BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER RIGHT CHANGE PETITION HEARING

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

SIERRA ROOM

1001 I STREET

SECOND FLOOR

SACRAMENTO CALIFORNIA

PART 1 REBUTTAL

Thursday, May 4, 2017

9:00 A.M.

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Pages 1 - 233

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

Dana Heinrich, Senior Staff Attorney (a.m.)
Conny Mitterhofer, Senior Water Resource Control Engr.
Kyle Ochenduzsko, Senior Water Resource Control Engr.

For California Department of Water Resources

Mark Cowin, Director
James (Tripp) Mizell, Senior Attorney 14
Cathy Crothers, Assistant Chief Counsel
Ken Bogdan, Senior Attorney

Duane Morris, LLP
By: Thomas Martin Berliner, Attorney at Law

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

State Water Contractors
Stefanie Morris
Adam Kear
Becky Sheehan

(Continued)

APPEARANCES (continued)

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

Sacramento Valley Water Users, North Delta Water Users
Kevin O'Brien

East Bay Municipal Utility District
Jonathan Salmon

Local Agencies of the North Delta
Osha Meserve

Anderson - Cottonwood Irrigation, and other parties
Dustin Cooper

City of Folsom, Roseville, San Juan Water District, Sac Suburban Water District
Ryan Bezerra

Sacramento Valley Group and Sacramento Municipal Utility District
Kevin O'Brien

City of Brentwood
David Aladjem

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

San Joaquin Tributaries Authority, and other parties
Tim O'Laughlin

(continued)

APPEARANCES (continued)

Delta Agencies, and other parties
John Herrick

Tehama-Colusa Canal Authority & water service contractors in its area
Meredith Nikkel

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

Clifton Court, L.P.
Suzanne Womack

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I N D E X

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Thursday, May 4, 2017 **9:33 a.m**

PROCEEDINGS

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CO-HEARING OFFICER DODUC: Good morning, everyone. It is 9:33 today. Welcome back to this hearing on the California WaterFix change petition.

I'm Tam Doduc. With me to my right are Board Chair and Co-Hearing Officer Felicia Marcus. To the Chair's right is Board Member DeeDee D'Adamo. To my left are Dana Heinrich and Conny Mitterhofer. We will be joined shortly by Mr. Ochenduszko, who is on his way.

We're also being assisted today by Mr. Hunt and Mr. Baker. Both? Mr. Long. Sorry. You guys switched on me.

General announcements. I think you all know by now, but just in case, if an alarm rings, we are going to evacuate. Follow Mr. Herrick. Do exactly as he does. We will take the stairs, not the elevators, down to the first floor, and meet up in the park. And so please take a moment right now and make sure you know the exit way, or at least know where Mr. Herrick is sitting.

Secondly, please come up to the microphone and -- as you provide your comments today because this is

being recorded and webcasted.

And please begin by identifying your name -- yourself and your affiliation.

Our court reporter is with us. Please make arrangements with her if you would like to have a copy of the transcript sooner than at the completion of Part 1.

And finally and most importantly, Mr. Delta Water Master, please take a moment and put your phone and any other noise-making devices on silent, vibrate, do not disturb. Please take a moment and double-check.

All right.

A couple of housekeeping items before we jump back into the cross-examination of Ms. Sergent. I believe we have two remaining cross-examiners, Ms. Womack and Ms. Spaletta.

Right there, yes.

And then we will have the remainder of the petitioner's Panel 2 which, according to my review of their testimony, is quite extensive in terms of operations and modeling.

Just by a show of hands, how many of you expect to conduct cross-examination of those witnesses?

(Hands raised)

CO-HEARING OFFICER DODUC: Okay. How many of

you expect that your cross-examination will last longer -- well, will last about an hour or more?

(Hands raised)

CO-HEARING OFFICER DODUC: Okay. So I think it's a safe bet that we will not get -- well, even if we do get through this remainder of Panel 2, petitioners also have two additional witnesses in Panel 3. So it's safe to bet, Group 7, that we will not get to your witnesses this week. Everyone in agreement with that? And if by some miracle we do finish, then we'll take an early break for the week. But somehow, I doubt it.

And so with that, unless there's any other housekeeping item, anyone has questions, requests?

Ms. Meserve, any new thoughts that you have for us?

MS. MESERVE: Not today.

CO-HEARING OFFICER DODUC: Not today. All right. In that case, then, we'll ask Ms. Sergent to come back up. And with any luck within the next few hours or so, we can dismiss her to go back and continue her -- enjoying her retirement.

And also my staff has requested that, when we finish with Ms. Sergent we take a short break so that the room could be reorganized for the next panel.

MR. MIZELL: Hearing Officer Doduc, I do have two housekeeping items. They're not -- they're not going to influence our process here today.

Our witnesses, Christian White and Chandra Chimalkuri, will not be -- will not be attending. Their testimony, therefore, will not be submitted as evidence.

Additionally, I'd like to let the Board know that, beginning on the 9th and proceeding through 19th, a new attorney, Ms. Robin McGinnis from the Office of Chief Counsel, right over there, she will be assisting with Mr. Berliner in presenting for the Department until I return.

CO-HEARING OFFICER DODUC: All right. Thank you, Mr. Mizell.

If there are not any other announcements, then we will ask Ms. Womack -- there you are. I have to readjust my list. Ms. Womack.

MS. WOMACK: Suzanne Womack --

CO-HEARING OFFICER DODUC: Ms. Womack, I -- your microphone may not be on.

MS. WOMACK: Oh, okay. It looked on. That's it. Okay.

MAUREEN SERGENT,

called as a rebuttal witness by the

petitioner, having been previously duly sworn, was examined and testified further as hereinafter set forth:

CROSS-EXAMINATION BY MS. WOMACK

MS. WOMACK: Susanne Womack, Clifton Court LP. And we established Friday that Ms. Sergent is an expert in -- and is DWR's water rights person. Right? Okay.

So my question today is based on DWR-77, roman numeral IV, which basically says the operation of the CWF, California WaterFix, will not injure legal users of water, which is your basic -- and I don't have the page number but, you know, it's the basic number 4. Ms. Sergent, I have a couple questions.

First of all, have you looked at my -- and when I say "my," I mean Clifton Court LP's -- appropriative water rights?

WITNESS SERGENT: I haven't reviewed your water rights specifically.

MS. WOMACK: Okay. And have -- my riparian water rights, the same answer?

WITNESS SERGENT: No.

MS. WOMACK: And the water license would be you as well? I have a water license as well. So, no?

WITNESS SERGENT: The water license would be me as well. I'm sorry.

MS. WOMACK: So have you reviewed my water license?

WITNESS SERGENT: Not your license specifically, no.

MS. WOMACK: Okay. I was wondering if -- let's see. In DWR-77, the page -- well, the page after roman numeral IV on Line 10, if we can get that up -- we talk about the Western Canal Water District, or you all talk about that.

So it's the page after --

CO-HEARING OFFICER DODUC: I'm sorry. Let's wait until we get that up.

MS. WOMACK: Okay. Yeah. Is that clear enough? So Line 10. Yeah.

There's -- the Western Canal Water District is one of the districts you refer to that you've talked about.

And I was wondering if you could show me on a map where the Western Canal is. I'd like to do DWR-2, Page 33. There's a map there, because I don't see a map in your DWR-77. Is that okay?

CO-HEARING OFFICER DODUC: Yes.

MS. WOMACK: Okay. So DWR-2, Page 33. Could you show me where Western Canal is on this?

WITNESS SERGENT: Western Canal Water District is up near Oroville, Lake Oroville.

MS. WOMACK: Oh, okay. I'm sorry.

WITNESS SERGENT: It diverts water out of Thermalito Afterbay.

MS. WOMACK: Does it go through a Western Canal? The reason I'm asking is, right next to Clifton Court, there is a canal that in this is called "West Canal."

Do you see that?It's to the east of Clifton 11 Court Forebay. It's called "West Canal."

WITNESS SERGENT: Okay.

CO-HEARING OFFICER DODUC: To your knowledge, Ms. Sergent, does West Canal Water District have any affiliation with the West Canal that's on this map?

WITNESS SERGENT: No.

MS. WOMACK: Okay. Let's see. Could -- I show CCLP-11. It's basically a map with our APNs.

A little bit bigger.

I'm confused because Western Canal is where my rights -- where I take one of my diversions is off Western Canal. I wonder -- I know you're not the person who did the other map.

But why has "Western Canal" been shorted [sic] to "West Canal"? And why aren't my rights up there

even on the DWR-2?

MR. MIZELL: Objection, beyond the scope of the rebuttal testimony, and asked and answered.

