimental for all species, not known to be effective at all for larva," for instance, "and out-migrating species." So --

WITNESS GREENWOOD: Could we take a look at

that?

MS. MESERVE: Is that Page 222 you have up there?

Oh, here we go. Okay. Thank you. I don't know. I've quoted it here, but it may not be there. I may need to come back to this point. I apologize.

You have -- so are you saying, though, just to maybe go to a larger point, Dr. Greenwood, that you think there might be different methods available than are available today that might be more effective in determining survival?

WITNESS GREENWOOD: I think things like acoustic telemetry are evolving. I won't say all the time, but they're evolving over time. And, for example, acoustic tagging as I mentioned, acoustic telemetry, over time the size of the tags has decreased so the smaller fish are able to be trapped.

This is important because this means we can use acoustic tagging instead of other methods, potentially improving the accuracy.

MS. MESERVE: So when you say the acoustic tagging, that requires actually putting some kind of object inside each of the fish to see where it goes; is that correct?

WITNESS GREENWOOD: Into a subset of fish that

have been either obtained from a hatchery or else caught in a rotary screw trap, for example, but obtained in some way.

MS. MESERVE: In terms of the mortality across the proposed new diversion screens, how would you account for the tides and reverse flows in thinking about survival of a given listed fish in this example?

WITNESS GREENWOOD: Regarding which example?

MS. MESERVE: I'm just saying, let's skip the studies. You're trying to operate in real-time to prevent entrainment, right?

WITNESS GREENWOOD: The screens will be designed to limit the potential for entrainment and impingement, as I mentioned in my testimony. So the velocity criteria, approach velocity is what's considered protective for Delta smelt, for example, point 2 feet per second, as I mentioned.

And then there will also be sweeping velocity applied past the screen, which is at least double the approach velocity to limit the potential amount of time that fish are passing the screens.

MS. MESERVE: And that would be only for the listed salmonids and the smelt, however, that you would be operating the screens?

WITNESS GREENWOOD: Those operations -- those

operations will be protective of whichever fish happen -- well, those operations are not made specifically in relation to the species of fish necessarily.

The approach velocities pump two feet per second. That's how the design -- the design of the screens would be to meet that criterion, regardless of whether Delta smelt are present in the area or not.

Likewise, the operational -- at least with the requirement for the sweeping velocity, that's point 4 feet per second or more, which is double the approach velocity. So if that was a listed fish that happened to be there or an unlisted fish, you know, that's not being specifically assessed.

MS. MESERVE: And so if the approach velocity -- how are you going to measure whether the approach velocity is going to be met?

WITNESS GREENWOOD: It's a requirement that it's monitored and reported as part of the permit, as part of the proposed project.

MS. MESERVE: Would that involve, like, sensors on the screens or --

WITNESS GREENWOOD: Velocity meters, yeah.

MS. MESERVE: And then, if it wasn't being met, then would the diversion cease?

WITNESS GREENWOOD: I think it -- through the -- through the overall adaptive management process, the reasons for it not being met would need to be assessed and then corrective actions would need to be considered to identify or to -- firstly, identify what the issue is and then identify the corrective actions that would be needed.

MS. MESERVE: So if it wasn't met, it would simply just be reported, and the operations would continue as before?

WITNESS GREENWOOD: I don't -- I can't describe the specifics, really, of the sort of time frame for the overall process. I don't recall if there are those specifics, I should say, that are currently listed. I think these are things that, as final design and moving towards the testing period, I think these are things that would be more developed during that time. I don't believe that the specifics of those things are -- are laid out at this time.

MS. MESERVE: So if the operations wouldn't -- couldn't or wouldn't be changed to try to meet the required sweeping velocities, how is that real-time operations?

WITNESS MILLER: Can I jump in?

MS. MESERVE: Go ahead.

WITNESS MILLER: So the sweeping velocity will be dependant on the flows in the Sacramento River. And the approach velocity will generally be how much you are diverting.

So in real-time, we'll have to monitor those conditions and adjust the diversions to maintain compliance with those criteria that are laid out. And so there will be times when the diversions are zero if the sweeping velocities are not -- and the approach velocities -- the sweeping velocity aren't appropriate.

MS. MESERVE: And operationally, how would you make the diversions go from just, to be conservative, 900 cfs to zero? Where is that knob?

WITNESS MILLER: I think Mr. -- forgive me, Mr. Bednarski, I think he described it in Panel 1 that there's some gates that you can basically adjust to make sure that criteria is being met.

MS. MESERVE: Well, would that be perhaps the gates that at the intermediate forebay or at Clifton Court or --

MR. MIZELL: Objection, asked and answered. This was a topic that was covered in Panel 1, actually, specifically. And so at this point, Mr. Bednarski has already testified as to how the facilities would be constructed to comply with the sweeping velocities.

MS. MESERVE: I believe it was about construction and less so about operation. This gentlemen here is saying he's the expert on operation, so I think it's pretty fair to --

MR. MIZELL: The gates --

CO-HEARING OFFICER DODUC: Hold on. Hold on. Hold on.

(Reporter interruption)

CO-HEARING OFFICER DODUC: Ms. Meserve, please repeat your question, focusing on the operational aspect.

MS. MESERVE: If it was determined for whatever reason that the diversions would need to go to zero, operationally how would you do that? And how long would it take to get to zero?

MR. MIZELL: Objection, compound question.

MS. MESERVE: Let's take the first part then.

WITNESS MILLER: It's -- I'm pretty sure that Mr. Bednarski answered a very similar question in Panel 1.

CO-HEARING OFFICER DODUC: I don't believe he did. At least I don't remember it. So --

WITNESS MILLER: He talked about the gates, that they can -- they have gates, and being able to draw those to basically adjust the approach velocities.

So it really would be a question for Mr. Bednarski in terms of how quickly those could be closed.

We have an example of our current facilities now, which was built 50-plus years ago, looking at Clifton Court, where those gates open and close potentially multiple times a day and that they're opened and closed in conjunction with the tides.

So I would imagine that they both -- the northern diversions would have something similar, but it's better for Mr. Bednarski.

MS. MESERVE: Wouldn't that be a little bit different in the north because the gates, I believe that you're talking about, would actually prevent fish from going into the pumping area, whereas, here, you're talking about gates that are, I believe, a few miles away at the intermediate forebay that could be closed. Wouldn't that be different?

WITNESS MILLER: I'm not sure if I understood your question.

MS. MESERVE: If your answer was that the gates can be closed relatively quickly under current operations at Clifton Court Forebay, I'm imagining that's closing the forebay, which then cuts off the water from being available to go to the pumps, which would potentially protect a fish from getting sucked in

there.

But here there is no gate in front of the screen. The gate is beyond the screen in the system, correct?

MR. MIZELL: Objection, misstates the testimony. Again, this is something Mr. Bednarski went over quite thoroughly, as to how the gates -- the intake structures are constructed, where the cut-off valves are, where the flow sensors are. He went over all this in Part 1.

If Ms. Meserve doesn't recall that, she has transcripts available to her, and she can review that. But at this point, it's well beyond operations. It's about the construction of the facilities themselves.

MS. MESERVE: It's clearly about operations. I apologize I didn't get -- I will check the transcript; I appreciate the reference, and I will check it.

But I think this is critical operations. We've got the fish guys and we've got the operations people here, and seems like the right time to ask.

MR. MIZELL: And it's been asked and answered. Mr. Miller indicated it's better for Mr. Bednarski.

MS. MESERVE: Well, I --

CO-HEARING OFFICER DODUC: Just hold on.

Mr. Jackson?

MR. JACKSON: Mr. Bednarski will be back in Panel 3. Is that the time, then, that you would want these questions?

CO-HEARING OFFICER DODUC: We will be back in Panel 3 to talk about impact to navigation.

MR. JACKSON: Well, it's the same testimony. It's the same document. He has his navigation and his screening in the same document in his testimony for this.

CO-HEARING OFFICER DODUC: To the extent that you can be creative enough to frame it that way, Ms. Meserve, you may try again with Mr. Bednarski.

But I think Mr. Miller has answered all he's capable of answering at this point.

MS. MESERVE: Okay. So I did have an outstanding question about the difference in the system now versus with the proposed North Delta diversions, so --

CO-HEARING OFFICER DODUC: Try that.

MS. MESERVE: Well, that was the question I asked. So I don't know if you're saying I shall try to ask that of Mr. Bednarski or seems like someone familiar with the operations would be --

CO-HEARING OFFICER DODUC: That sounds more

like a structure question than an operations question.

MS. MESERVE: Okay, I can defer it then.

CO-HEARING OFFICER DODUC: So where are you on your list of questioning now? Are you done with Mr. Miller and Dr. Greenwood -- or Dr. Wilder? I'm all confused.

MS. MESERVE: o, I'm not. I'm still on Dr. Greenwood, and I shall try to move along. However I would note that this panel is extremely large.

CO-HEARING OFFICER DODUC: I understand.

MS. MESERVE: And I believe we do have a right to cross-examine witnesses.

CO-HEARING OFFICER DODUC: You do. But you also need to make the cross-examination efficient, flow well, and --

MS. MESERVE: I shall strive to do so. Thank you.

CO-HEARING OFFICER DODUC: Exactly.

MS. MESERVE: Okay. Let's see. Just back to one point with Dr. Greenwood. I believe there were some questions about this yesterday regarding Page 3 of your testimony where you discuss using a reasonableness standard in determining whether the fish were reasonably protected, all of the fish.

And I just wondered, when you considered the

reasonableness, did you look at all about whether fish would be used by Native American tribes, such as the lamprey, in analyzing reasonableness?

WITNESS GREENWOOD: My focus was on biological criteria from the perspective of the species, so not what you are asking.

MS. MESERVE: And now I have some questions about sediment. I have an exhibit, LAND-219. And this is just an excerpt from the Final EIR, Chapter 11. And I believe I tried to highlight an area.

Sediment is important, Dr. Greenwood, in terms of some of the fish species, right, and in particular, the Delta smelt?

WITNESS GREENWOOD: Yes, as I noted in my testimony.

MS. MESERVE: Mm-hmm. And is it your testimony that a sediment plan would be developed later to address this reduction of about 11 percent of the total sediment in the Sacramento River by the project?

WITNESS GREENWOOD: That's right. It's a requirement of the -- for example, the Incidental Take Permit.

MS. MESERVE: And are there any specific parameters for the sediment that you would be seeking to plan to reintroduce under this new plan?

WITNESS GREENWOOD: Can you --

MS. MESERVE: Like the size class of the sediment, for instance?

WITNESS GREENWOOD: I think it would be -- it would be required to be -- well, it would be desirable to have the size class that is -- it would actually be desirable to have the size -- the range of size classes that provide the important functions, such as the turbidity for Delta smelt, the substrates of the slightly coarser of the material that's entrained, the actual substrate, for example, for spawning of Delta smelt.

MS. MESERVE: And then I noticed that on Page 47 of the ITP it talks about possibly incorporating sediment during low-flow periods along the main stem of the river on benches. Are you familiar with that?

WITNESS GREENWOOD: I'm familiar with that concept, yes.

MS. MESERVE: If the sediment was placed on benches, how would that help protect fish? Wouldn't that only be dislodged during high flows?

WITNESS GREENWOOD: That example, concept, the intent would be to have, as you say, the higher flows redistributing the sediment. But I think that's --

that's just an example. I think, during the development of the sediment reintroduction plan, different possibilities for the introduction of sediment would need to be considered. And I think that would be one of the potential ways that sediment could be reintroduced.

MS. MESERVE: All right. Do you have any knowledge of whether -- what levels of mercury would be allowed to be returned back into the river that had been taken out by the diversions?

WITNESS GREENWOOD: I think the return of -- I think the return of -- the materials to be returned that have been entrained, the plan would need to be addressing the potential for, you know, mercury content in the sediment. So I don't have any specific information, other than it's acknowledged that that is -- that's something that needs to be considered during the development of the sediment reintroduction plan.

MS. MESERVE: Would it be possible that the removed sediment shouldn't actually be reintroduced because of high levels of mercury?

WITNESS GREENWOOD: I don't know.

MS. MESERVE: Have -- has a reintroduction of sediment, don't you think that could be a concern for

diverters along the river who are trying to use the water for agricultural or other purposes?

WITNESS GREENWOOD: I don't know specifically. I think sediment -- a sediment reintroduction plan being developed would have to consider those sorts of factors, but I'm not familiar specifically with that issue.

MS. MESERVE: Is there anything in the sediment reintroduction plan that would address possible impairment of local water diversions from sediment reintroduction?