CO-HEARING OFFICER DODUC: This is, indeed, outside of her testimony which references a different Western Canal organization. But I know that you're trying to seek answer, Ms. Womack.

So to the extent, Ms. Sergent, that you even have that information?

WITNESS SERGENT: I do not.

CO-HEARING OFFICER DODUC: Mr. Mizell, since you are not prohibited or DWR is not prohibited from discussing matters with other parties, I would ask you to find the appropriate person to answer that question for Ms. Womack outside of this hearing.

MR. MIZELL: And the question would be as to why on one map it's labeled the "Western Canal" and in another it's labeled "West Canal"?

CO-HEARING OFFICER DODUC: Unless you have another reason for asking that question.

MS. WOMACK: Well, I have -- I've been told that "we're carefully moving forward," and "trust us," and "no water users will be harmed," and my water right isn't even up there.

Western Canal is back from the 1870s. I can

show you CCLP-16 -- that's our change in diversion -- that shows Western Canal.

CO-HEARING OFFICER DODUC: And you certainly may do that when you present your rebuttal testimony.

MS. WOMACK: Okay. But, water rights -- so what we've established is that there -- she knows nothing about my water rights.

CO-HEARING OFFICER DODUC: She did not specifically review your water rights.

MS. WOMACK: She hasn't reviewed my water rights, and that at least DWR-2 thinks "West Canal" is appropriate. I really would like to show CCLP-16 so you can see how simple it is. It really is simple. This is a simple thing.

CO-HEARING OFFICER DODUC: And you may do that when you present your rebuttal testimony.

MS. WOMACK: You don't want to see that now? Okay. I can do that. Well, water rights --

CO-HEARING OFFICER DODUC: Not as part of cross-examination.

MS. WOMACK: It is my water rights, and it is to do with Western Canal but just a different Western Canal.

CO-HEARING OFFICER DODUC: To which she does not have any information.

MS. WOMACK: Any knowledge. Okay. So our expert hasn't looked at my water rights and has no -- knows nothing about this Western Canal.

CO-HEARING OFFICER DODUC: I believe that's what she's testified.

MS. WOMACK: Is that -- okay. I'm clear, then. Thank you so much, and good luck in retirement.

MR. MIZELL: So that I'm clear, there's no pending question for DWR to answer?

CO-HEARING OFFICER DODUC: No, there is not.

MR. MIZELL: Okay.

MS. WOMACK: So he will get in touch with me?

CO-HEARING OFFICER DODUC: I'm sorry. What else do you need?

MS. WOMACK: So your ruling is that Mr. Mizell will get in touch with me?

(Cell phone interruption)

MS. SPALETTA: That was me.

CO-HEARING OFFICER DODUC: Do you still have a question?

MS. WOMACK: Oh, no. About West Canal. You said that he would -- it wasn't me.

CO-HEARING OFFICER DODUC: Ms. Womack, your outstanding question, your remaining question --

MS. WOMACK: My remaining question --

CO-HEARING OFFICER DODUC: -- which might not be outstanding, but it remains, nonetheless, is why --

MS. WOMACK: Well, it is outstanding.

CO-HEARING OFFICER DODUC: -- why the change in name or --

MS. WOMACK: Well, I just -- why -- why -- again, Mr. Mizell is the person that says, "We will harm no legal users of water." Well, shoot, if you don't know who the places are, how do you know that?

CO-HEARING OFFICER DODUC: Now you are making an argument that should be presented as part of your rebuttal testimony.

MS. WOMACK: Okay. But you said that he would get in touch with me? I want to be clear.

CO-HEARING OFFICER DODUC: Yes, I want to be clear as well. You had a question with respect to the graph that was prepared or the chart that was prepared in DWR witnesses and why the name was changed from "Western Canal" to "West Canal."

MS. WOMACK: Mm-hmm. Correct.

CO-HEARING OFFICER DODUC: Mr. Mizell, you will address that outside of this hearing.

MR. MIZELL: Okay.

MS. WOMACK: That was me.

CO-HEARING OFFICER DODUC: And Ms. Spaletta,

who has now turned her phone off on vibrate or silent may come up now and conduct her cross-examination.

And before you begin, if you could give us a brief outline of the topics you intend to cover.

CROSS-EXAMINATION BY MS. SPALETTA

MS. SPALETTA: Good morning. Jennifer Spaletta, North Delta Water Agency -- I'm sorry. Not North Delta Water Agency -- North San Joaquin Water Conservation District.

I am actually going to cover a point made by North Delta Water Agency -- that's why it was on my mind -- regarding their motion to strike as part of my presentation today.

I will also be asking Ms. Sergent about the statements she makes on Page 3, 5, 6, 14, 21, and Page 13 of her rebuttal testimony.

So if we could go ahead and bring up Exhibit 77, which is DWR's 77, Ms. Sergent's testimony, it will probably make it easier. And we'll start with Page 2. And I'd like to call your attention to Lines 10 through 20.

Just review those briefly, please, Ms. Sergent.

Okay. So in Lines 10 through 14, you're simply paraphrasing what others provided in their

testimony, correct?

WITNESS SERGENT: Correct.

MS. SPALETTA: And in Lines 15 through 20, you are arguing that the contents of already admitted exhibits, specifically Exhibit 1 and 2, contradict what the testimony you've just paraphrased says, right?

WITNESS SERGENT: In 14 and 15, I'm stating that the information in our petition itself supports the argument that it's just a change in point of diversion, rediversion.

MS. SPALETTA: But these -- this hearing team is to actually look at the contents of your petition to make that decision, correct?

WITNESS SERGENT: I guess I'm not clear on your question.

MS. SPALETTA: You understand that your view of what's in your petition is not evidence; that what's in your petition is the evidence, correct?

WITNESS SERGENT: Right.

MS. SPALETTA: All right. So then I would like to move to strike Lines 10 through 20 on Page 2 of Ms. Sergent's testimony. And I'd like to explain why I'm making this motion.

CO-HEARING OFFICER DODUC: Please do.

MS. SPALETTA: Yes. I understand the ruling

of the Hearing Officers, and I read it, about why you dislike evidentiary objections. But we are now at a point in this proceeding where this type of testimony is becoming rogue. And there is a relaxed rule in for the State Board which is that you are to rely on the type of evidence a reasonable person would rely on in the conduct of serious affairs.

We've now passed that threshold. We're now allowing witness to simply paraphrase other people's testimony and then also paraphrase what's in existing exhibits in the record.

This does not add any new evidence to the record. Nor does it provide any additional rebuttal. And so we are starting to snowball by having declarations that paraphrase other people's testimony and paraphrase admitted exhibits without providing anything new and then, as you saw last Friday, you end up with hours and hours of cross-examination about those paraphrased statements.

So we've gone beyond the concept of real evidence and are simply having essentially legal briefs and arguments submitted through the petitioner's witnesses. It's improper. It's improper under basic rules of evidence, but it's also improper even under relaxed rules of evidence by the Board so I'd like to

make that motion for the record, and I'll continue.

CO-HEARING OFFICER DODUC: Before you continue, Mr. Berliner, Mr. Mizell -- actually before you -- anyone wish to join in on Ms. Spaletta's objection and motion, recognizing that I'm sure her argument applies not only to petitioner's submission but also other parties as well --

MS. SPALETTA: It does.

CO-HEARING OFFICER DODUC: -- at least of what I've read?

MR. KEELING: That's my understanding. Tom Keeling for San Joaquin County protestants, although Ms. Spaletta omitted that she is actually conducting this cross-examination and tendering these objections and motions to strike on behalf of the San Joaquin county protestants as well.

CO-HEARING OFFICER DODUC: Mr. Jackson, who's spent I think an hour on cross-examination going through some of these details that I believe Ms. Spaletta referred to.

MR. JACKSON: Yes, and I think she said it better than I have, but I do join the motion on behalf of CSPA, CWIN, and AquAlliance. It is the paraphrasing of other people's testimony and, as such, under any set of evidentiary rules, is not allowable.

CO-HEARING OFFICER DODUC: Anyone else wish to comment this? Mr. O'Laughlin, I can't believe you're resisting.

MR. O'LAUGHLIN: No, no. Thank you, though.

CO-HEARING OFFICER DODUC: All right. Mr. Mizell, Mr. Berliner?

MR. BERLINER: I guess, first of all, I'm not aware of any rule of evidence that prohibits a witness from paraphrasing another witness's testimony. You can argue with whether the paraphrase is accurate or not, but we've had paraphrases here for months. So this is simply an introduction to the section, after which Ms. Sergent gives her explanations to support the contention that she's raised above that the arguments by the parties misstate the request in the petition. Now, there may have been a misunderstanding between Ms. Spaletta's question and Ms. Sergent's answer. I understood Ms. Sergent's answer to be that she was not trying to usurp the responsibility of the Board by offering her opinions. And we've already had a ruling on that, that her opinions are acceptable and will be considered by the Board in the context within which those opinions were given.