WITNESS GREENWOOD: You're asking about a sediment reintroduction plan that hasn't been completed. So it doesn't currently have anything written.

MS. MESERVE: Are you aware that drip irrigation systems include extensive filtration systems that are very sensitive to sediment?

WITNESS GREENWOOD: I'm not really aware of that, no.

MS. MESERVE: And are you aware that there are thousands of small diversions in the Delta that are used for agricultural purposes?

WITNESS GREENWOOD: I'm aware of that, yes.

MS. MESERVE: Which -- do you believe that a

401 permit discharge process would affect the impacts of this kind of sediment on beneficial water users?

WITNESS GREENWOOD: I don't -- I don't really have the expertise, I don't think, to answer. I don't know if there's one of the water quality panel members that would offer some perspective, but I personally don't have any.

CO-HEARING OFFICER DODUC: Do you have further questions for Dr. Greenwood?

MS. MESERVE: Yes, Dr. Greenwood.

CO-HEARING OFFICER DODUC: Because I was going to ask if the doctor needs a break.

WITNESS GREENWOOD: I'll sit up straight. I'm getting slouchy.

MS. MESERVE: I think we can give him a break.

CO-HEARING OFFICER DODUC: All right.

MS. MESERVE: Okay.

CO-HEARING OFFICER DODUC: I think a different way is you can say "I don't know."

WITNESS GREENWOOD: Okay.

MS. MESERVE: Let's go on to Dr. Bryan.

CO-HEARING OFFICER DODUC: He's fresh. He's not had any questions yet. Go ahead.

MS. MESERVE: Wake up down there. All right. So obviously we had questions in Part 1 and microcystis

is also a public interest concern for Part 2.

Now, in the EIR, we had listed several factors for the triggering of the growth of microcystis or HABs, correct?

The EIR page I have excerpted is actually LAND-91. If we could please look at that.

And warm temperatures is -- warmer temperatures is one of those five factors -- sorry. I should have given that to you.

Now, so, would you agree, Dr. Bryan, that warmer temperatures are one of the primary drivers for formation of HABs?

WITNESS BRYAN: Yes, as indicated in terms of what's on the screen, I believe -- did you -- can you scroll down to the bottom so I can see the footer on that?

MS. MESERVE: That's the Final EIR.

WITNESS BRYAN: The Final EIR. Okay.

Yeah, as it indicates there from the studies that have been done on the Delta by Peggy Lehman, primarily, and others, what she has found and reported in her scientific papers is that temperatures of 19 degrees C or higher are necessary for microcystis blooms. So we don't see blooms in the wintertime; we see them in the summertime.

MS. MESERVE: Right. And when you say the summertime, what months are you thinking?

WITNESS BRYAN: Well, it varies from year to year, as she's shown in her paper on the drought. When you get temperatures above 19 degrees C varies from year to year also. So in most years, it's a May-through-October time frame that microcystis can occur in the Delta, with August and September being the primary months.

In the 2014 drought, it was reported that microcystis persisted for a greater period of time. It started earlier in the spring and persisted, excuse me, longer into the fall because of elevated temperatures during the drought, among other factors.

MS. MESERVE: And if you could please look at Dr. Bryan's testimony, DWR-1017 on Page 4, Lines 7 through 9, it discusses the temperature expected in the Delta would be the same as ambient air temperatures in that location.

WITNESS BRYAN: I'd like to correct that. That's not really what it says. What it says is that river water temperatures tend to be in equilibrium with air temperatures. When you release water from upstream reservoirs, it tends to come out of the lower levels of the reservoir. It can be very cold.

For example, water up at Shasta, as that water comes down the Sacramento River for hundreds of miles, it warms up. And by the time it reaches the Delta, it's typically very close to equal of what that ambient air temperature is. It's not necessarily the same temperature; in fact, it's not the same temperature as the air temperature, but it's essentially reached an equilibrium with the air temperature.

MS. MESERVE: When you say "equilibrium," to me, that means the same. Tell me how "the same" is not "equilibrium"?

WITNESS BRYAN: The water's moving. It starts out colder. It's moving. It comes downstream; it warms up. Water absorbs heat very differently than air. You know, rarely do you ever see a lake or a stream or any water body that has the exact same temperature as the ambient air temperature, unless it's like a puddle or something very, very tiny, because water absorbs heat differently than air.

So even in the heat of summer, when we've got 105 degrees out, the Sacramento River is not 105 degrees; it's much cooler than that.

But it's not -- it's not rapidly changing its temperature with every river mile as it goes, you know, say, from River Mile 60 to 50 to 40. It's just not

change that much because it's already been acted upon enough by air temperature that the amount of change in temperature that is going to occur from, say, a Folsom release or a Shasta release has already largely taken place.

Then when that water comes down into the Delta, obviously, it experiences tidal exchange, and the tidal waters have their influence on temperature. So it's a long way of saying that the temperature of the river waters entering the Delta are in equilibrium with ambient conditions when they reach the Delta.

MS. MESERVE: And is it your opinion that the reductions in flow caused by the operation of the North Delta diversions would not affect temperature?

WITNESS BRYAN: When you say "not affect temperature," can you be more specific?

MS. MESERVE: Is it your contention that the reductions in flow caused by the diversions would not change the temperature that you would expect to see in those summer months?

WITNESS BRYAN: If you're talking about immediately downstream of the diversions -- is that what you're referring to?

MS. MESERVE: The diversions are located in the very northernmost part of the Delta, so there's

several miles more of river and sloughs downstream from there. So I'm thinking of any location where had been HABs could form really, more broadly.

WITNESS BRYAN: Well, in my prior testimony that I presented in Part 1, I presented very extensive analysis of both velocities and temperature effects that the California WaterFix could have relative to the No Action Alternative, showed exceedance plots at nine locations in the Delta for temperature.

And those different lines representing the different operational scenarios, California WaterFix versus No Action, I think in those plots we also -- the California WaterFix was identified as H3 and H4 in that case, and we saw the lines falling on top of each other.

So, no, when you operate the system to California WaterFix versus operating it through the No Action scenario, you're just not going to see very large temperature differences in the Delta. You know, it's one of those things that, will be there minor temperature differences? In certain locations, there could be minor temperature differences.

It was my opinion, as I stated in that testimony, that any minor temperature differences that may occur due to the California WaterFix operations

relative to the No Action scenario would not be sufficient to change the frequency or magnitude of microcystis blooms throughout the Delta.

MS. MESERVE: And in doing -- in making the opinion here in your Part 2 testimony that we were just looking at, did you do any looking at actual data, or did you simply rely on the modeling?

WITNESS BRYAN: I'm not sure what to do with that question. When we're comparing the effects of a project that haven't been implemented yet, we have to rely upon modeling as a comparative analysis of what would temperatures look like in the system, in the Delta I think is what we're talking about right now under an operational scenario of a No Action, i.e., no project implemented, versus what the temperatures across the Delta may look like upon implementing the proposed project, the California WaterFix in this case.

So what -- I wouldn't be able to use actual temperatures in that analysis.

MS. MESERVE: Perhaps a better way to ask it would be did you look at relationships between flows in the existing system and temperatures between the differences between air and water?

I understand your point, the project is not in place. But did you try to look at actual data

regarding flows and temperature in order to come to this conclusion?

WITNESS BRYAN: No, that wouldn't be a very relevant thing to do because the reason that we rely on this suite of models that we rely upon -- studying CalSim and that feeding in the temperature models -- is because what we're looking at under different operational scenarios is, if you take a central location in the Delta, the water arriving at that location comes from multiple source waters -- the San Joaquin River, the Sacramento River, Bay water, and any side tributaries, et cetera.

Under different scenarios, the ratio -- we call this fingerprinting in DSM-2. The ratios of those source waters change. So if you were to develop some kind of regression analysis of flow and temperature from real data, it would be very difficult if not impossible to apply that to this scenario that we're trying to evaluate, which is the WaterFix versus No Action. So we use our suite of models to do that for us.

MS. MESERVE: Could we please have Exhibit LAND-116, which was on the thumb drive.

Just to test this a little further, I'd I like to show you some water temperature/air temperature data

that was collected at the Old River at Tracy gauge station, to test this idea of equilibrium that you've been testifying to.

CO-HEARING OFFICER DODUC: Hold on.

MS. ANSLEY: If we could have some authentication as to the source of this data, necessarily? Like, was from a study? Are we looking at -- who collected this, and is it off of CDEC? Is it -- what source is this data?

MS. MESERVE: Would you please scroll to Page 3 of this particular exhibit.

The sources are from the NOAA climate data, the water year index data is from CDEC and DWR. So these are readily publicly available information collected by DWR and then put in the format of a table. And I can certainly ask my questions just on the basis that, if these are correct, what would his opinion be. Or we could take a break and let him take a look at it, if the chair would so desire.

CO-HEARING OFFICER DODUC: Let me ask the court reporter. She's the most important person here.

Do you need a break?

THE REPORTER: I could have a break.

CO-HEARING OFFICER DODUC: All right. Let's take a break until 2:45.

(Recess taken)

CO-HEARING OFFICER DODUC: All right. It is 2:45. We are back in session, and we'll all thank Debbie for that break.

And since it was asked to let me confirm right now, we do have a hard stop at 5:00 o'clock today. So we will not go beyond that.

Ms. Meserve, please continue.

MS. MESERVE: If I have the right one -- okay.

So before the break I had provided some temperature data collected in the years 2015 to 2017. If we could put up that LAND-116 again on the first page.

And I provided a copy to the witness so that Dr. Bryan could take a look at it.

And so this location at Old River at Tracy, Dr. Bryan, do you think this would provide a long transit time through the Delta for the air and water temperature to equilibriate, according to your assumption that we discussed previously?

WITNESS BRYAN: I'm not sure what you mean by that.

MS. MESERVE: Considering that the location of this station is in the southern part of the Delta, and if we were talking about Sacramento River water that

may show up in that location, it would have a long time to equilibriate, wouldn't it?

WITNESS BRYAN: Well, Sacramento River water is not the only water that ends up at that location. So you've got water -- that's what I was explaining earlier. So you have water coming from multiple sources to any given location in the Delta. They're all going to have their own transit time. They're all going to have to start out with their own volume, their own temperature. And then the amount of transit time will be different for each of them for ambient air temperature to affect them. And as they come together at that location, you get an even temperature.

MS. MESERVE: So, now, the air and water temperatures, are they the same in these summer months according to the data set that we've provided?

WITNESS BRYAN: You'll have to clarify that for me.

MS. MESERVE: Looking at the air, water temperature column on the far right.

WITNESS BRYAN: The far right column that's titled "Water Temperature Minus Air Temperature?

MS. MESERVE: Yes.

WITNESS BRYAN: Uh-huh.

MS. MESERVE: Are they -- that's showing how

much cooler the water would be than the air, right?

WITNESS BRYAN: Mm-hmm.

MS. MESERVE: So in the various -- in all of the years there are some differences between the air and water temperature, correct?

WITNESS BRYAN: Yes, as you show in this table; that's correct.

MS. MESERVE: Does it look to you like there is a relationship potentially in this data set between the water year type and the difference between air and water temperature?

MS. ANSLEY: Objection, vague and ambiguous. These are average July through September temperatures. And I believe her earlier question, the earlier conversation was more instantaneous effects -- or not instantaneous but the effect of ambient air temperature on water temperatures. So I think that this is vague and ambiguous as to whether there's a connection between the rightmost column and water year type.

CO-HEARING OFFICER DODUC: She has totally confused me now. I thought I understood your question, Ms. Meserve.

What is your question, again?

MS. MESERVE: Looking at the snapshot of this these years, doesn't it look like there are differences

in air and water temperature that may relate to the water year type? I can provide a specific example maybe would be cleaner.

CO-HEARING OFFICER DODUC: Please.

MS. MESERVE: I think I heard counsel for DWR argue I was using averages, so that was funny. And it's -- this is an average. So, I am.

So for instance, Dr. Bryan, if we look at 2005, that's an above-normal year and we see that the difference is that the average water temperature was 7 degrees cooler in this location. Do you say that?

WITNESS BRYAN: I see that.

MS. MESERVE: And then if we look at, for instance, another wet year, 2011, there's also a pretty large difference, 5.8 degrees. Do you see that?

WITNESS BRYAN: I see that.

MS. MESERVE: And then if we look at the third wet year here, another wet year in 2017, we have a difference of minus 7.8 degrees difference.

So thinking about those differences and then the fact that the drier years, for the most part, seem to be closer, do you think this data set may show that there is a relationship in those wetter years that puts the temperature of the water cooler?