So unless I'm mistaken, Ms. Spaletta is arguing one thing and Ms. Sergent answered another

thing. So first of all, I think that the question and the answer are coming from different perspectives. But getting, then, into the substance of Lines 15 to 20, all Ms. Sergent is doing is pointing out where the mistakes by the varies parties are found so that they can be corrected. And then she proceeds in her testimony to explain that in greater length.

CO-HEARING OFFICER DODUC: Understood.

All right. With that, we will take that under advisement.

And Ms. Spaletta, please continue your cross-examination.

MS. SPALETTA: Turning your attention to the top of Page 3, Lines 1 through 9. Can you review those for a moment.

Ms. Sergent, the information you've provided in Lines 1 through 9, does it provide any information other than what is already in admitted Exhibits 6 through 9 and 1?

WITNESS SERGENT: Again, the information is cited in those, and I point out the limitations in response to the claims that were counter.

MS. SPALETTA: So the answer is no?

WITNESS SERGENT: I'm explaining what it -- what I understand to be contained in this.

MS. SPALETTA: But you're not referring to any new exhibits; you're simply summarizing information that's in the permits and the petition?

WITNESS SERGENT: That's correct.

MS. SPALETTA: And then if we turn to Page 4. If you could review Lines 1 through 16.

In Lines 1 through 16, Ms. Sergent, are you doing anything more than simply paraphrasing the contents of the State water rights permits which is the subject of this decision?

WITNESS SERGENT: I am. I paraphrase, and then I add my opinion as to the relevance of those, with respect to the questions.

MS. SPALETTA: And then in Lines 16 through 19, you're expressing an opinion about what the intent of the State Water Board was when those permits were issued, correct?

WITNESS SERGENT: I'm -- as I do above in Lines 6 through 9, I provide what my understanding of the reasoning for including those in the permits.

MS. SPALETTA: So, again, I would move to strike Lines 1 through to 20 as duplicative of evidence that is already in the record and also move to strike Lines 16 -- I'm sorry -- move to strike Lines 1 through 16 as duplicative of evidence already in the record and

move to strike 1 Lines 17 through 20 as unsupported opinion.

CO-HEARING OFFICER DODUC: Mr. Berliner?

MR. BERLINER: Again, there's nothing wrong with paraphrasing. What Ms. Sergent has done is pointed out to the parties that raised various issues where they were wrong because the permits contained certain language.

I think it's Ms. Spaletta's argument that, unless the rebuttal testimony offers brand-new evidence, it's inadmissible. That seems to be the pattern.

But there's no requirement for that. Rebuttal testimony can be, if somebody said the ball was blue and you have a picture of it that you admitted before, you can pull the picture and say, "See, the ball is red." So there's no prohibition in rebutting somebody's testimony with other testimony that's already in the case, which is simply what we have here. And then, in order to support Ms. Sergent's opinion that she gives at 16 to 20, she says, "Well, I relied on previous statements to come up with that opinion." And Ms. Spaletta can take issue with the opinion; that's what this hearing is all about. The Water Board can disagree with the opinion. That's fine

because it's just testimony from one witness.

But to say the witness's opinion is not admissible when we've already had a ruling on the admissibility of her opinions is just to go over old ground that we've already dealt with.

CO-HEARING OFFICER DODUC: Ms. Spaletta?

MS. SPALETTA: I frankly do not want to spend next six months going around the same merry-go-round. I think we need to make sure that this hearing is actually about getting new quality evidence in the record that rebuts evidence that was presented in the case in chief. And if it doesn't do that, it doesn't need to be added to the record, and we don't need to spend hours upon hours cross-examining people about unsupported opinions.

CO-HEARING OFFICER DODUC: Thank you. We'll take that understand consideration. And please continue.

MS. SPALETTA: I'd like to turn your attention to Page 5, Lines 7 through 10, where you state, "The SWP permits and the maps submitted with the permit applications which are filed with the State Water Board as referenced in the CWF petition clearly show the point of diversion at Hood and an isolated facility from Hood to Clifton Court Forebay." Do you see that

testimony?

WITNESS SERGENT: I do.

MS. SPALETTA: Have the maps been submitted by DWR as exhibits?

WITNESS SERGENT: They have not been submitted as exhibits except to the extent that they are referenced in the petitions themselves, which are exhibits.

MS. SPALETTA: So the maps are referenced in the petitions, but there's no actual maps that are available to any of the parties in this case, correct?

WITNESS SERGENT: The maps are on file with the Water Board.

MS. SPALETTA: And the maps that are on file with the Water Board have not been made a part of the State Water Resources Control Board Exhibits 6 through 9, correct?

MR. MIZELL: I'm going to object because they are part of the record as being part of the petition by reference, and that's current and accepted practice by the State Water Board to reference maps within your files in the petitions.

MS. SPALETTA: If that is the accepted practice of the State Board, then I have a request of the Hearing Team. And that is to get those maps

available and append them to State Water Resource Control Board's Exhibits 6 through 9 so that the public, the Hearing Officers, and the people participating in this action can actually look at the maps and be able to see the information that Ms. Sergent is testifying about.

If those maps cannot be made available to the public and the father's this case, then I would move to strike Ms. Sergent's testimony regarding the contents of the maps.

CO-HEARING OFFICER DODUC: So noted.

MS. SPALETTA: Okay. I'd like to turn your attention to the lower part of Page 5.

CO-HEARING OFFICER DODUC: I'm sorry, Ms. Spaletta, before you continue, let me ask staff to make sure they've captured in its entirety your last request.

Can someone confirm? All right.

Ms. Spaletta, please, continue.

MS. SPALETTA: Turn your attention to the portion of Page 5 under the heading, "The SWP permits have not expired," if could you go ahead and read that section.

MR. BERLINER: The entire section?

MS. SPALETTA: Just the paragraph there would

be fine.

Ms. Sergent, in this portion of your rebuttal testimony, you were responding to the testimony of Chris Shutes, where he claims that the State Water Project permits had expired, correct?

WITNESS SERGENT: That's correct.

MS. SPALETTA: Now on the next page, we'll turn to Page 6, on Line 11, you state that the RTD, Restore The Delta, assertions are factually incorrect. Did I read that right?

WITNESS SERGENT: Yes, that's correct.

MS. SPALETTA: But it is true, as Mr. Shutes included in his testimony, that the SWP permits had a date by which Department was to put the water under the permits to beneficial use, correct?

WITNESS SERGENT: That's right.

MS. SPALETTA: And that date was in 2009, correct?

WITNESS SERGENT: That's correct.

MS. SPALETTA: And that date has passed, correct?

WITNESS SERGENT: The date has passed, and we filed a petition for time extension.

MS. SPALETTA: When you filed your petition for time extension the State Water Resources Control

Board noticed that petition, correct?

WITNESS SERGENT: That's correct.

MS. SPALETTA: And there were parties who protested your petition for extension of time?

WITNESS SERGENT: That correct.

MS. SPALETTA: And the State Water Resources Control Board to date has not resolved that protest or granted the extension, correct?

WITNESS SERGENT: That's correct.

MS. SPALETTA: So as you sit here today, you understand that at some point the State Water Resources Control Board will likely act on your petition, correct?

WITNESS SERGENT: As noted later in my testimony, that proceeding -- the Department anticipates that that will be addressed in a separate proceeding before the Board.

MS. SPALETTA: And you understand that, when the State Water Resources Control Board acts on your petition for extension of time, they very well may place conditions on the State Water Project permits which limit them beyond the current stated terms, correct?

MR. BERLINER: Objection, relevance and beyond the scope of the testimony.

CO-HEARING OFFICER DODUC: Ms. Spaletta, please repeat the question.

MS. SPALETTA: Sure. Do you understand that, when the State Water Resources Control Board acts on the Department's petition for extension of time, they very well may condition the approval of the extension of time so that it limits the terms of the permits. Do you understand that?

CO-HEARING OFFICER DODUC: Overruled, it's a natural extension of her line of questioning.

To the extent you can answer, Ms. Sergeant.

WITNESS SERGENT: I can't say what terms or conditions the board may put on it, but they will issue an order which will have terms and conditions in it.

MS. SPALETTA: And one possible result of that order is to deny the petition for extension of time, correct?

MR. BERLINER: Objection, calls for speculation.

CO-HEARING OFFICER DODUC: It is one possible outcome, yes.

MS. SPALETTA: Is your answer yes?

WITNESS SERGENT: That -- the Board is within its power to deny the petition, yes that's correct.

MS. SPALETTA: Okay, turning your attention to

Page 13, please, Lines 14 through 16.