WITNESS BRYAN: So is the question that you're

asking is there a relationship -- according to the data that's -- you presented, is there a relationship between water year type and temperature at this location?

MS. MESERVE: Water temperature at the location, yes.

WITNESS BRYAN: Yeah, you would expect that. You will expect there to be a relationship between the two.

MS. MESERVE: In a wetter year, you would have higher flows, correct?

WITNESS BRYAN: You'd have higher flows. You'd have higher volumes of flows coming in. You should have lower transit times, therefore less time to react to ambient air temperature. Your ambient air temperature tends to be cooler on average in wet years than in dry years, so it's not a surprise that you will see a relationship between water temperature and year type. That's not a surprise to me. That's very expected.

MS. MESERVE: Going back to your statement in your DWR-1017, Page 4, you say that it is close to equilibrium with air temperatures. Doesn't this table show otherwise?

WITNESS BRYAN: No, it does not. In fact, it

actually shows what I'm talking about. In a wet year, when you have large volumes of water coming down channels that are cool to begin with, air temperatures can generally be cooler than in a dry warmer year. That water coming down into the Delta is going to eventually become in equilibrium with ambient air.

Another way to say that is ambient air temperature is a primary driver of temperatures in the Deltas, at least as it's entering the Delta. So you get a different equilibrium, if you want to use that term. I think you're struggling with the term that I'm using. You get a different equilibrium in ever situation. If you release 10,000 cfs at 50 degrees and air temperature is 80, it's going to come in equilibrium as it enters the Delta. But that equilibrium temperature is going to be different than if you release 5,000 cfs at a different temperature and the air temperature is different.

So I'm not trying to say that temperatures are always the same. What I'm trying to say is that there's an interaction between an ambient air temperature acting upon a slug of water going down the Sacramento River, the San Joaquin River as it enters into Delta. And if it's a large volume of water, it's going to come into equilibrium with the air temperature

acting upon it in a different way than a small slug of water would coming down the same channel.

Transit times are different. The amount of interaction with that volume of water with the air is different. All of those things are different. But that doesn't change the fact that the ambient air temperature is the primary driver of temperatures entering the Delta. You're still going to get variability across years, and you're going to get variability with flows.

MS. MESERVE: Doesn't this data set show that, when there's more flows, the water temperature is cooler in those months?

WITNESS BRYAN: In the way in which you have looked at it, when you've taken the data that you have and you've arranged it by year, and you've -- you essentially, when you're looking at water year types versus temperature, you're looking at very large differences. A wet year and the amount of water that's coming down, the temperature of the water that's being released from wherever it's coming from, the air temperatures, all these things are pretty radically different between a wet year and a critically dry year.

So again, it's not a surprise that you're seeing this relationship. I don't think this is really

germane to the analysis I did. The analysis that I did takes these concepts into account. We look at what the flows will be in the rivers operating to the No Action Alternative and how those reservoirs will be operated and how the river flows, what they will be as they flow down into the Delta. We also see that for the other scenario, the California WaterFix scenario.

Then we use temperature models to help us understand that interaction that we've been talking about. And then, in the comparative analysis that we've all talked about through this hearing, we can compare temperatures of the flowing water in the Sacramento River at a given location or in the San Joaquin or in the Delta between WaterFix and No Action Alternative but that's the analysis that I did.

And the conclusion from that analysis is that the California WaterFix can have very minor effects on temperature the Delta. Those effects on temperature would not be of a sufficient magnitude to cause the microcystis or cyano HABs in the Delta, the frequency of abundance to be notably worse under the WaterFix relative to what we would see in the No Action Alternative.

So I -- that's what my original testimony said in Part 1. I reevaluated that relative to the

California WaterFix H3+. That's what my testimony is about. And I reaffirmed that California WaterFix H3+ fits within what I looked at before.

The amount that California WaterFix in H3+ would change river temperatures, Delta temperatures is virtually the same as what I looked at before for H3 and H4. So the conclusions that I reached regarding how WaterFix could affect microcystis in the rivers or Delta when we were defining the project as H3 and H4 still stand when we define the project as California WaterFix H3+. That's what my testimony is saying.

MS. MESERVE: Under H3+ as compared to the prior alternative scenarios you analyze, aren't the export limits removed for the late fall period in a manner that might exacerbate HABs formation?

WITNESS BRYAN: I'm not following you.

MS. MESERVE: If we could look at Ms. Smith's testimony -- PowerPoint, which would be --

CO-HEARING OFFICER DODUC: I'm not sure, Dr. Bryan, to what extent you looked at the exports and other criteria upon which the modeling was conducted. Did you actually review that, or did you simply take the results from the modeling and comparing the results with the No Action Alternative to first BA H3+, H3, and H4 and to now CWF H3+?

WITNESS BRYAN: Correct, the latter. And in doing so for the parameters that affect cyano HABs and microcystis, velocity in the channels, temperature, and things of that nature, yes.

CO-HEARING OFFICER DODUC: But he may not -- doesn't sound like he does -- have knowledge about what particular criteria went into various modeling runs.

MS. MESERVE: And just to confirm, you didn't look at any data like I have here about and try to determine relationships between flows and water year types and temperatures to come to your opinion that there's this equilibrium?

WITNESS BRYAN: No. I think the approach that I took was more appropriate to answer the question I was trying to answer, which was would the California WaterFix change hydrodynamics and temperatures within the rivers and Delta sufficiently to cause microcystis and other cyano HABs to be worse under that scenario than they would otherwise be under the No Action Alternative.

That was the question I set out to answer. And so the approach that I took, the comparative analysis approach that I took, I think, is the most appropriate way to answer that question.

MS. MESERVE: And the year that you were

looking at in terms of that would be like 2020, 2030, to 2035, correct, not a later year, right, for the modeling?

CO-HEARING OFFICER DODUC: That would be an aspect of modeling.

MS. MESERVE: You don't know what year it was assumed in terms of climate change?

WITNESS BRYAN: You could ask the modelers that, but --

MS. MESERVE: Okay. Let's go on to -- let's see. On Page 7 of your testimony, you state that with respect to turbidity that there would be a minimal effect on turbidity in the Delta, to summarize. This is on Lines 4 through 13.

And then you had stated previously that you thought one reason that there had not been HABs in the lower Sacramento River was due to turbidity; isn't that correct?

I'm referring back to your Part 1 testimony, which is a DWR-81, Page 6, Lines 27 through 28. You opined that the turbidity in the Sacramento River would help prevent HABs?

WITNESS BRYAN: Which lines were you referring to?

MS. MESERVE: That was Lines 27 through 28.

WITNESS BRYAN: On Page 6, did you say?

MS. MESERVE: Yes.

WITNESS BRYAN: Yeah, it says the lower Sacramento River has not had a history of cyano HABs largely because of the river's turbulent flows, turbidity, and temperature. Is that what you're referring to?

MS. MESERVE: Yes.

WITNESS BRYAN: Okay.

MS. MESERVE: And then going back to that excerpt of the Final EIR, we looked at the total suspended solid concentration as one of the factors, one of the primary environmental factors triggering HABs, correct?

WITNESS BRYAN: I don't know that I agree with that statement.

MS. MESERVE: Let's go back to LAND-91, if we could. Sorry. I'm keeping you guys busy.

That's No. 3.

WITNESS BRYAN: No. 3 is talking about --

MS. MESERVE: Clarity.

WITNESS BRYAN: It's talking about water and radiance. It's talking about the amount of light that's available for algae to use. Obviously, total suspense columns and turbidity can affect that. But

they're two different things.

MS. MESERVE: Do you disagree with this list of primary environment factors in the Final EIR?

WITNESS BRYAN: No, I do not disagree that.

MS. MESERVE: And we discussed earlier the fact that the EIR also discloses that there's an 11 percent entrainment of sediment in the Sacramento River, which was in the context of concern on impacts to Delta smelt; is that familiar to you?

WITNESS BRYAN: You're going to have to give me some more specifics and relate it to my testimony.

MS. MESERVE: So, Doctor, back to -- well, it's related to your testimony because you're opining about the relationship of the fact that there's turbidity in the Sacramento River is helping prevent HABs formation, right? And then we have the EIR disclosing 11 percent removal of the turbidity -- of sediment.

WITNESS BRYAN: Well, you're -- let me stop you.

I'm not suggesting that turbidity levels in the Sacramento River are the only thing that prevents the Sacramento River from having problem HAB formation.

MS. MESERVE: If the turbidity was to be reduced, would that be a potential driver for HABs

formation along the lines of the Item 3 in the Final EIR that we were just looking at?

WITNESS BRYAN: Is your question if the turbidity in the Sacramento River were to be reduced? Is that your question?

MS. MESERVE: Yes.

WITNESS BRYAN: By what magnitude?

MS. MESERVE: The EIR discloses and it's discussed in Dr. Greewood's testimony as well on Page 26, that there is 11 percent entrainment of all sediment in the Sacramento River.

WITNESS BRYAN: That's not one and the same with the resulting turbidity. So you're talking about volume of sediment, like pounds of sediment, maybe 11 percent of the mass of sediment may be entrained. That's not to say that, downstream of those intakes, you would have 11 percent reduction in turbidity. You can't make that connection.

MS. MESERVE: If there was no reduction in turbidity, why do you think the smelt -- the analysis would be concerned about and end up imposing a sediment reintroduction plan?

CO-HEARING OFFICER DODUC: I can hear your objection now. Go ahead.

MR. MIZELL: Objection, asked and answered as

to Mr. -- Dr. Bryan's opinion as to what the turbidity effects actually mean in scientific terms, and out of scope and directed towards the biologists for the biological impact of what the EIR/EIS discloses.

CO-HEARING OFFICER DODUC: Sustained.

MS. MESERVE: Are you aware, Dr. Bryan, that as a result of the reduction in turbidity, that there is a sediment reintroduction plan in the ITP in the BiOps?

WITNESS BRYAN: I'm familiar with the -- with the concept that a sediment reintroduction plan has been discussed, but I have no details on that.

WITNESS GREENWOOD: If I might add, the analysis suggestions that the reduction in sediment has the potential to reduce turbidity.

MS. MESERVE: And, Dr. Greenwood, if the turbidity wasn't actually reduced by the sediment removal, we wouldn't have any reason to have a sediment reintroduction plan, would we?

WITNESS GREENWOOD: Turbidity is not the only consideration in the sediment reintroduction plan. As described in the ITP, in the Incidental Take Permit. Turbidity is one function of sediment. But I believe that the ITP also contemplates the function as physical habitat, as I mentioned earlier. So for example,

spawning habitat for smelts.

MS. MESERVE: Dr. Bryan, in your analysis regarding the potential for HABs formation, did you consider the 11 percent reduction in sediment that's disclosed in the Delta smelt portion of the Final EIR?

WITNESS BRYAN: I considered what our Water Quality Chapter 8 concluded about changes in turbidity due to the California WaterFix relative to the No Action. And we concluded that the California WaterFix would not result in substantial reductions in turbidity relative to that which would occur under the No Action Alternative. And part of the reason we concluded that -- there's actually a number of reasons. The first reason --

MS. MESERVE: I'm sorry. I'm not finding this to be answering the question.

I asked whether specifically you considered the 11 percent reduction that was in Chapter 11 of the EIR that we've been discussing. So it's a simpler question.

WITNESS BRYAN: I did not directly consider that because it was not directly relevant to my analysis.

MS. MESERVE: I've got a few questions for Dr. Wilder.

In your testimony on -- which is DWR-1013, on Page 7, you refer to population level impacts. Could you please explain what you mean by "population level impacts" and how that would apply to this hearing in Part 2? It's Lines 24 through 28.

You know, I think I might have been on the incorrect one.

Let me ask it this way. Do you discuss population impacts in your testimony, Dr. Wilder?

WITNESS WILDER: Yes, I do.

MS. MESERVE: I apologize for the wrong page.

And how do you think the population level impact would be relevant to the inquiry in this hearing?

WITNESS WILDER: Well, it's -- population level describes something that is, you know, having a pervasive effect on the entire population, and therefore it's -- I would argue that it's directly relevant to the reasonableness of the protection.

MS. MESERVE: And is it your opinion that only a population level impact would be unreasonable in this context?

WITNESS WILDER: Not necessarily.

MS. MESERVE: So would something less than a population level impact potentially be unreasonable?

WITNESS WILDER: Yeah, it could.

MS. MESERVE: And then looking at Page 10, you have that table regarding salmonid presence. And in general, just going back a little bit to the discussion we had before with Dr. Greenwood, there's some salmonid presence in the vicinity of the proposed diversions pretty much all year; is that correct?