You state, "Diversion at the CWF facilities during the Term 91 period would not reduce the amount of natural flow or lower the water surface elevations below what would otherwise exist in the North Delta."

I did not understand this statement, and I wanted to ask you to clarify it. Did you mean that they would not reduce the amount of natural flow or lower the water surface elevations compared to before the State Water Project was in operation or compared to what exists today without the California WaterFix facilities?

WITNESS SERGENT: It would not lower the water surface elevation below what would be available to those parties under natural conditions without project storage releases.

MS. SPALETTA: And how do you know that?

WITNESS SERGENT: The amount of water -- during Term 91, by definition, the projects are releasing more water from project storage than is being exported by the project. They are releasing supplemental storage to maintain water quality and flow objectives in the Delta. The amount of water being exported is less than that quantity.

MS. SPALETTA: Okay. So you are extrapolating

from the way Term 91 works to an opinion about water surface elevations, correct?

WITNESS SERGENT: I guess I don't understand your question.

What I'm stating is that more water is entering the Delta as a result of surplus supplemental storage releases than would exist without those storage releases. A portion of that water could be diverted at the North Delta facilities. However, additional water would still remain. So if you have a set channel configuration, you have more water in that channel than would exist without the storage releases, the water surface elevations will be higher than without those supplemental storage releases.

MS. SPALETTA: Have you actually performed a study of what the water surface elevations were before the project was completed?

WITNESS SERGENT: That misstates what I just said.

MS. SPALETTA: I'm just asking you if you performed a study.

WITNESS SERGENT: I did not perform a study on water surface elevations before the project was constructed.

MS. SPALETTA: So if we could turn to Page 14,

I could have you look at Lines 12 through 23, regarding your discussion of the North Delta Water Agency agreement.

And I'll just note that North San Joaquin and San Joaquin County join in the motion to strike by

North Delta Water Agency regarding this entire paragraph. As Ms. Sergent testified in response to the North Delta Water Agency questions, she has no personal knowledge of the intent of the parties to this agreement.

And frankly, under the law, extrinsic evidence regarding intent is not relevant unless the contract is found to be ambiguous. So I'm not even sure we're in the realm of possibility for admissibility for this paragraph.

Finally, to the extent Ms. Sergent relied on 17 documents that were available to her at DWR for some historical background as she testified to when she was questioned by North Delta Water Agency, those documents have not been available to the other parties that are part of this case, so she should not be allowed to testify about their contents or ramifications.

CO-HEARING OFFICER DODUC: Any response, Mr. Mizell?

MR. MIZELL: Certainly. Ms. Sergent relies

upon the 1981 North Delta Water Agency contract with the Department of Water Resources that is an exhibit and has been available to the parties in this case.

Secondly, I don't believe that there is an outstanding objection from North Delta Water Agency to the description that Ms. Spaletta just made, and I would like it clarified by the Board.

Lastly, to the extent that her opinion in this paragraph does require an ambiguous contract, I believe that the testimony of North Delta Water Agency has provided that ambiguity, as they have yet to confirm our understanding of that contract; in which case, it means that the two parties to the contract disagree as to its meaning.

Therefore, Ms. Sergent's opinion is relevant and informative to this hearing.

CO-HEARING OFFICER DODUC: Thank you. Ms. Spaletta, please do refresh my memory 19 because, like Mr. Mizell, until you voiced your objections today, I did not note any objections to date of her testimony.

MS. SPALETTA: No, there were no objections today [sic]. I did watch the entire video of Ms. Sergent's cross-examination on Friday. And I believe it was Rebecca Smith and Meredith Nikkel who

were examining her about the contents of her rebuttal testimony regarding the North Delta Water Agency contract. And they specifically moved to strike all of her testimony regarding that contract as lacking foundation.

And so I am joining that motion, but I'm making mine very, very specific to Lines 12 through 23 on Page 14 because I don't believe that this testimony has supported foundation. I don't believe it's relevant even under the relaxed evidentiary standards of the State Board.

And I'll just note, just because two parties disagree on what a contract means does not mean that the contract is ambiguous and that extrinsic evidence is admissible to interpret it. That is a legal issue in a -- typically a court of law. In this case, it would be the Hearing Officers first have to make a determination that a particular provision is ambiguous, that it cannot be interpreted based on its plain language.

And once that determination has been made, then extrinsic evidence beyond the four corners of the contract may be admissible but only if it's the type of extrinsic evidence that is admissible to interpret an ambiguous contract provisions.

This not that type. You cannot have a party provide a self-serving statement of intent when they were not there to negotiate the contract.

CO-HEARING OFFICER DODUC: Final response on this matter, Mr. Mizell?

MR. MIZELL: Certainly. I believe that the objection made by North Delta Water Agency was overruled by the Bench, and therefore, I'm not understanding how somebody can join an objection that's already been overruled.

Additionally, to the extent that the Department needed to be present when negotiating the contract, the Department was present when negotiating this contract in 1981. Ms. Sergent may not have been in the room, but she has reviewed the files of the Department and that is -- she is deriving this from the plain language in the North Delta Water Agency agreement.

The additional point I'd like to raise is that she is not attempting to interpret the contract out of context with any additional rebuttal testimony. She is responding to statements made by opposing parties, which means it is appropriate rebuttal because she is -- the parties of North Delta Water Agency have brought this before the Board in these opinions, and

therefore, we should have an opportunity to respond to them.

CO-HEARING OFFICER DODUC: Thank you. We'll take that under advisement.

Please continue, Ms. Spaletta.

MS. SPALETTA: All right. In this section of testimony, however -- oh, just to note, the ruling by the Hearing Officer was that they may and likely would overrule the North Delta Water Agency objection, but there was actually no ruling from the Bench.

To the extend that you do overrule North Delta Water Agency's objection, mine would be a new one.

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

MS. SPALETTA: Okay.

You mentioned here in the middle of the paragraph that the diversion capacity at the proposed California WaterFix facilities is less than half of that of the Peripheral Canal and potential impacts to water levels in the area of the North Delta diversions would not exceed those expected with operation of the Peripheral Canal. Do you see that?

WITNESS SERGENT: I do.

MS. SPALETTA: By "Peripheral Canal," do you mean the project that was submitted to the voters of

California as described in Senate Bill 200?

WITNESS SERGENT: I mean the project that was being proposed by the Department. And my understanding of it is based upon DWR references, not the bill. I'm not familiar with the bill itself.

MS. SPALETTA: When you say "Peripheral Canal," you're not referring to the entire project as it was approved by the legislature and submitted to the voters in Senate Bill 200 in 1982?

WITNESS SERGENT: I believe -- and the reference in my testimony is I believe I am referring to what was described in Bulletin 132 of the Department.

MS. SPALETTA: And as you sit here today, do you know whether or not the Peripheral Canal that you're referring to in your testimony is the project that included deliveries of water in facilities to the South Delta to aid in recirculation?

WITNESS SERGENT: The Peripheral Canal did include deliveries of release of water along its length; however, if you'll notice in my testimony, I'm referring to -- I made no statements as to water levels in any other portion of the Delta, including the South Delta.

My reference is in response to questions

regarding water levels in the area of the North Delta diversions.

MS. SPALETTA: But you agree with me, do you not, that the Peripheral Canal as was previously proposed did include deliveries of water in the South Delta and even in the Western Delta and that those components of the Peripheral Canal project are not part of the current California WaterFix project, correct?

MR. MIZELL: Objection, beyond the scope of rebuttal.

CO-HEARING OFFICER DODUC: Overruled.

Please answer.

WITNESS SERGENT: The -- as I just mentioned, the Peripheral Canal back in the '80s did include -- or the one that went before 1981, did include releases of water along its length. And that is not a part of the project now.

However, the -- my comment addresses concerns about diversions in the area of the North Delta -- water levels in the North Delta diversions. Those diversions in the South Delta would have no effect or, you know, on the impacts of diversions in the area of the North Delta.

MS. SPALETTA: Turning to Page 21 -- and I only have 29 seconds left to keep it under 30 minutes,

so we need to do this one quick.

Okay. Looking at Page 21, Lines 17 through Page 22, Line 11, that's where you provide your opinion that a demonstration of a change in water quality alone is not sufficient to support a claim of injury to individual's water rights, correct?

WITNESS SERGENT: That's correct.

MS. SPALETTA: And on Page 22, you actually provide a quote from a State Water Resources Control Board decision which cites a couple of cases, California cases. Do you see that?

WITNESS SERGENT: I do include an excerpt from a State Board's decision.

MS. SPALETTA: Have you actually read the cases that you cite here?

WITNESS SERGENT: I'm not citing those cases. The State Water Board cited those in its opinion.

MS. SPALETTA: So you haven't read these cases?

MR. BERLINER: Objection, relevance. She's already indicated she wasn't citing those for any purpose other than to --

CO-HEARING OFFICER DODUC: I'm sorry, Mr. Berliner. You need to get closer to the microphone.

MR. BERLINER: Sorry. Objection as to relevance to this line of questioning. The witness has already testified that she cited those cases only because they're included in the Water Board citation and that her intent was to cite the Water Board citation, not the cases. So she included those for completeness.

MS. SPALETTA: And my question was whether you read the cases.

MR. BERLINER: And my objection is relevance as to that because they weren't cited for any purpose.

CO-HEARING OFFICER DODUC: Well, actually, I want to know. Overruled.

Ms. Sergent?

WITNESS SERGENT: I did not go back and read those cases.

CO-HEARING OFFICER DODUC: I would have applauded you if you had.

MS. SPALETTA: And I've gone over my 30 minutes, so I would just like to note for the record that I have made various objections and motions to strike portions of Ms. Sergent's testimony.

And I would request -- we're going to move into another phase of this case -- that the Hearing Officers start seriously considering whether motions to

strike should be granted. And hopefully, we can cut down some of the cross-examination in this matter so that we aren't going around the same merry-go-round multiple times.

CO-HEARING OFFICER DODUC: Thank you. So that was a motion and also a request for a posting of the various documents relating to petitioner's water rights.

MS. SPALETTA: Thank you.

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

Mr. Mizell, any redirect?

MR. MIZELL: No, thank you.

CO-HEARING OFFICER DODUC: And in that case, thank you, Ms. Sergent.

Please go forth and enjoy your retirement. We will take a break for the staff to do some reorganizing for the next panel, and we will resume at -- how much time do you think you need, Ten minutes? All right. So we will resume at 10:40

(Recess taken)

CO-HEARING OFFICER DODUC: Thank you, everyone. It is 10:40, and we are resuming. A couple of things before we get to this panel.

First, to address some but not all of

Ms. Spaletta's objections -- we will obviously respond to them in more detail when evidence is being submitted by petitioner into the record. But for now, with respect to the objection concerning paraphrasing points from cases in chief that you intend to rebut, that objection is overruled.

To the extent that the paraphrasing is concise and is helpful, it will be allowed. With respect to the objection of paraphrasing or summarizing testimony previously submitted in order to rebut points during this phase, that objection is also overruled to the extent that such, again, paraphrasing is concise and is helpful to us as we proceed.

On that note, though, I'd like to remind all the parties of two things. And that is, to the extent that rebuttal testimony refers back to testimony already presented during cases in chief and which has undergone extensive cross-examination the first time around, I will be less patient with detailed cross-examination or I should say recross-examination of those aspects the second time around as part of rebuttal.

I appreciate that sometimes they need to be repeated in order to rebut perceived misrepresentation. But to the extent that we keep rehashing the same

grounds in cross-examination of rebuttal on evidence that has already been submitted and cross-directed on, I'll be less patient with that. So just be mindful as we move forward.

And then, secondly, while we do strive very hard to ensure the efficiency in terms of presentation of testimony and not repeat, not repeating testimony and not repeating cross-examination, I would also like to remind all the parties that excessive technical objections are also not real helpful and not efficient, especially those objections that would be better served to be argued in your closing briefs. So please keep that in mind as we move forward as well.

With that, we are on to the remaining Panel 2 15 for petitioners.

How much time do you expect, Mr. Mizell and Ms. Aufdemberge, for your presentation of your rebuttal?

MR. MIZELL: Thank you, Hearing Officer Doduc. We expect that this panel will be no greater than 2 hours and 45 minutes, although the witnesses have all been given the instructions to be concise and nonrepetitive, both from your statements and as well as from my own. So it very well may be some minutes shorter than 2 hours and 45, but I want to give you the

maximum we expect.

CO-HEARING OFFICER DODUC: All right. And now if I may ask people to come up to one of the microphones and give me indication if you wish to cross-exam this panel and how much time you expect you'll need. And it will be helpful to me if you also identify yourself by group numbers.

MR. COOPER: Good morning, Dustin Cooper on behalf of Anderson - Cottonwood Irrigation and other parties, Group 7. The way we've organized ourselves in Group 7, I will be cross-examining Mr. Leahigh first. I would anticipate approximately an hour. Mr. Bezerra will be after me.

MR. BEZERRA: Yes, thank you. What we've done is each of us has taken the lead for the entirety of Group 7 as to distinct witnesses. So as Mr. Cooper indicated, he's the lead for our entire group for Mr. Leahigh. I'm the lead for the entire group with Ms. Parker. I anticipate 90 minutes to two hours for the lead for that whole group.

CO-HEARING OFFICER DODUC: All right. We will discuss your time request when we get to you.

MR. BEZERRA: I understand. I just want to emphasize we're trying to organize this so you don't really have to hear one of us do it once with lots of

cross of each witness.

CO-HEARING OFFICER DODUC: I appreciate that. Thank you.

MR. O'BRIEN: Kevin O'Brien. I'll be taking the lead on Mr. Munevar. And I estimate an hour and 15 minutes.

CO-HEARING OFFICER DODCU: An hour and 15 minutes? Okay.

MR. O'BRIEN: Kevin O'Brien.

CO-HEARING OFFICER DODUC: Mr. Aladjem?

MR. ALADJEM: Good morning, Chair Doduc, David Aladjem for the City of Brentwood, Group No. 10.

CO-HEARING OFFICER DODUC: I'm sorry. Before you begin --

Are those three the entirety of Group 7's cross-examination?

MR. BEZERRA: I think each of us anticipates the possibility of a little additional following the leads but not much. And to some degree, it depends on what gets covered and how. So I would say that probably each of us has possibly 15 minutes to half an hour on other witnesses that we didn't personally cross. So, for example --

CO-HEARING OFFICER DODUC: I don't understand.

MR. BEZERRA: Okay. Yeah, I promise you we're

trying to organize this in a coordinated way.

So as theoretically, Mr. Cooper is the lead for the entirety of Group 7 on Mr. Leahigh. I might have 15 minutes on Mr. Leahigh after that.

CO-HEARING OFFICER DODUC: Is that included in the 60 minutes estimated by Mr. Cooper?

MR. BEZERRA: No. If I could just suggest a possible approach to this?

CO-HEARING OFFICER DODUC: Please.

MR. BEZERRA: Yes. Each of us will do our lead. I suggest you then call us all back as Group 7 questioners after we're done with the lead, and then see -- ask for a time estimate, if any, as to what each of us may want. And we understand that further cross will be limited.

CO-HEARING OFFICER DODUC: Fair enough for now.

MR. BEZERRA: No, I understand for now. You'll have to see how it plays out.

CO-HEARING OFFICER DODUC: I'm sure you have to see how it plays out.

MR. BEZERRA: Precisely.

CO-HEARING OFFICER DODUC: Got it. Thank you.

Mr. Aladjem.

MR. ALADJEM: Once again, Chair Doduc, David

Aladjem for the City of Brentwood, Group No. 10. I estimate 45 minutes to an hour. And because I have a court appearance in Southern California tomorrow I have, switched with Mr. Jackson, and so I'll be taking his place in the line-up, and he will be taking mine.

CO-HEARING OFFICER DODUC: All right.

MR. JACKSON: Yes, for my three clients with these four witnesses, I would estimate an hour and 15 minutes. And part of that will be done by Chris Shutes.

CO-HEARING OFFICER DODUC: And Mr. Jackson, your group is -- number? Sorry.

MR. JACKSON: 31.

CO-HEARING OFFICER DODUC: 31. Okay. So you will be going in Mr. Aladjem's place then, in terms of order?

MR. JACKSON: If we -- may I ask a question?

CO-HEARING OFFICER DODUC: Of Mr. Aladjem or of me?

MR. JACKSON: Of Mr. Aladjem, and then back to you.

CO-HEARING OFFICER DODUC: Mr. O'Laughlin.

MR. O'LAUGHLIN: Tim O'Laughlin, representing the San Joaquin Tributaries Authority. Approximately about an hour, hour and 15 minutes.

CO-HEARING OFFICER DODUC: And group number?

MR. O'LAUGHLIN: I have no idea. It's been a while.

CO-HEARING OFFICER MARCUS: Can we put him at the end of the line?

MR. O'LAUGHLIN: I'd be perfectly happy.

CO-HEARING OFFICER DODUC: Can someone tell me what number Mr. O'Laughlin is?

MR. HERRICK: Zero. Is this mike on? I'm sorry.

CO-HEARING OFFICER DODUC: Mr. Herrick.

MR. HERRICK: John Herrick, South Delta Water Agency and other parties. Up to an hour, but with so many people ahead of us, you know, that could be shorter.