WITNESS WILDER: Well, this table wouldn't show that. This is strictly upstream of the Delta.

MS. MESERVE: So it's -- I'm sorry. So salmonid presence upstream in the areas, for instance, that we would be looking at monitoring through the screw trap, for instance?

WITNESS WILDER: The Knight's Landing screw trap?

MS. MESERVE: Yes. So they would be present in the system, for instance, upstream? Does the table apply to upstream, do you think, in the vicinity of Knight's Landing?

WITNESS WILDER: Yes, it does.

MS. MESERVE: So during all months of the year, there's some kind of presence of salmonids?

WITNESS WILDER: Yeah, I mean, specifically, the first -- the first column, the adult immigration and the last column, juvenile immigration would be life

stages that would pass Knight's Landing at some stage if they were going up to one of the tributaries that passes Knight's Landing.

MS. MESERVE: So does that presence throughout the year of these various salmonids complicate operations to try to avoid take of those listed ones?

WITNESS WILDER: Can you define "complicated"?

MS. MESERVE: There's no time of the year where there's not a salmonid to try to avoid take of, is there?

WITNESS WILDER: There are certainly periods that are more important to the different races or species, in the case of steelhead.

MS. MESERVE: And when you looked at the reasonableness or considered the reasonableness of the actions proposed, did you consider the fact that the lamprey is a Tribal Trust species and a California species of special concern, as an ESA species of special concern?

WITNESS WILDER: Indirectly, yes.

MS. MESERVE: Is there any specific plan for protection of these types of species?

WITNESS WILDER: There are plenty of protections of native species that exist under the WaterFix project, nothing specific to Pacific or river

lamprey.

MS. MESERVE: This may be -- go toggle back to Dr. Greenwood because then when we -- the lamprey is a very small skinny fish, right? So there's no screen protections, for instance, for the lamprey that would protect them from entrainment?

WITNESS GREENWOOD: It depends on the size of the lamprey. I mean, lamprey typically, when migrating is micropthalmia, like, that's the migrating life stage. I mean, they would be -- they would be larger. So I think our analysis, if I'm recalling it correctly, from the -- I think the detail analysis was done in Appendix 5.B of the Draft BDPC that was then cross-referenced in the EIR.

I think that showed the lamprey about 50 to 60 millimeters and greater would be protected from entrainment by 1.75 millimeter screens, screen openings for the North Delta diversions. And the 50 to 60 millimeters is smaller than the typical sizes of the micropthalmia downstream migrating life stages. So on that basis, those would be protected from entrainment.

MS. MESERVE: That would be if the sweeping velocities we discussed earlier were met at all times?

WITNESS GREENWOOD: What I just discussed is specific to entrainment. So there was -- I believe the

comment was regarding entrainment, there not being protection because of the screens not being effective at screening out the fish because of the shape, because of the morphology.

That's a function of the screen opening, which our analysis showed is about -- I believe it was at 60 millimeters or so.

MS. MESERVE: And then would it be impingement if the fish was slammed against the screen and couldn't fit through?

WITNESS GREENWOOD: Impingement is the -- is defined as when a fish is -- can be defined in different ways. Generally, it's regard to be when a fish is stuck on a screen for a -- a certain amount of time. The amount of time can differ depending on the definition of it.

But that's yeah, so it's -- that's what impingement is.

MS. MESERVE: Thank you.

Madam Hearing Officer, I see my time is close to being out from the original estimate. I do have some questions for Mr. Reyes and Dr. Smith. I know that the Solano and Contra Costa County have questions on modeling as well, and they're here this afternoon. I'm wondering if it may be efficient to let them ask

their questions first and see what questions of mine remain, or would you like me to continue?

CO-HEARING OFFICER DODUC: I think that actually is a very good suggestion. We will do that.

MS. MESERVE: Okay. Hopefully they're not surprised.

CO-HEARING OFFICER DODUC: Good afternoon. Please begin by -- well, I think she outted you having questions for Mr. Reyes and Ms. Smith. But are there any other witnesses that you will be cross-examining? Please identify them and

MR. KELLER: Thank you. Kurtis Keller with Contra Costa County and Contra Costa County Water Agency. I'm with Group 25. I will be asking just a very brief clarifying question to Dr. Greenwood regarding the modeling prepared for the Incidental Take Permit application.

I'll ask Mr. Reyes a few questions regarding modeling compliance for the spring outflow criteria and Ms. Smith with respect to compliance with water quality objectives and water quality assumptions.

CO-HEARING OFFICER DODUC: Thank you. Please proceed.

CROSS-EXAMINATION BY MR. KELLER

MR. KELLER: Dr. Greenwood, yesterday you

described the modeling prepared for the ITP application as something between BA H3+ and CWF H3+, but that it was neither one of those operating criteria; is that correct?

WITNESS GREENWOOD: That's right. We did have some analysis, although most of the biological modeling analysis was BA H3+. We did have the what I was calling, I guess, intermediate scenario that was between BA H3+ and CWF H3+ in terms of having the additional spring outflow requirements of CWF H3+.

MR. KELLER: So my clarifying question is are you aware of any other instance other than the modeling for the ITP application where this intermediate operating scenario is utilized or relied upon in analyses or testimony offered as evidence in this proceeding?

WITNESS GREENWOOD: I'm not aware of that, no.

MR. KELLER: Okay. Just for context, just in terms of we were somewhat confused yesterday about the modeling criteria. And I just wanted to confirm that it wasn't the basis in some other portion of the analyses or testimony.

So, although I directed it to Dr. Greenwood, if there is another panel member that is aware, I'd ask the same of them.

Hearing no answers, I'll just take that as the clarification. So, thank you.

I'll move on to Ms. Smith. And I have a few questions regarding compliance with water quality objectives. If you could pull up DWR-1015, Page 19. This is Ms. Smith's written testimony. Line 10.

Ms. Smith, you said in your testimony what the changes in chloride concentration for CWF H3+ for all months is very similar to those for H3 and H4 and only slight variations reflected in -- specifically November through December for Contra Costa Canal; is that correct?

WITNESS SMITH: Are we on -- I may be looking at the wrong Page. 10 is for Clifton Court and for -- and November through December for --

MR. KELLER: Contra Costa.

WITNESS SMITH: -- Contra Costa Canal, yes, that's correct.

MR. KELLER: Thank you. So if we could scroll down to Page 24 and look at Figure CL.1. Thank you. Figure CL.1 shows monthly average chloride concentration at Contra Costa Canal. And I'm looking specifically at November and December months. The figure shows a spike in average monthly chloride concentration under CWF H3+, that is approximately 20

to 40 percent increase above that shown for the H3 and H4 scenarios in that run; is that correct?

WITNESS SMITH: I did not check to see what percentage of difference it was between those.

MR. KELLER: Okay. Would it appear that 20 to 40 percent in those two months is approximating the increase over the H3 and H4 scenarios, looking at that graph you put together?

WITNESS SMITH: Possibly.

MR. KELLER: That is what you're referring to was a slight variation in --

WITNESS SMITH: Let me go back to 10 again, on Page -- what was it?

MR. KELLER: It was Page 19, Line 10 of your testimony.

WITNESS SMITH: I think the variation was in reference to the No Action Alternative, but let's make sure of it.

MR. KELLER: Your statement on Page 19 was the changes in chloride concentrations for CWF H3+ for all months is very similar to those for H3 and H4, with only slight variations.

WITNESS SMITH: If that's the case, I actually meant that as compared to the No Action Alternative. I do agree that there are some differences between H3 and

H4 and the California WaterFix H3+ in the graph that you showed.

MR. KELLER: So just to clarify, so you were referring to slight variations with the No Action Alternative about H3- --

WITNESS SMITH: That's what I was thinking when I was going through this.

CO-HEARING OFFICER DODUC: I think you do say that in Line 17. And 20.

MR. KELLER: The fact that you say that on Line 17 and 20, though, are you still saying that what you meant in Lines 10 through 13 are not in references to H3 and H4?

WITNESS SMITH: If -- if what you're pointing out is true, yes, I agree with what you said on the graph, that there's a difference between those.

MR. KELLER: So referring back to the figure CL.1, these are long-term averages, correct?

WITNESS SMITH: Go back to that page -- oh, there we are. Those are -- yeah, for 16-year monthly averages.

MR. KELLER: Those spikes in chloride concentration then could be significantly greater in individual November or December months over the full operations modeling period, correct?

WITNESS SMITH: Possibly, but I am not sure that would be the correct way of analyzing that data. I would look at the exceedance plots, just because we're looking at the operation, you know, like over -- similar to what Mr. Reyes said very nicely earlier, in terms of not comparing the -- making the one-to-one comparison in terms of results.

MR. KELLER: One final question about the graphs. Doesn't the monthly average chloride concentration under CWF H3+ scenario in November represent degradation of water quality at Contra Costa Canal intake relative to the No Action Alternative?

WITNESS SMITH: There is a -- yes, there is a negative difference between the chloride concentration in November and the No Action Alternative. Between the California WaterFix H3+ and the No Action Alternative.

MR. KELLER: Thank you, Ms. Smith.

I'm going to turn to Mr. Reyes. Can we have DWR-1016, Page 5. This is Mr. Reyes's written testimony, Lines 1 through 5.

Mr. Reyes you state that all the operational criteria presented in Part 1 remain the same except for spring outflow and the fall South Delta OMR export restrictions.

Just to clarify, by "remain the same," you

mean the operational criteria presented in Part 1 to this iteration, the operational criteria for CWF H3+, right?

WITNESS REYES: Yeah, that's correct. So the operational criteria presented as -- in H3 and H4 are identical also in Cal WaterFix H3+ other than the two that I said are exceptions.

MR. KELLER: Ms. Buchholz stated last week that the operational criteria for CWF H3+ falls within the operational range between Alternative 4A, H3 to H4; do you agree with that statement?

WITNESS REYES: Yes, I do in the sense that, because these are the two things that were changing -- or the item that is changing between H3, H3+, and H4, by saying that it's within that range, we're referring to, in this case, the spring outflow and the resulting -- resulting outflow as an aggregate.

So H3 having the least amount of outflow required, H3+ having the next highest amount of outflow required for spring outflow, and H4 having the most required outflow for spring outflow.

MR. KELLER: So you spoke in terms of outflow, but there are other criteria to make -- there are other criteria involved in making the conclusion that CWF H3+ falls within the operational rage, H3 and H4, right?

Is that correct?

WITNESS REYES: No, that's not correct. I was -- when you say that it falls between an operational range, it's putting a -- I guess putting a bound on where H3+ is. And it's between H3 and H4 as far as spring outflow is concerned.

MR. KELLER: If we could move to -- scroll down to Line 14, please. Starting with that paragraph beginning with Line 14 and 15. When you describe the changes to spring outflow, you state that BA H3+ implemented the spring outflow criteria, which requires maintaining the March-through-May average Delta outflow that would have resulted due to export restrictions with the 2008, 2009 Biological Opinions without CWF. This requirement was achieved by constraining the total Delta exports in April and May per the 2009 NMFS Biological Opinion, San Joaquin River inflow-export ratio constraint.

Does CWF H3+ also include the San Joaquin River export ratio as a means to comply with spring Delta outflow requirement for April and May?

WITNESS REYES: It's applied in April and May as an exception when total Delta outflow reaches 44,500 cfs.

MR. KELLER: Thank you. Are petitioners at

this part of this proceeding requesting the permit terms restrict operations by restricting total Delta exports in April and May pursuant to San Joaquin River inflow-export ratio?

WITNESS REYES: I'm not sure I quite understand the question. Could you repeat that, please?

MR. KELLER: Because the San Joaquin -- the question was are petitioners requesting a permit term to restrict operations by restricting total Delta exports in April and May to under San Joaquin River inflow-export ratio?

WITNESS REYES: I believe that's a policy question. Maybe I'm not the best to answer, but I don't believe so.

MR. KELLER: Okay. Is there some other operational mechanism that's going to be used to comply with the spring outflow requirement in April and May?

WITNESS REYES: As modeled, I'd say it's an export reduction.

MR. KELLER: Inclusion of the San Joaquin River inflow-export ratio in CWF H3+ to comply with the spring Delta outflow requirement results in less South Delta exports in April and May under CWF H3+ as compared to under H3 and H4; is that correct?

WITNESS REYES: Yes, the H3, and I'm not absolutely sure about H4, what the effect is on the export there.

MR. KELLER: South Delta exports in April and May under CWF H3+ are less than under H3 and H4 in those respective months; is that another example of CWF H3+ not being within the range of H3 and H4?