CO-HEARING OFFICER DODUC: And your group number?

MR. HERRICK: 21.

MS. NIKKEL: Meredith Nikkel on behalf of the Tehama Colusa Canal Authority, Group 8, ten minutes. And then I'm also appearing on behalf of North Delta Water Agency, Group No. 9, approximately 45 minutes.

CO-HEARING OFFICER DODUC: Thank you.

MR. KEELING: Tom Keeling on behalf of San Joaquin County protestants, Group No. 24. I believe I

will not have any more than 15 to 20 minutes for this panel.

CO-HEARING OFFICER DODUC: And do you request to go before Ms. Meserve?

MR. KEELING: I always defer to Ms. Meserve's predilections.

CO-HEARING OFFICER DODUC: Ms. Meserve.

MS. MESERVE: Good morning, Osha Meserve for the Local Agencies of the North Delta, Group 19, and other parties. And at this time, I don't have a special request with respect to order, and I expect to have about 45 minutes of questions.

CO-HEARING OFFICER DODUC: All right.

Ms. Womack.

MS. WOMACK: Hi, Suzanne Womack, Clifton Court LP. I'm not availabl e until the 10th, but it's looking like this could be something I could do on the 10th, so I'd like about 15 minutes. If it comes up, ahead of time I'll have to waive my rights. Thanks.

CO-HEARING OFFICER DODUC: Thank you.

MS. MESERVE: Sorry. I forgot I was supposed to also mention for Mr. Emrick, Group 27, City of Antioch. He also has a series of questions for this panel. I'm going to just estimate 45 minutes for him, but I'm sure he can fill you in with the details. He's

in court this morning.

CO-HEARING OFFICER DODUC: All right. Thank you. Looks like you'll be here a while.

And have we figured out Mr. O'Laughlin's group number?

CO-HEARING OFFICER MARCUS: 18.

CO-HEARING OFFICER DODUC: 18?

Mr. O'Laughlin, you are 18, just before Ms. Meserve.

MR. O'LAUGHLIN: Oh, okay. Great. So can I leave?

CO-HEARING OFFICER MARCUS: Please.

CO-HEARING OFFICER DODUC: And Mr. Mizell, Ms. Aufdemberge, does any of your witnesses require the oath?

MR. MIZELL: Yes, Ms. Nancy Parker requested it.

(Witness Nancy Parker sworn)

CO-HEARING OFFICER DODUC: Thank you. And you may begin.

JOHN LEAHIGH, ARMIN MUNEVAR, NANCY PARKER, DR. PARVIZ NADER-TEHRANI,

called as rebuttal witnesses by the petitioner, having been previously duly sworn, were examined and testified

further as hereinafter set forth:

MR. MIZELL: Thank you. Now, the panel you have before you consists of Mr. John Leahigh, Mr. Armin Munevar, Ms. Nancy Parker, and Dr. Nader-Tehrani.

DIRECT EXAMINATION BY MR. MIZELL

MR. MIZELL: And Mr. Leahigh, is DWR Exhibit 78 a true and correct copy of your rebuttal testimony?

WITNESS LEAHIGH: Yes, it is.

MR. MIZELL: Mr. Munevar, is DWR-86 a true and correct copy of your rebuttal testimony?

MR. MUNEVAR: Yes, it is.

MR. MIZELL: Dr. Nader-Tehrani, is DWR-79 a true and correct copy of your written testimony?

WITNESS NADER-TEHRANI: Yes, it is.

CO-HEARING OFFICER DODUC: Yes. Thank you. Please make sure the microphone is on and close to you.

MS. AUFDEMBERGE: And this is Amy Aufdemberge, 18 Department of the Interior.

Ms. Parker, is DOI-33 a true and correct copy of your rebuttal testimony?

WITNESS PARKER: Yes, it is.

MS. AUFDEMBERGE: And is DOI-35 a true and correct copy of your statement of qualifications?

WITNESS PARKER: Yes, it is.

MS. AUFDEMBERGE: Thank you.

MR. MIZELL: Thank you. With that, I will introduce Mr. Leahigh, who will begin the presentations, and they will coordinate amongst themselves to progress through all of the witnesses.

CO-HEARING OFFICER DODUC: Thank you.

WITNESS LEAHIGH: Good morning, Hearing Officers, Board Member, Board Staff. Again, John Leahigh with the Department of Water Resources. Appreciate the opportunity here for rebuttal testimony. I would like to go over -- tell you the eight 11topics that I -- that will be part of my rebuttal.

First of all, how the uncertainty relates to project allocation decisions; how the majority of water for State Water Project export is from sources other than Lake Oroville; how the vast majority of releases from Lake Oroville are non-discretionary; how export capacity goes unused during periods when stored water could be moved under existing conditions; how the California WaterFix will allow for an increased opportunity to capture excess flows as a substitute for stored water; how challenges associated with the exceptional droughts are completely independent of the California WaterFix; how the California WaterFix would not fundamentally change Delta hydrodynamics, if anything, only increase the efficiency. And lastly,

how we would not expect a change in Term 91 periods with the California WaterFix.

MR. MIZELL: And, Mr. Leahigh, if I can interrupt shortly here.

Are you going to be utilizing DWR-10 during your talk?

WITNESS LEAHIGH: Yes, I will.

MR. MIZELL: Okay. Mr. Hunt, if we could bring up DWR-10, please.

WITNESS LEAHIGH: Thank you. So for the first topic of how uncertainty and how it relates to project allocation decisions -- hold on just a second. If I can figure out how to -- this way.

MR. OCHENDUSZKO: Mr. Leahigh, if you could just identify when you want the next slide, Mr. Hunt can help you out.

WITNESS LEAHIGH: Okay, sure.

Next slide, please.

So I'll start with -- this is just a list. I'm not going to -- I'm going to go through it real fast here. In terms of -- well, let me start with -- so this first topic is in rebuttal to Mr. Bourez's testimony as part of the Sacramento Valley Water Users' case in chief, where he contended that his model is a more realistic representation of what actual operations

would be under the California WaterFix by claiming quote, "Operators have more information at their disposal to make decisions," unquote.

While it's true that the operators do have more information available to them, the real world is much more complex and much more uncertain than what Mr. Bourez simulates under his model runs.

So the list you have in front of you on the slide is -- are a number of the factors and the variables that are considered as part of the allocation decision process -- current and projected storages, forecasted runoff for the year, and that's not just runoff into Lake Oroville but throughout the system. That's the highest degree of uncertainty that exists from year to year.

There will be the required Feather River flows, Feather River settlement contract deliveries out of Thermalito Afterbay, the anticipated depletions in the system in the Valley and also in the Delta, anticipated Delta outflow requirements and salinity objectives.

Another area of large uncertainty is the anticipated export restrictions of -- as they relate to the biological opinions. And then also the delivery patterns for the contractors south of the Delta.

Next slide, please.

So I talked about the area of most uncertainty. That's the runoff forecast. And the project receives these through Bulletin 120, which is a runoff forecast based on the snow surveys, the monthly snow surveys.

Got an example here from 2012.

Early on in the spring, there's an enormous amount of uncertainty in terms of the actual runoff that we would expect to see in any given year. So the example here in February, the difference between the driest and the wettest forecast would be -- was 3.3 million acre-feet in that particular year, and that's just for the inflow into Oroville alone.

As we step through the spring months, that uncertainty begins to funnel down as we get more knowledge in terms of the actual snowpack accumulation and as we get through the majority of the rainy season.

But even by the -- by May, which is typically when we provide our final allocation to our contractors, the amount of uncertainty in this particular example was still 665,000 acre-feet. So although that's a great reduction from what that uncertainty was earlier in the year, it's still a very significant number.

And that's -- so, for example, that 665,000 acre-feet, if we release that for export, would constitute a month and a half worth of exports.

So there's still going to be a significant amount of uncertainty in terms of our actual use of Banks Pumping Plant for the summer, for example.

Also a large degree of uncertainty would be to what extent the NMFS, the National Marine Fishery Service, and United States Fish and Wildlife Service biological opinions, to what extent those restrictions will affect export capabilities in the winter and the spring.

And that uncertainty, the difference in the range, is up to 200,000 acre-feet per month, which is something that's not known ahead of time. And also, just the exact amount of water that would be necessary to meet the D1641 requirements, especially the water quality requirements, we have estimates of the water supply necessary to meet those, but until we actually operate through the summer, we won't absolutely know.

Next slide, please.

So because we don't want to over-promise on our delivery capability to our customers, we use a conservative estimate on the ranges of uncertainty. So that would be, for example, on the drier end of the

range of the Bulletin 120 forecast for runoff. And in addition, we will assume something other than the least restrictive biological opinion case.