MR. MIZELL: Objection, assumes facts not in evidence. There's been no other examples of H3+ being outside of the range of H3 and H4. If the questioner would like to rephrase in the singular...

MR. KELLER: I believe Mr. Reyes asked -- answered previously about spring outflow, giving an example of being outside of the range of H3 and H4.

WITNESS REYES: I think that is exactly the opposite of what I said. I'm saying, as far as spring outflow is concerned, H3+ is within the range of H3 and H4.

MR. KELLER: You're right. I apologize. That's incorrect. So in this instance, then, with spring -- South Delta exports in April and May being less in -- under CWF H3+ than under H3 and H4, is that an example of being outside the range of H3 and H4?

WITNESS REYES: I'm not sure if that applies in the case of Delta exports because, when we were

referring to our range, operational range, we were referring specifically to the spring outflow.

MR. KELLER: Okay. Thank you, Mr. Reyes. I'm going to ask a few final questions of Ms. Smith.

Can we go back to DWR-1015, please. And start with Figure C8 On Page 16.

Ms. Smith, Figure C8 is a cumulative probability plot for exceedances, D1641 Fish and Wildlife EC objectives at Prisoner Point. And it shows that CWF H3+ exceeds the standard approximately 13 percent of the time?

WITNESS SMITH: Yes, yes.

MR. KELLER: Would you agree with that?

WITNESS SMITH: Yes.

MR. KELLER: On Page 25, it's Figure C9. That figure is a cumulative probability plot for exceedances, D1641 Ag EC objective at Emmaton which shows exceedances of CWF H3+ approximately 16 percent?

WITNESS SMITH: Could you roll that up please, Mr. Hunt?

MR. KELLER: C9 is on Page 25.

WITNESS SMITH: It was there. It just wasn't there on the -- okay. That's approximately, yes. You said 16 percent? Is that what you asked? Could you repeat the question?

MR. KELLER: I asked if it showed that CWF H3+ exceeded the standard objective approximately 16 percent of the time.

WITNESS SMITH: Yes, that's correct.

MR. KELLER: Lastly, C13 is -- Figure C13 is on Page 27, and it's a cumulative probability plot for exceedances of D1641 at Contra Costa County chloride standard. And it shows that the chloride standard could be exceeded by as much as 500 milligrams per liter of chloride; is that correct?

WITNESS SMITH: That's what it shows, but that is a definite model anomaly between the -- the time steps. It's a result of the time steps between the inflow and the exports at Contra Costa Canal.

MR. KELLER: Okay.

WITNESS SMITH: And additionally, these are model results -- and this was stated before -- that the operations -- and you can talk to Mr. Miller about this -- but we're able to take care of a lot of these modeling anomalies that we're not able to deal with in a month.

MR. KELLER: Okay. I think you preempted my question exactly because you're referring to real-time operations that were described by Mr. Miller, I think, yesterday, that they tried to deal with potential

exceedances --

WITNESS SMITH: That's correct.

MR. KELLER: -- in real-time operations?

WITNESS SMITH: That's correct.

MR. KELLER: So your testimony -- so it's your statement that the likelihood of exceedances for the water quality objectives under CWF H3+ is actually less than what's depicted in the figures in your testimony?

WITNESS SMITH: Yes, based on information I've got from operations, yes, I believe that the exceedances would be less.

MR. KELLER: The effects of those real-time operations aren't reflected in your figures because those real-time operations aren't reflected in the CWF H3+ operational criteria, correct?

WITNESS SMITH: The -- no, that's not -- not quite correct. I'm not -- so could you repeat your question, and I'll try and clarify?

MR. KELLER: Sure. So my question was the effects of those real-time operations are not reflected in the figures in your testimony because real-time operations aren't included in CWF H3+, the operational criteria of CWF?

WITNESS SMITH: The operation criteria are included. And I can defer to Mr. Reyes on that. It's

just that the models aren't able to model some of the real-time things that occur that the operators are able to -- to evaluate that the models aren't able to evaluate.

MR. KELLER: Okay. I understand that.

Under different model assumptions, for example, higher Delta outflows, it's possible to model operations under which various EC objectives would be met; is that correct?

WITNESS SMITH: Can you restate that? Sorry.

MR. KELLER: Maybe I'll ask it in a different way as opposed to restating it, which is, if we were to include different -- under different model assumptions, such as higher Delta outflows, which may represent real-time operations or could have represented real-time operations that were taken, it's possible to model those operations under which -- strike that. Let me rephrase it. I apologize.

I'm trying to get to -- if we were to attempt to model those real-time operations, for example, higher Delta outflows, model results could be such that EC objectives were met; is that correct?

WITNESS SMITH: The -- yes, but I'm not sure where the Delta outflows, if there was a real-time situation and we were -- and the criteria were in

effect, plus the additional situations that the operators deal with -- and Mr. Miller probably explain it better -- yes, those objectives -- my understanding is those objectives would be met.

MR. KELLER: Okay. I'll just ask one final question. And thank you for bearing with me Ms. Smith.

The simulation of CWF H3 operations in your testimony do not reflect real-time operations that may be conducted as part of the project?

MR. MIZELL: Objection, asked and answered.

CO-HEARING OFFICER DODUC: Let's answer it again.

WITNESS SMITH: The criteria -- and Mr. Miller has stated this. The criteria is part of those operations. And so, yes, that's included, but there are some aspects that the modeling can't cover that is not included.

MR. KELLER: Okay. Thank you, Ms. Smith. I appreciate it.

No further questions.

CROSS-EXAMINATION BY MR. WOLK

MR. WOLK: Dan Wolk for the County of Solano. I just have a couple of questions along the same lines as my colleague, Mr. Keller.

First, for Mr. Reyes, we could call up his

PowerPoint, DWR-1028, Page 12.

CO-HEARING OFFICER DODUC: You only have questions of Mr. Reyes?

MR. WOLK: I'm sorry. I have a couple for Ms. Smith as well, but that's it. They should be very brief.

Okay. So, Mr. Reyes, this is from your -- your PowerPoint. I'm sure you're familiar with it.

So just to make sure I understand this, under the CWF H3+ that operations's criteria it states that, if I'm reading this correctly, that it would be the same as the No Action Alternative with additional minimum flow requirement of 3,000 cfs from January to August at, you know, the minimum flow near Rio Vista. Am I reading this table correctly?

WITNESS REYES: Okay. For the category "Minimum flow near Rio Vista," you're looking at Cal WaterFix H3+?

MR. WOLK: Yeah. So it says, you know, CWF H3+ --

WITNESS REYES: It's the same as H3.

MR. WOLK: Same as the H3, right.

WITNESS REYES: Okay. Then reads, "Same as the No Action Alternative with additional minimum flow requirement of 3,000 cfs from January to August," yes.

MR. WOLK: Okay. Great. So I just want to make sure, judging by this in your testimony, that DWR is proposing to operate, you know, the future WaterFix project according to a January-through-August Rio Vista minimum flow requirement, 3,000 cfs.

WITNESS REYES: I think this is something where this is just a modeling -- assumption, although it's not a part of our project. It was something that was just left in the model. And I think it's meant to be not a part of the project.

And then I've reviewed the results from the Cal WaterFix H3+. And the months when this requirement actually controls is basically one month in the entire simulation. And so it was left in by mistake, as an operation. However, it's -- it does not control in the modeling, save for one month.

MR. WOLK: Let me unpack what you just said there, Mr. Reyes. So when you say it was a mistake in the modeling, are you saying that this -- what are you saying was a mistake? So what's the mistake --

WITNESS REYES: The criteria -- so under D1641, there's a Rio Vista requirement that is from September to December.

MR. WOLK: Right.

WITNESS REYES: And early generations of the

Cal WaterFix modeling extended a Rio Vista requirement from January through August, so essentially year round.

And however, that was never a part of the Cal WaterFix proposed project. That was something done as a modeling convenience because early editions of this were showing low outflows in certain months. So that was difficult for the DSM-2 model to process, so we needed something just to keep the flows higher until we essentially worked out what our issues were.

And those issues were worked out, however, the criteria was left in, just the modeling. And in this case, I'm talking about CalSim modeling.

MR. WOLK: Okay. So Mr. Reyes, now, I mean, if I or are general public or anyone really reading this slide, it says, "CWF proposed operations criteria," it has, "CWF H3+ which is the proposed model.

It says "same as H3+." That provides -- well, just forgetting even what we're talking about with Rio Vista, how are we supposed to read this slide? That it's something that may be disregarded or maybe filled with errors or -- I'm a little confused.

WITNESS REYES: Well, I wouldn't say it's filled with errors, but maybe just this one item. Like I said, this is reflective of the model, not

necessarily of the proposed operations.

MR. WOLK: In terms of thinking about, you know, the residents of Solano County or anyone else in the state who's trying to rely on these models, how are we supposed to read this PowerPoint then? I guess the bottom line is is DWR -- are they or are they not going to adhere to this minimum Rio Vista flow standard, 3,000 cfs?

MR. REYES: They are going to adhere to the D1641 Rio Vista standard.

MR. WOLK: So, well, then let me ask it a different way. Won't eliminating that January through August minimum flow requirement, won't that change the way that the WaterFix will operate and, in turn, change the environmental impacts of that project?

WITNESS REYES: And as I stated earlier, the modeling, when you review the actual flow at Rio Vista in the modeling, it never actually has a month where it's controlled by this requirement other than that one month. I believe it's one month. I'll have to double-check. But from my recollection when I reviewed this, it only controlled that one time. So --

MR. WOLK: Okay.

WITNESS REYES: -- I don't think the operation would change.

MR. WOLK: So, Mr. Reyes, has DWR then carried out CalSim II operation studies for CWF H3+ that do not include this January-through-August Rio Vista flow standard or, you know, this requirement?

WITNESS REYES: I don't believe so.

MR. WOLK: I mean, I couldn't find it. I didn't see it in the results but -- okay.

WITNESS REYES: But if we did, it would eliminate that one month, I would guess.

MR. WOLK: Okay. Thank you, Mr. Reyes.

So, Ms. Smith, I have a question for you kind of on the lines of what my colleague was talking about. If we could pull up your PowerPoint, DWR-1027, and turn to, I think, Slide 20. So line -- excuse me, Slide 20.

So Ms. Smith, just to kind of refresh your recollection of this one, this shows monthly averages -- excuse me -- monthly average EC at San Andreas Landing. I'm sure you're familiar with this slide.

WITNESS SMITH: I am.

MR. WOLK: Too familiar. So if I'm reading this correctly, at least for the months of October, November, and December, the proposed project, CWF H3+, has -- shows greater monthly average EC at San Andreas Landing compared to certainly H3 and H4 and at least in

October and November more than the No Action Alternative; is that correct?

WITNESS SMITH: Yes. It's showing higher monthly average EC in the areas that you described.

MR. WOLK: Okay. So -- and just to use layman's terms then, instead of using the term "EC," I think it's fair to say, then, that that shows that, at least in October and November, that it represents a degradation of water quality in the Delta at least with respect to EC.

WITNESS SMITH: I would say yes. There's a difference between the -- the EC values between the No Action and the California WaterFix H3+.

MR. WOLK: Okay. Thank you.

And then if we could just really quickly go to Slide 24, this is the slide that my colleague spoke of. This is the average chloride concentration.

In this one, if you look at, say, November, which you were talking about before, that shows CWF H3+ being larger than the No Action Alternative, same with October, actually. And, likewise, that -- you know, again, to use layman's terms -- that shows that there is a degradation of water quality, at least here with respect to chloride concentration, at Contra Costa Canal under the project than compared with the

No Action Alternative?

WITNESS SMITH: There is a difference in the results, yes.

MR. WOLK: Okay. So I just want to make clear then that -- because Ms. Buccholz did testify to this, that, you know, that the proposed project CWF H3+ is within the range H3 and H4, but clearly, at least with these two key metrics about water quality, it's outside those bands. That's one thing I want to just at least confirm; is that correct?

WITNESS SMITH: So in Ms. Buccholz was talking about that, she was talking about the operating criteria. She wasn't talking about the EC results.

MR. WOLK: Okay. Fair point. But at least judging by this, it's outside those bands of H3 and H4, in terms of water quality, water quality degradation, at least for those months?

WITNESS SMITH: They are different from H3 and H4, but what Ms. Buchholz talked about was the operating criteria.

MR. WOLK: Okay. Thank you.

Okay. That's it for me. Thank you. I think that's it from our group as well.

MR. KELLER: Okay. Thank you very much.

Thank you, Ms. Meserve, too, for letting us

hop in here.

CO-HEARING OFFICER DODUC: Thank you. Thank you for raising a line of questioning that I am now confused about, Mr. Reyes.