So these would be the Old and Middle River limitation -- negative flow of the Old and Middle River limitations.

And then of course, the projects operate -- as I said, they operate -- the projects in realtime conditions, and if, in most cases, additional water is available to us in the summer, which is often the case because we are using a conservative estimate, that additional water could be pumped into San Luis Reservoir, not necessarily allocated in that year but held over for project purposes in the following year. So MBK's modeling incorporates more foresight than the operators truly possess in the real-world operations. As I said, we use a conservative end of the range for those uncertainties. And for that reason, I believe the petitioner's modeling better reflects the real-life operations and, therefore, does a better job of simulating the real-world project operations.

Next slide, please.

Actually, I'll go ahead and skip the next couple slides and go to the graphic. Thank you.

So the next topic is how the majority of Water Board SWP export is from sources other than Lake Oroville. And this is in rebuttal to -- Mr. Nomallini, during the case in chief for Central Delta, asserted that the projects should not export water during the winter until it becomes clear that the current year will not be dry.

Mr. Nomallini's implication that upstream storages are being imprudently drafted early in the year for export is based on a false premise that the source of the project's exports is always from upstream storage. In fact, the source of winter exports, even in the driest years, is predominantly from surplus flows that would end up as excess Delta outflow if not exported and put to beneficial use by the projects.

So these stacked bar charts that you see before you are examples of three different year types. So this is historical data that shows the primary sources of water for export at the State Water Project Delta export facilities. An example for a wet year is 2011. We've got 2012 as an example of kind of an average year, and 2015 as an extreme critical -- critically dry year.

You can see the lowest bar on these columns is the flood control releases and unstored flow, which is

the source of water for export in many years. And predominantly in wet and dry years, it's the majority of the source for the supply. Now, of course, in the critically dry years, there's very little of it, but it makes up the majority of the source of the water for export.

The blue bars represent water that was released -- that was required to be released from Lake Oroville and then, after serving that initial purpose, is then picked up at the State Water Project exports. The red bars indicate the volume of water that would be released explicitly for the purpose of export by the State Water Project from Oroville.

So, again, what you can see is the vast majority of the water that's exported in the very wet cases and the dry cases is not from stored -- is not from water that's released -- stored water that's released from Lake Oroville. In the average years, it makes up a larger component of the total, but it's -- still the majority of the supply is from non-discretionary releases or other excess flows in the system.

Next slide, please. In fact, you can go to the next graphic if you would. Thanks.

So the next topic is along the same lines.

How is the vast majority of releases from Lake Oroville -- how are those comprised? And so in a similar assertion by California Sport Fishing Protection Alliance in its case in chief, it was asserted that the State Water Project releases too much storage in drier years. Most release of stored water in every year is released for purposes other than export. The projects have no discretion in releasing the vast majority of the water that we do. So again, here's the three years of example: wet, normal, critically dry.

The first block there, the blue block, is minimum required releases to the Feather River through our FERC license through agreements with the Department of Fish and Wildlife.

The next block, the purple block, would be releases for flood control purposes in order to maintain the required vacant storage in Lake Oroville for flood protection.

The next block, the green block, would be releases from Lake Oroville that are explicitly to meet the Delta requirements. So this would include the flow requirements, the salinity requirements.

The next block up is the orange block, represents the releases out of the lake for afterbay settlement contractor deliveries.

And the final piece, the red block, that's the only portion that is released for the State Water Project exports.

And again, you can see sort of the same pattern. In the wetter years and the dry years, there's very little of that discretionary release. It does show up primarily in the average years, but it is a small portion of the total. Most of that -- most of those releases are for non-discretionary reasons. Next slide, please.

So the next topic --

Actually, if you would go directly to the next 13 graph. There we go. Thank you.

So the next topic is how export capacity goes unused during periods when stored water would be moved under existing conditions.

So as part of the case in chief again for California Sports Fishing Protection Alliance, it was asserted that the petitioner's modeling for State Water Project operations should be expected to be more aggressive in releasing additional stored water from Lake Oroville for exports South of Delta during the summer months because of the greater diversion capability afford by the North Delta diversion.

In a similar manner, Mr. Bourez asserted that

modeling should be expected to show a greater use of Central Valley project Joint Point of Diversion at the State Water Project export facilities. These assertions are not borne out by project policy or the historical practice of limiting release of upstream stored water in all but the wettest years.

So what you have in front of you, once again, is a historical -- is historical data depicted in a graphical form, and it is color-coded by year type. So we have -- this is all of the years back to the year 2000, ending last year, with the wet years in blue, above-normal and below-normal years in green, dry years in orange, and critically dry years in red.

And this is the -- on the Y-axis are volumes -- volume of acre-feet. And this is for the three-month period July through September. And the reason I picked these months is that they constitute the three months where the majority of stored water would be moved at the export facilities.

The dashed red line represents the full permitted capacity for export during these three months for both the Central Valley Project and the State Water Project, so a little over 2 million acre-feet of capacity under existing conditions.

The solid red line represents the actual use

of that capacity in each of these years. The dotted red line represents the use of Joint Point of Diversion by the Central Valley Project at the State's facilities. So the dotted red line is actually a subset of the solid red line.

And then the only other line on there is the gray, which is the unmet demand during that -- during each of these particular years.

So this is just a demonstration that the reason we would not be utilizing the full capacity for export is not because of a demand limitation. So you can see in most of these years, there was unmet demand, with the exception of the 2006.

So the point on this is, if you look at the -- so the wetter years, 2011, 2006, and 2005, which was actually a wet year on the San Joaquin Basin, those were the only years where we utilized the full permitted capacity of both projects. You can see in all of the other years, the full capacity under existing conditions was not utilized.

And to get back to those wetter years, as I had represented in the previous bar charts, the source of that water would have been excess flows that would have been available even during the summer in those wetter-type years.

So in all of the other years, this would have represented the movement of stored water from the upstream SWP and CVP reservoirs to the Project's export facilities in the Delta.

So the evidence does not support the assertion by the protestants that the projects would be expected to draft more storage out of upstream reservoirs due to increased summer capacity afforded by the California WaterFix when the projects are not fully utilizing all the conveyance capacity that's available to us today for that purpose.

In fact, the State Water Project moderates releases of stored water. The first block of water that we reserve upstream is to meet regulatory and contractual obligations. The next portion of the additional storage is managed for State Water Project contractor deliveries in a way that balances between maximizing average annual deliveries and for providing some dry-year reliability.

And the strategy for obtaining this is that -- that supply is that the higher the State Water Project allocation in any given year, the greater the storage that's left behind in Lake Oroville to guard against a dry year and to protect that dry-year allocation.

Next slide, please.

So that -- as part of this same rebuttal, that leads to the next topic, which is how the California WaterFix will allow for an increased opportunity to capture excess flows as a substitute for stored water.

So the petitioner's modeling which I'm going to show in the next slide has increased the reliance on unstored flow in many of the cases, and it's decreased the reliance on stored releases. So this is completely consistent with the strategy that I just discussed.

The MBK modeling, on the other hand, increased reliance on both stored -- well, increased the use of both stored releases and unstored flow. So it's quite more aggressive in the use of the stored water, and this is inconsistent with that policy or strategy, if you will.

Next slide, please.

So here are the results. This was presented as part of the petitioner's modeling and, again, color-coded by the different year types.

And under this particular case, we're comparing the no action alternative with H3. And what you can see here is that it shows an increase in export capabilities for the State Water Project under all the year types. And that's that -- the reason for that increase, if you can see the breakdown of the sources

of water, is -- comes from the increased capabilities of exporting excess unstored flows. And that's in the -- primarily in the winter and the spring. It actually shows somewhat of a decrease in the use of stored water for export in each of these.

And that's entirely consistent with that strategy that I just discussed where, in years where we're able to give a higher allocation to our contractors in order to balance that average annual delivery with dry-year reliability, we will leave even additional storage for carryover into the following year to protect against those drier years. So that's the effect that's captured here as part of the petitioner's modeling.

Next slide, please.

In contrast, in MBK's modeling of the California WaterFix -- now, this is a slightly different. This is MBK-modeled Alternative 4A. So it's a slightly different -- it's not -- it's not the H3. But the point still holds here, in that as consistent with the petitioner's modeling, there is greater use of capture of unstored flow in the winter and the spring.

But MBK takes it a step further and shows additional stored water being released in the summer

months for export. And that's entirely inconsistent with not only the strategy that I discussed but historical practice if you look at -- based on the other evidence that I provided.

So next slide, please.

So -- so -- and -- okay. So increased opportunities to capture excess flows as a substitute for stored water. So along this same theme with California WaterFix, what the regime that's reflected in this modeling -- essentially what it does is it restores some of the capabilities that existed prior to the implementation of the biological opinions in 2008 and 2009.