We have been -- well, we heard that CWF H3+ is now the proposed project that is before us. And you've conducted modeling of CWF H3+ to which all of these witnesses have reviewed the modeling and base their testimony and their conclusion on that modeling.

And now you've just said, I think, in response to Mr. Wolk's question, that the proposal from petitioners is to operate to D1641, which is not necessarily what is reflected in the modeling for CWF H3+, case in point being this minimum flow here, Rio Vista, that Mr. Wolk highlighted.

So I'm confused because so far, we've been focusing on CWF H3+. And I was under the impression that that would be -- that is the current proposal from petitioners, the current operations criteria, as it says on your slide right here, for what is before us.

So now I'm hearing, based on your answer to Mr. Wolk, that that's not necessarily true. So perhaps I'm missing something that you can clarify.

WITNESS REYES: Well, I think -- I think you have it. It's -- like said, this is an assumptions

matrix, which is a review of the model. And this reflects the model; however, the model maybe didn't reflect the proposed operations in this one case.

CO-HEARING OFFICER DODUC: Just this one case?

WITNESS REYES: Yes.

CO-HEARING OFFICER DODUC: What about all the other cases where, under CWF H3+, it says "same as H3," but H3 is different from D1641 or the No Action Alternative?

WITNESS REYES: Yeah, my point is that wherever it says "same as H3" and maybe H3 says "same as NAA," those are all the same.

This is the one criteria, and probably maybe a WaterFix criteria, that's different than what the proposed operation is.

CO-HEARING OFFICER DODUC: Is it the one and only?

WITNESS REYES: That I know of, yes.

CO-HEARING OFFICER DODUC: Okay. It is the one and only difference?

WITNESS REYES: Yes.

CO-HEARING OFFICER DODUC: All right. Thank you.

Ms. Meserve, hopefully that has streamlined your questions for Mr. Smith and Mr. Reyes.

MS. MESERVE: Yes.

EXAMINATION BY MS. MESERVE (resumed)

MS. MESERVE: I should just need maybe 15 minutes or so to wrap up.

So just to start with Mr. Reyes, in following up on what you looked at in your modeling, would you think that it's possible that -- you've said that, in general, that CWF H3+ is similar to the previous operational scenarios.

Is it possible that those similar operations might have different impacts on a particular water user, for instance, you know, a water user who diverted water downstream from the proposed North Delta diversions?

WITNESS REYES: I'm sorry. I'm finding that question a little vague. And maybe it wasn't you, but could you maybe specify like a specific change or operation? I'm having trouble following where you're going with that question.

MS. MESERVE: The modeling approach is looking at the these large averages over time for a month or a year perhaps. And from a water user standpoint, we're concerned about particular water users in particular locations who are using water at particular times.

So I'm just asking whether, if an operation

that you might find similar might have, for instance, on a day-to-day basis a different -- a difference that wouldn't be similar for one of those types of water users.

WITNESS REYES: Again, when you said "day-to-day," I think, I last stated in my earlier, I guess, reply to some questions about the proper use of models, I'm speaking to a changed condition and not a comparison of a particular time period to that same exact time period in two different scenarios.

So I don't know exactly -- if your question is about that, are you referring to a specific time period difference? Or is it, you know, something else?

MS. MESERVE: Let me give you an example. So thinking of --- obviously we're comparing No Action Alternative to CWF H3+. And then we're trying to do that all by comparing CWF H3+ to the prior scenarios, H3 and H4, and trying to keep all this straight, right?

So if we're trying to understand those impacts on the legal users of water who are in specific locations, how is information you're putting forth regarding the modeling going to inform that?

WITNESS REYES: I think the information I displayed in my presentation -- and it's also part of my testimony -- looked at a long-term average for

different delivery classes and also look at exceedance for different storage and different reservoirs.

And for the deliveries, it also looked at the averages over different water year types. And so I guess for someone else -- for someone looking at delivery information, that's the information that was provided in my presentation and my testimony. And the modeling itself, which has been provided, has the complete data set that is not averaged. And it has it for all the scenarios you spoke about, H3, H3+, and H4.

MS. MESERVE: And so maybe this is -- so it really doesn't speak to an individual -- I'm not talking about an export water user. I'm talking about water users within the Delta that rely on certain water qualities and availability of water, for instance.

So the modeling that you've done really doesn't speak to that is what I hear you saying; is that correct?

WITNESS REYES: No, I'm not saying that. As a part of -- like, if we were speaking about the Delta and there are Delta users that may be, like, riparian users or users like that, those are accounted for in our model through what we call their conceptive use demand. And those tend to be met first or are met first in our model.

MS. MESERVE: But the water quality that one of those users, say, downstream from the proposed diversions might expect to receive under a CWF H3+ operational scenario, you haven't spoken to those, or the model doesn't try to predict that level of granularity, if I'm understanding your --

MR. MIZELL: Objection, asked and answered at this point. Mr. Reyes has explained many times that the modeling has data for all the points that Ms. Meserve might be interested in and at a fine time step and not averaged.

So to the extent she's looking as to where the information is, Mr. Reyes has indicated now three times, I believe, that it is in the modeling.

CO-HEARING OFFICER DODUC: Does that also apply to water quality data? I'm seeing --

MS. MESERVE: I'm seeing that, Ms. Smith, I think, wants to answer this.

WITNESS SMITH: Water quality is available with DSM-2.

WITNESS BRYAN: I might also add that water quality data, detailed water quality data is available in the Final EIR as well as SWRCB-108, which was the information following the publication of the proposed Final EIR. And Chapter 8 is Water Quality. And it has

appendices A through P. And so there's a lot of water quality data available here.

MS. MESERVE: Correct, but none of that data is speaking to, if I'm talking about the Bogle diversion one mile downstream from, you know, CWF Intake Proposed No. 5, we don't have that kind of data in comparative or otherwise, correct?

WITNESS SMITH: I'm not sure of the specificity of the data that you're talking about, but within DSM-2 there are locations at the node where -- locations at nodes that represent farmers' diversions, both in amounts and also returns and also water quality.

MS. MESERVE: And those outputs that were provided in -- on November 30th for the new operational scenario, that would be more relevant than the items that Dr. Bryan has just referenced, wouldn't it?

WITNESS SMITH: I do not know. I think it depends on -- I think we need more clarification on what you think is relevant.

MS. MESERVE: Well, just to follow up, Ms. Smith, on a couple of questions that Mr. Herrick asked you earlier with respect to the South Delta, you have testified that the CWF H3+ is similar to the other outputs with respect to salinity. But you didn't look

at specific diversions in your analysis in the Northern Delta or Central Delta, did you?

WITNESS SMITH: I mean, I know that there was a lot done in Part 1. And so, no, I did not do -- I did not look at each and every location. I looked at locations that were representative of different regions of the Delta.

MS. MESERVE: So upon the change to a different operating -- initial operating scenario, no additional specific analysis was developed for water users within the Delta; is that correct?

MR. MIZELL: Objection --

CO-HEARING OFFICER DODUC: There's an objection being voiced?

MR. MIZELL: There is an objection being voiced. Again, this is the same objection we raised with Mr. Herrick about this line of questioning. The ruling precluded us from putting in evidence at this point in time on specific injury to legal users of water. So these lines of questions will, of course, be no because no one requested that we do that.

CO-HEARING OFFICER DODUC: So noted.

MS. MESERVE: A little frustrating, however, because we were told we could ask questions about --

CO-HEARING OFFICER DODUC: You can ask the

questions, Ms. Meserve, but the answer will be no.

MS. MESERVE: The ability to ask the question is not that helpful it turns out. Yeah.

I mean, I guess one should follow up on Mr. Mizell's comment, however. It would be possible that an expert could have looked at data, for instance, and it may not be within the testimony. And I know that was something that came up in Part 1 when we were able to cross-examination, for instance, Dr. Nader-Tehrani, and he disclosed different information that he looked at.

So I think it's fair to ask the question. I understand what you are saying; they may not have. Okay.

Now, Mr. Reyes, for the CalSim modeling in Part 1 that included the OMR limit of 5,000 cfs, do you know why those specific limits were included?

WITNESS REYES: I'm not sure what you're referring to there.

MS. MESERVE: The OMR limit in October and November of minus 5,000 cfs -- this is going back to the comparison between the --

WITNESS REYES: Sure.

MS. MESERVE: -- prior modeling and the current modeling.

WITNESS REYES: So what is your question?

MS. MESERVE: Do you know why those limits on OMR were included?

WITNESS REYES: Are you referring to Cal WaterFix H3+?

MS. MESERVE: It is H3 and H4 and then the BA H3+ all included the OMR limit.

WITNESS REYES: Oh, gotcha. Okay. Actually, I don't know. There's -- in that modeling, there was OMR limits that were more stringent than the current BiOp OMR limits that were part of the defined project. And I'm not sure why it went further than the BiOps. And for H3+ in October and November, they were rolled back to provide outflows, but I'm not sure for the reasoning.

MS. MESERVE: Now that those OMR limits are gone, are the CWF H3+ operations consistent with the reduction of exports that is required during the pulse flow period of 14 days? This is in October and November.

WITNESS REYES: Yeah, I'm -- I guess I'm not sure what pulse flow periods you're talking about. Yeah, I'm not sure what you're talking about.

MS. MESERVE: All right. I'll move on.

Ms. Smith, in your testimony on Page 17, you

discuss how the water quality and water levels for CWF H3+ are similar to H3 and H4. The prior cross-examiners talked about the difference in the April and May.

Also, isn't another of the differences in your testimony regarding the removal of limits on diversions in October and November that are increasing salinity and decreasing outflow under CWF H3+?

WITNESS SMITH: Could you pick up those questions and the description? I got a little lost when I was looking at Page 17 and then --

MS. MESERVE: Sorry.

WITNESS SMITH: -- I wasn't quite sure what you were connecting.

MS. MESERVE: Yeah, sorry. I'm just -- on page -- let's see. Your testimony is DWR --

WITNESS SMITH: Oh, I'm sorry. It's 1015, yes.

MS. MESERVE: 1015. And then I was looking on Page 17 and just following up on some of the questions that were already asked regarding the differences. Let me find it -- Lines 11 through 14. Similar when compared the No -- NAA.

So one of the differences that's shown in some of the graphs at the end of your testimony, however, is

changes in water quality and salinity, in particular in October and November; is that correct?

WITNESS SMITH: Yes, there are salinity differences. And I think what I did is, when I made the statement, is I look at all months at all locations when the making the assumption of the majority of the results.

MS. MESERVE: And then could we look at the DWR-1031, which is the figure showing the range of alternatives and how CWF H3+ -- so given that the salinities are much higher in October and November and then outflows are much lower, wouldn't it be incorrect for the CWF H3+ to be in this position between H3 and H4?

MS. ANSLEY: Objection. It's asked and answered, I believe, by the last questioners. Even it was explained that this graph pertains to criteria. So this was already gone over.

MS. MESERVE: It says "Range of Alternatives." It actually doesn't say anything about operating criteria.

MS. ANSLEY: I think if you look at the blue.

CO-HEARING OFFICER DODUC: Are you talking about the blue box, Ms. Ansley?

MS. ANSLEY: Yes. And I think this was also

testified to by Ms. Buccholz at some length as well. And I think that -- I believe that one of the witnesses who was answering questions with the last questioners pointed specifically to -- maybe it was Mr. Reyes -- pointed specifically to Ms. Buccholz' testimony where she explained what she meant by H3+ falling between the range of H3 and H4. So this has been asked a number of times.

CO-HEARING OFFICER DODUC: It has been.

Ms. Meserve?

MS. MESERVE: I would move to strike this exhibit. I don't think it's helpful to the trier of fact or to the public because it's indicating that the H3+ is within the -- somewhere between 4A-H3 and 4A-H4, but with respect to the salinity in the fall months in all those various locations at the back of Ms. Smith's testimony, as well as with respect to the spring outflow requirements and various other examples, it really isn't within the range as they've proposed it and as they've modeled it.

So I don't see how this figure is representative of the information that we've heard.

WITNESS REYES: If I can answer --

CO-HEARING OFFICER DODUC: I understand when you say -- the parameters that you describe as being

outside of range of H3 and H4 were the results from the modeling.

MS. MESERVE: Yes.

CO-HEARING OFFICER DODUC: Not the operational criteria themselves, but the results of the modeling.

MS. MESERVE: I believe it would be splitting hairs to try to separate the operational criteria from the results of the modeling because obviously the original criteria is not leading to the result that was intended.

CO-HEARING OFFICER DODUC: Because the results of the modeling does not take into account the real-time operations that are also part of the proposal is my understanding.

MS. MESERVE: That's the allegation. I do have some questions about how real-time operations would prevent the result that's been modeled.

CO-HEARING OFFICER DODUC: We have gone through that numerous times in Part 1.

Mr. Mizell or Ms. Ansley, anything you want to add?

MR. MIZELL: Not at this time. I believe the Hearing Officer has it correct.

CO-HEARING OFFICER DODUC: Your objection is overruled, or your motion is denied, whichever one it

is.

This is what happens when you have an engineer try to do this.

And your 15 minutes-plus are up, so, Ms. Meserve?

MS. MESERVE: Can I have one moment, please?

CO-HEARING OFFICER DODUC: Everyone stretch while we're waiting. We're not taking a break.

MS. MESERVE: I guess just follow up.

CO-HEARING OFFICER DODUC: Follow-up, one question? Two questions?

MS. MESERVE: I had prepared more. I would insist on making them, but I don't have much more at all. I wanted to follow up on something Ms. Smith said about this exact issue of the real-time operations potentially correcting for the things they saw in the model.

And I was just wondering how is it, for instance, it would only be able to be corrected, Ms. Smith, after it had already occurred in the real times's operations wouldn't it.

WITNESS SMITH: No, I don't agree with that.

WITNESS MILLER: Can I add a little bit?

MS. MESERVE: Go ahead.

WITNESS MILLER: Mr. Leahigh and Ron --

Mr. Milligan talked about this in great detail in Part 1. But essentially, in real-time operations, we have the ability to do -- be a little proactive when we see water quality increasing, we can start taking action, for example.

MS. MESERVE: So what would be the consequence if the exceedances that show up in the model actually do occur and aren't prevented?

MR. MIZELL: Objection, vague question. If the exceedances do occur, how can it be prevented at the same time?

MS. MESERVE: o, I said what would be the consequences? If he's incorrect and they aren't prevented, they are they're occurring, right? Which is similar to going back to Part 1, our existing experience with projects.

WITNESS MILLER: Mr. Leahigh, in his testimony, showed that the compliance with D1641 and 1485 was 98.9 percent in compliance. And that was compared to some of the modeling that was presented there. And I don't remember what exceedances the modeling was showing. So it would be -- it was describing some other sort of proactive ability.

MS. MESERVE: I won't raise all of the old arguments regarding the exceedances/violations. Thank

you.

No further questions.

CO-HEARING OFFICER DODUC: Thank you, Ms. Meserve.

Mr. Jackson, you mentioned that you were sharing cross-examination questions or duties with Mr. Shutes.

MR. JACKSON: That's correct.

CO-HEARING OFFICER DODUC: And I will ask you to keep in mind that we will be adjourning at 5:00 or earlier, so please fine the appropriate break time in your cross-examination for us.

MR. JACKSON: How about right now? I'm wore out.

CO-HEARING OFFICER DODUC: You're not wasting 40 minutes. I'm going to squeeze every minute I can out of you guys.

MR. JACKSON: Well, you were talking about it earlier.

CO-HEARING OFFICER DODUC: I think it will be a very nice reward for these witnesses if we can dismiss them by Friday, but we'll see.

MR. JACKSON: I was trying to see whether or not we needed all 11 of them for the last 30 minutes in the traffic jam.

CO-HEARING OFFICER DODUC: I have to stay, so they have to stay.

MR. JACKSON: All right.

CO-HEARING OFFICER DODUC: And I'll just note, if one of them leaves, they'll be the one that has the key answer to one of your questions, Mr. Jackson.

MR. JACKSON: We're going to begin with Mr. Shutes, and I'll follow.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: I'll use up more time, but I'll follow.

CO-HEARING OFFICER DODUC: And Mr. Shutes, given that it's 4:22, what do you think you'll be covering just until 5:00 o'clock? And then we will restart your list tomorrow. And maybe overnight you'll shorten it. I can dream.

MR. SHUTES: Is this on? The button doesn't seem to work.

CO-HEARING OFFICER DODUC: It's fine.

MR. SHUTES: The issues that I have are for Mr. Miller and for Mr. Reyes. Specifically, what CWF H3+ is.

CO-HEARING OFFICER DODUC: Thank you.

MR. SHUTES: Whether it is a -- and the distinction between modeling assumptions and

operational rules, what the rules are, the variables in operations, where we can find the rules, how they may change, and who will enforce them, and then some details about the applications of the operating rules.

So to start, I'd like to bring up Mr. Miller's testimony. And that -- I'd like to turn to Page 3. That's DWR-1011. I'm not sure how far I'll get here. I'm just going to go until I have to stop.

I think you're right. It doesn't seem to have a light.

CROSS-EXAMINATION BY MR. SHUTES

MR. SHUTES: Good afternoon, Mr. Miller. I'm looking at the top, the bottom of Page 2, Line 27 at the top of Page 3 to the first line, where it says your testimony demonstrates how DWR might operationalize or implement key modeling assumptions, do you recall that?

My question, my first question is isn't -- CalSim is a mathematical model that represents CVP and SWP operations and related hydrology; isn't that correct?

WITNESS MILLER: That's my understanding, but I'm going to refer most of the modeling questions to Mr. Reyes.

MR. SHUTES: Well, most of my questions here concern the relationship between modeling and

operations. So I'm -- I will direct most of my questions to you. If Mr. Reyes is the more appropriate person, I may ask him, or he can jump in.

So isn't it true that, rather than what you've stated here, that you're going to operationalize modeling assumptions, what you're really going to operationalize is the rules that the modeling assumptions seek to -- to input into the model; is that correct?

MR. MIZELL: Objection, misstates the witness's testimony.

CO-HEARING OFFICER DODUC: Overruled. I would like to understand that. And if it's a misstatement, then Mr. Miller can correct Mr. Shutes.

WITNESS MILLER: I was going to ask Mr. Shutes to restate his question.

MR. SHUTES: Isn't it true that what DWR operators will try to operationalize are the rules for CWF H3+ that form the basis of the modeling assumptions rather than operationalizing the modeling assumptions themselves?

WITNESS MILLER: I'm losing a little bit of the distinction here, but what has been -- what has been modeled -- and I guess the assumption is that were used in model -- need to be operationalized for

implementation and daily operations.

MR. SHUTES: So I think this is part of the problem that I've had throughout this process.

If we could pull up Mr. Reyes Exhibit 1069, I think we could -- we could look at this a little more carefully.

And a number of folks have touched on this in the last couple of days, and even Ms. Meserve, as to whether the tables that Mr. Reyes presented here were actually the proposed project or whether they were the modeling assumptions for the proposed project.

And I don't understand which they are and what the distinction is.

So if we can turn to Slide 11 please.

At the top, and it's hard to see here but there's an area in -- in gray that says "These parameters are for modeling purposes. Actual operations will be based on real-time monitoring of hydrologic conditions," and so forth.

So my first question is does the comment in the gray box here refer just to Table 2, or does it refer to all the subsequent tables going through Page 20?

WITNESS RYAN: It refers to just this table here. So it's talking about the North Delta diversion

bypass flows. And you see a bunch of rules down below that that essentially define how the model is approximating the North Delta diversion bypass flow rules. And, you know, assumptions have to be made because it's a model. So the low-level pumping period is December to June.

And are you going to stay at that low-level pumping if you're above 5,000 cfs, no more than 300 cfs per each intake? And you're essentially waiting for the first pulse to come. And so there's a description of how we're defining a pulse. And it's Sacramento River flow at Wilkins Slough increasing by more than 45 percent within a five-day period is Criteria 1. And Criteria 2 is a flow with anything greater than 12,000 cfs.

Now, that's the model, approximation of what a pulse flow may be. But in real-time, you know, they may be looking at other things that the CalSim model doesn't have information about.

MR. SHUTES: Okay. But as part of the proposed project, back to Mr. Miller, will low-level pumping be part of the proposed project?

WITNESS MILLER: Yes, as described in my example of the fish pulse protection actions. Based on actual fish presence, low-level pumping will be

initiated based on some criteria like what I explained, Knight's Landing Catch Index greater than five fish per day.

MR. SHUTES: I understand. And initial pulse protection will also be part of the project, not the modeling but the project? That's part of what you're proposing for what you're calling CWF H3+; is that correct?

WITNESS MILLER: Based on actual fish presence, is it?

MR. SHUTES: Yes. Initial pulse protection, however you've defined, it is that part of the proposed project H3+ that you said would have not unreasonable impacts on fish?

WITNESS MILLER: How are you defining "initial pulse protection," like it's interior in the modeling assumptions?

MR. SHUTES: Is there a place that it's stated differently?

MR. MIZELL: Objection, asked and answered.

MR. SHUTES: Mr. -- go ahead.

CO-HEARING OFFICER DODUC: No, I don't think it was answered. Overruled.

WITNESS MILLER: I was going to probably refer to the -- either the Biological Assessment or the

FEIR/EIS.

MR. SHUTES: Okay. And going through the rest of Mr. Reyes's tables, the pulse -- post pulse operation flipping to page -- Slide 13, the different -- Level 1, if it's up there, please. Level 1, post pulse operation; Level 2; Level 3; and so forth. Are those categories going to be part of the proposed project?

WITNESS MILLER: That is my understanding. And there's still some uncertainty in terms of how we will move through these's these levels. Those conditions still need to be determined, and it will be based on discussions with the Fish and Wildlife -- not Fish and Wildlife -- the fisher agencies, most -- the fisher agencies.

MR. SHUTES: Are the numbers in this table the initial operating criteria?

WITNESS MILLER: Can you repeat that? I'm sorry.

MR. SHUTES: Are the numbers in this Sub Table A the initial operating criteria for CWF H3+?

WITNESS MILLER: Yes.

MR. SHUTES: Are the categories, like, level 1 post pulse operations et cetera, are those categories subject to change, or just the values within the

different columns?

WITNESS MILLER: So it would be the criteria that -- at what point do you move from Level 1 to Level 2? Under what conditions do you move to the higher levels is still needing some resolution.

MR. SHUTES: But the three levels are part of the proposed project?

WITNESS MILLER: Yes, that's my understanding.

MR. SHUTES: Okay.

WITNESS MILLER: I think Mr. Greenwood wanted to chime in on something.

WITNESS GREENWOOD: All I wanted to clarify was that the test period that I mentioned earlier on would be the time where, before full operations, where I think it's specified in the -- in the permits that the information to make decisions about the -- the operations plan based on Level 1, Level 2, Level 3, and when it's appropriate to switch between those would be based on the results from the testing -- testing phase, as I understand it.

MR. SHUTES: So is there a table that shows all the different operating criteria, not the modeling criteria, but the operating criteria initial operating criteria for CWF H3+? And can anyone answer that?

(No response)

MR. SHUTES: I guess my question, then, is why not?

MR. MIZELL: Objection, badgering the witness.

CO-HEARING OFFICER DODUC: Overruled.

WITNESS REYES: Well, I would just like to say that -- and I think that these modeling assumptions are the starting place because we're talking a project that hasn't be constructed, hasn't be operated to. And so when we're talking about operational factors that need to be weighed, those haven't necessarily been developed yet in terms of a full plan. I mean, this is stuff that's going to develop.

And -- and the modeling assumptions, you know, they make some -- some assumptions to simplify things for modeling. And I think as we develop an operational rule I'll assume it's similar. You'd have some starting point, but then it's going to take real-time information to actually operate the system.

And that's what Mr. Miller is referring to when he he's saying operationalize.

WITNESS MILLER: And I think the Biological Assessment -- I forget the exhibit number now.

MR. SHUTES: Okay. I don't know how to do this exactly, but --

MS. ANSLEY: Wait. I'm sorry. I don't think

Mr. Miller was finished.

MR. SHUTES: Excuse me.

CO-HEARING OFFICER DODUC: Please finish.

WITNESS MILLER: The Biological Assessment has a -- a comparison table, Table 3.3-1

MR. SHUTES: Is that a comparison table of CWF H3+?

WITNESS MILLER: That is the updated Biological Opinion.

MR. SHUTES: I'm sorry. I didn't catch that.

WITNESS MILLER: The updated Biological Opinion -- sorry, I mean Assessment.

MR. SHUTES: And is that one of the exhibits here?

WITNESS MILLER: Yes, I don't remember the exhibit off the top of my head, but --

MR. SHUTES: The revised Biological Assessment? Is that what we're talking about?

WITNESS MILLER: 11- -- DWR-1142.

MR. SHUTES: So one of the problems I've had throughout this process is trying to keep up with what is a modeling assumption and what is part of the proposed project. And I guess what I'd like to request is that somebody put together something that shows what the rules are and where they come from.

I don't know to whom I make that request or how I should go about it, but it has been extremely difficult to follow the different aspects of this proposed project. And there's been considerable confusion among the witnesses over the last couple days about what modeling corresponds to what and what exactly we're talking about when we're talking about it. I'll continue.

WITNESS MILLER: Did you want to see the table?

MR. SHUTES: Pardon?

WITNESS MILLER: In Chapter 3?

MR. SHUTES: Yes, please.

MR. MILLER: 3-86. Scroll up just a little bit. I think this Table 3.3-1 and it continues on.

MR. SHUTES: And this is current as of today?

WITNESS MILLER: I believe so.

MR. SHUTES: All right. Very good. Let's continue. Mr. Miller --

Can we good back to Mr. Miller's testimony, please.

Page 8, Lines 15 through 17, you talk about the winter-run and spring-run Chinook. If they are greater than five fish per day, there's then a pulse protection operation that's implemented, correct?

WITNESS MILLER: I -- the Folsom is specifically if the Knight's Landing Catch Index of winter-run and spring-run Chinook salmon are greater than five fish per day, then a pulse protection operation --

(Reporter interruption)

WITNESS MILLER: I'm sorry. Do you want me to go back?

THE REPORTER: Yes, that would be good.

WITNESS MILLER: Specifically, if the Knight's Landing catch index -- I guess that is in a shorten formed there -- of winter-run and spring-run Chinook salmon are greater than five fish per day, then a pulse prevention operation is implemented.

MR. SHUTES: Does that apply only to winter-run and spring-run Chinook?

WITNESS MILLER: That's what, the Knight's Landing Catch Index?

MR. SHUTES: Correct.

WITNESS MILLER: My understanding, and I would probably have to defer to Mr. Greenwood, but Knight's Landing Catch Index catches more than spring-run and winter-run.

MR. SHUTES: I understand that. But will the pulse protection action be triggered only if winter-run

or spring-run are captured or if any salmon are captured?

WITNESS MILLER: I based this one on what was described in the NMFS biological opinion.

MR. SHUTES: This is either for Mr. Greenwood or for Mr. Miller.

How would -- how would you distinguish between spring-run, winter-run, or other runs of salmon?

WITNESS GREENWOOD: I believe the -- well, currently what's done I think is length based. But I believe the Incidental Take Permit speaks to a genetic-based approach for that determination, recognizing that this initial value of five fish per day could be subsequently refined during the time leading up to the test period and during the test period and before the actual -- final operations commence.

MR. SHUTES: So is the intent to trigger the pulse only for winter-run and spring-run?

WITNESS GREENWOOD: That's the focus of the pulse protection action, yes.

MR. SHUTES: So if there were releases of hatchery fish from Coleman that were not spring-run fish and a large amount of fish moved downstream past Knight's Landing and were captured in the rotary screw

trap, those would not trigger a pulse protection action?

WITNESS GREENWOOD: Based -- I think the pulse protection action is based -- as we've been discussing it there from the -- what's shown on the screen is specifically focused in on winter-run and spring-run Chinook salmon reaching a threshold catch. But I think there's also other considerations, for example, increases in river flow as well.

But what's specifically written here is focusing in on the winter-run and the spring-run.

MR. SHUTES: So Mr. Miller, in your Example 1 of this, you mentioned a pulse protection action in March. Which run of fish would that be aim at?

WITNESS MILLER: Well, what I looked at, what I looked at was the actual Knight's Landing catch index, and they had broken it into pieces based on -- I mean, just based on length. They had a spring-run column and a winter-run column and a fall-run column and maybe -- maybe another one as well.

So I based these actions in my analyses on the columns representing fish for the winter-run and the spring-run.

MR. SHUTES: And so length is the determinant?

WITNESS MILLER: In my example, yes, it would

have been the length.

MR. SHUTES: Could we pull up Mr. Wilder's testimony again, Page 10. I believe you want the signed one. There you are.

Doesn't, Mr. Greenwood or Mr. Wilder -- and if I'm not stating the doctors correctly, please forgive me, Dr. Wilder.

Isn't there considerable overlap in the life history of the different runs of salmon in Sacramento River?

WITNESS GREENWOOD: Yes.

MR. SHUTES: And wouldn't it be hard to distinguish between a -- in certain months, between a, say, a late fall-run and a spring-run out migrant?

WITNESS GREENWOOD: It may be, depending on the criteria that are used to assess the identity of a particular run; length based, has overlap. I believe I mentioned that I think the ITP, if I'm remembering correctly, contemplates using a genetic assignment method.

MR. SHUTES: And how would that work?

WITNESS GREENWOOD: Where fish sampled in rotary screw trap at Knight's Landing, for example, have a rapid genetic assessment done.

MR. SHUTES: That would be a scale sample or

something else?

WITNESS GREENWOOD: Some type of tissue sample. I'm not sure exactly which.

MR. SHUTES: All right. But there's no intent to have a pulse protection for fall-run Chinook or hatchery fish; is that correct?

WITNESS GREENWOOD: The focus of the actions is on the listed species, but with the temporal overlap that I noted in my opinion as well, which is also noted in the NMFS Biological Opinion, that that temporal overlap results in protection of the unlisted runs as well as the listed runs.

MR. SHUTES: Very well. Can we go back to Mr. Reyes' Exhibit 1069, please. And let me look specifically at Page 12. Wrong page. I'm sorry.

Mr. Miller's testimony, Page 12, Line 27.

I'd like to talk a little bit about the division between North Delta diversions and South Delta diversions when we're down at the minimum flow level.

Mr. Miller, isn't it correct that there's kind of a minimum flow level for the each of the North Delta intakes of 300 cfs?

WITNESS MILLER: When you say "minimum," like it will never be decreased below 300 cfs? Is that the question?

MR. SHUTES: That's the question.

WITNESS MILLER: No, I -- that's incorrect.

MR. SHUTES: Would it be possible to shut down any or all of the intakes completely?

WITNESS MILLER: My understanding is yes, it could go to zero.

MR. SHUTES: Okay. According to your understanding, how would the division between North Delta and South Delta diversions be divided -- be made at minimum pumping levels, at minimum levels when the outflow criteria were requiring minimum diversions?

WITNESS MILLER: So for example, the 1500 cfs you're talking about here?

MR. SHUTES: Mm-hmm.

WITNESS MILLER: So if all other requirements were being met and it was really just the spring outflow target that was controlling?

MR. SHUTES: Yes.

WITNESS MILLER: It would probably be somewhat dependant on the OMR criteria at the time and the -- the other conditions. And so it's -- I don't know if it's a really that -- that clear in terms of sitting here today. You would have to sit there and look at the other conditions in the Delta. But --

MR. SHUTES: Would salinity be one of those

conditions?

WITNESS MILLER: Salinity could be one of those conditions based on -- yeah, conditions in the lower Sac or the lower San Joaquin.

MR. SHUTES: Could we pull up -- let's scratch that. Could we pull up State Water Resources Control Board Exhibit 104. It's the ITP. And I'd like to look at Page 66, please.

CO-HEARING OFFICER DODUC: Mr. Shutes, just a heads up, you should think about wrapping up in about five minutes.

MR. SHUTES: I'll get through this document and then call it a day.

CO-HEARING OFFICER DODUC: Okay.

MR. SHUTES: At the bottom first -- I don't think we've got the right --

MS. ANSLEY: Excuse me, if I can help, SWRCB-104 is the Biological Assessment.

MR. SHUTES: No, that's not what I wanted. It's the ITP. And I'm sorry, I got the wrong number. It's the State Water Resources Control Board exhibit. 107, excuse me. My bad.

This is a question for Mr. Miller or anyone else who can answer. At the bottom of this paragraph, it discusses the fact that they hope to meet the Delta

outflow criteria based on willing sellers. What happens if --

CO-HEARING OFFICER DODUC: Hold on, Mr. Shutes. Which paragraph are you --

MR. SHUTES: Bottom of the first paragraph, "As described in the permit application, the spring outflow criteria are intended to be provided through the acquisition of water from willing sellers and through operations of the SWP."

My question for any of the panelists is what happens if willing sellers cannot be found?

WITNESS MILLER: Can we -- what section is this, Mr. Hunt?

MR. SHUTES: This has to do with the outflow criteria.

WITNESS MILLER: So there's portions of this that would probably be better informed by the clarification memo that we brought up earlier today. And --

CO-HEARING OFFICER DODUC: The one attributed to Ms. Nikkel?

WITNESS MILLER: Yeah, that one.

CO-HEARING OFFICER DODUC: Ms. Nikkel, could you please give us the reference again?

MR. SHUTES: It's on the same web page that

you just pulled this off of, at the bottom.

MS. ANSLEY: It's the same exhibit number, Madam Chair, at the bottom, I believe.

MR. SHUTES: Mr. Miller, go ahead.

WITNESS MILLER: So I think the -- on the second page, the second paragraph, I think that should be an answer to your question regarding the intent and how the -- how the spring outflow is intended to be met.

MR. SHUTES: I'm sorry. Can you point to the specific line or sentence that answers the question?

WITNESS MILLER: So, again, the second paragraph, "Therefore, the spring outflow criteria as described in the ITP on Page 181 within Table 9.9.4-1, Page 185, within Sub Table B, and Page 188, under Condition of Approval 9.9.4.3 are properly interpreted as requiring Permitee to utilize the linear relationships described in Sub Table B as targets to be met to the extent export cuts down to a minimum of 1500 cfs can achieve them."

MR. SHUTES: I'm sorry. That doesn't answer the question, in my opinion, of what happens if willing sellers cannot be found. I don't see anything that discusses water purchases or sellers or any such thing in that paragraph.

There may be something buried in one of those tables, but I don't see it.

MR. MIZELL: Objection, no question pending. The questioner is just making testimony.

CO-HEARING OFFICER DODUC: No, the questioner has a valid point. He asked a question. Mr. Miller pulled up this paragraph.

And yet you have not made the linkage back to the question he asked.

WITNESS MILLER: Sorry. So that the intent of -- part of the willing sellers as described in the ITP was for the purpose of meeting the spring outflow target. This memo clarifies how you meet that spring outflow target.

MR. SHUTES: But does it say -- I don't see that it says anything about water sales in order to achieve that target.

WITNESS MILLER: Because it only -- it only requires export reductions down to 1500 cfs based on this clarification letter.

CO-HEARING OFFICER DODUC: I'm sorry. Are you saying that, because it limits export cuts down to 1500 cfs, you will no longer need the sellers in the previous condition that Mr. Shutes asked you about?

WITNESS MILLER: That is my interpretation of

this clarification letter.

CO-HEARING OFFICER DODUC: And, Mr. Shutes, we are at 4:59. Do you have a quick question? Or can we continue tomorrow?

MR. SHUTES: Let's continue tomorrow.

Thank you all. We will return tomorrow at 9:30.

Mr. Shutes -- Mr. Shutes and Mr. Jackson, then followed by NRBC and Ms. Des Jardins. And if we have time, Group 38.

And we also received a request from Ms. Suard to conduct cross-examination on behalf of Group 41. And we also have Ms. Womack 43, Grassland 44, and Group 7 all remaining to cross-examine this panel.

Mr. Mizell?

MR. MIZELL: Based on that information, I am trying to anticipate when Panel 3 will go. Earlier today you indicated it might be as early as Thursday afternoon, but not Thursday morning. I'm trying to coordinate flights from Washington and San Diego, so.

CO-HEARING OFFICER DODUC: It depends also on whether you have redirect for Panel 2.

MR. MIZELL: In the absence of redirect, are we looking at Thursday morning we suspect or --

CO-HEARING OFFICER DODUC: I am looking right

now at the remaining. Based on the estimates that were given -- and this does not include Ms. Suard, who did not give a time estimate -- we have 880 minutes to 1050 as a range of cross-examination still remaining. 880 to 1050 according the estimates provided to me. You can do the subtractions and division, assuming, what, seven hours a day, and work that out. Okay?

Thank you everyone. We'll see you at 9:30.

(Whereupon, the proceedings recessed at 5:02 p.m.)

STATE OF CALIFORNIA)
) ss.
COUNTY OF MARIN)

I, DEBORAH FUQUA, a Certified Shorthand Reporter of the State of California, do hereby certify that the foregoing proceedings were reported by me, a disinterested person, and thereafter transcribed under my direction into typewriting and which typewriting is a true and correct transcription of said proceedings.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named, nor in any way interested in the outcome of the cause named in said caption.

Dated the 19th day of March, 2018.

DEBORAH FUQUA

CSR NO. 12948