So it increases -- it restores some of that ability to capture some of the spring runoff events for beneficial use.

The -- so when the BiOps were applied in 2008 and 2009, they limited the amount of reverse flow for the South Delta diversions. But with the use now of the North Delta diversion, there would be an opportunity to capture some of those excess flows in the winter and the spring without -- while still meeting those limitations in the South Delta.

So next slide, please.

So here is modeling results from DWR's

delivery reliability report. These are from two different reports, one from 2005 which predated the biological opinions, and one from 2011 following the biological opinions.

But this shows that same change in general pattern that I've been talking about where, prior to the biological opinions, more of the supply for the projects came from the winter and the spring -- or for the State Water Project came from the winter and the spring. And after the biological opinions in the 2011, you can see higher exports in the summer months.

So the projects actually became more dependent on stored water from upstream reservoirs after the biological opinions. And what the California WaterFix would allow for is restoration back more so to that previous operating regime where we would rely more on the unstored flows in the spring and the winter, and actually become less reliant on the stored water during the summer period.

Next slide, please.

So the next topic I wanted to cover is how challenges associated with exceptional droughts are completely independent of the California WaterFix.

So a couple of the parties -- well, Mr. Shutes and Ms. Paulsen, among others, asserted that it is

unreasonable for the California WaterFix to rely on temporary urgency change petitions.

So TUCPs are rare and only implemented under extreme conditions. Now, unfortunately, we have seen some extreme conditions in recent years. And this was part of my case in chief testimony.

With 2013, the lowest precipitation on record for any calendar year, a hundred years going back, 2014 by far the warmest on record, over 4 degrees Fahrenheit warmer than any year on record -- or I'm sorry -- than the average.

2015 was the lowest snowpack; essentially no snowpack in 2015, so these were extreme cases. And the TUCPs were one -- were only one of several emergency management actions that were taken to balance the shortages among the various beneficial uses in those years.

So although exceptional droughts and adverse hydrologic changes associated with climate change do present challenges, these are completely independent from the proposed California WaterFix project.

Next slide, please.

So next I'd like to address how the California WaterFix would not fundamentally change Delta hydrodynamics and, if anything, will improve the

efficiency of those hydrodynamics.

Again, it might be easier if I go to the graphic. If you could just scroll to -- there we go. Thank you.

So Mr. Brodsky in the Save the California Delta Alliance claimed that the operations of the California WaterFix would represent a big change in the way water would be flowing in the Delta. I continue to argue as part of this rebuttal that the fundamental hydrodynamics do not change.

So during wetter periods, which was part of my case in chief, I showed the example where in big flow years or big flow periods and certainly this year, as an example, when there's very wet conditions, the North Delta diversion would be skimming off the top of the large Delta inflows and really have no appreciable change to the Delta hydrodynamics.

What I'd like to focus more on this rebuttal is the hydrodynamics in the drier periods in periods where the Delta is in balanced conditions.

So under -- the graphic in front of you shows the -- essentially the flow regimes in the Delta. On the left would be the existing condition without the California WaterFix, without the North Delta diversion.

We currently rely on Cross Channel flow.

That's through the Cross Channel. That's the whole reason it was designed and constructed, was to bring freshwater Sacramento River water into the Central Delta. That is needed in order to meet the Delta standards, to meet the Central Delta ag standards, to meet the M and I water quality standards within the Delta.

There's also a need for some level of reverse net Old and Middle River flow, and that's to -- for some of this fresher water to get into the M and I export locations at Contra Costa Water District as well as the M and I locations which are the project exports themselves at -- from Clifton Court and Jones Pumping Plant.

What you can also see here is at times there is also a certain amount of reverse flow in the western Delta. And that's due to not only the natural tidal conditions during spring tides, for example, but it's also from the diversions of all types in the interior Delta. During periods when the projects are pumping heavily in the South Delta and they must rely on a larger amount of water from the upstream reservoirs, this -- so this negative -- this reverse flow in the western Delta becomes more pronounced with high South Delta export.

In order to counteract this -- and this negative flow in the western Delta brings salts in with it. That's a mechanism for salt transport into the interior. So in order to meet the standards, what the projects are required to do is release additional water from upstream reservoirs in order to provide additional outflow to counter this negative western Delta flow.

This additional water for outflow is often also referred to as "carriage water." Carriage water represents an inefficient use of the upstream stored water.

With the California WaterFix hydrodynamics depicted on the right, we will continue to need the cross-Delta flow as we do today -- that's not going to change -- in order to meet the interior and M and I water quality objectives.

However, the North Delta diversion in the tunnels will allow for some amount of the project exports to go directly to the south -- to the Banks Pumping Plant and Jones Pumping Plant, and this would, therefore, not require -- this would result in less South Delta pumping which would also result in less negative West Delta reverse flow, which would have less of a detriment in terms of the salinity coming to the Delta. And, therefore, it would also require much less

carriage water.

And so that would actually result in less water being released from project upstream storages, which would represent a more efficient movement of water from the projects to their customers south of the Delta.

So next slide, please.

So the last topic is -- so Mr. Bourez in his testimony contended that the frequency and duration of Term 91 periods would increase with the proposed WaterFix. Term 91 is a condition determined by the State Water Resources Control Board when supplemental project supplies are needed to meet in-basin uses.

Next slide, please.

So as part of this proposed project, in-basin 16 uses are not expected to change with the California WaterFix. And, if anything, as I've just laid out in the hydrodynamics section, the amount of stored water to meet the Bay-Delta standards would not be expected to increase. If anything, because of the increased efficiency, we would see decreases in the amount of stored water to move the same amount of export.

Therefore, the frequency of Term 91, I would not expect that to change whatsoever as part of the proposed California WaterFix.

And so that concludes my rebuttal. Thank you.

CO-HEARING OFFICER DODUC: Thank you, Mr. Leahigh.

Next? And before you begin, I would like to take a lunch break at some point, near around noon. So I'll leave it to you to determine the best time for there to be a break in your testimony between you and the next witnesses.

Unless, Mr. Mizell, you believe all your witnesses can be done within the next 90 minutes or so?

MR. MIZELL: No, I think we will need to take a break. And maybe if Mr. Munevar can look for one of the transitions between your presentation and Ms. Parker's presentation.

CO-HEARING OFFICER DODUC: All right.

WITNESS MUNEVAR: Okay.

CO-HEARING OFFICER DODUC: And also while we still have Ms. Spaletta here, at some point we'd like to get some clarification on your objections. So we'll ask you to come up at that point.

Mr. Munevar?

WITNESS MUNEVAR: Well, good morning, Hearing Officer, Members of the Board, Board Staff. Thank you for allowing me to present my rebuttal testimony. My name is Armin Munevar, and I've previously testified in

this matter.

CO-HEARING OFFICER DODUC: And I think we need to get your PowerPoint up?

WITNESS MUNEVAR: Yes. So in order to be most efficient, I will be presenting in coordination with Ms. Parker from Reclamation. This coordination, however, does not modify the fact that each of us have independently prepared written testimony.

So during my oral summary and that of Ms. Parker, we'll be using a series of slides for convenience of the Hearing Officers and to be efficient in our time. These slides are simply excerpts of the testimony and exhibits, and the statements in the slides are cited where they can be found in the written testimony.

MR. MIZELL: If I might, Mr. Hunt, it's the file that I gave you this morning.

WITNESS MUNEVAR: Thank you.

BOARD MEMBER D'ADAMO: What is the number of the exhibit? I'm looking for it.

MR. MIZELL: This is not an exhibit. As Mr. Munevar was just explaining, these are excerpts from the testimony so that we don't have Mr. Hunt flashing back and forth between various pages.

BOARD MEMBER D'ADAMO: I see what you're

saying.

WITNESS MUNEVAR: Okay. Well, thank you.

My rebuttal testimony and that jointly presented by Ms. Parker from Reclamation will focus on several main arguments that have been made by various protestants related to CalSim II modeling and results.

Specifically, my rebuttal testimony will focus on arguments related to impacts to legal users of water, flawed Sac Valley water user modeling of discretionary operations, a sensitivity analysis in which we isolated the major differences between MBK modeling and petitioner's modeling, a rebuttal to MBK's two-year modeling example.

We will present each of the protestant arguments and demonstrate why they're flawed or incorrect and offer our opinion. The outline is presented here, and we'll follow in sequence with this outline.

The Sacramento Valley Water Users and other protestants have relied upon MBK's modeling and contentions by Mr. Bourez that they have determined that the petitioner's modeling fails to demonstrate an absence of injury to legal users of water due to inappropriate assumptions regarding operation of the CVP and SWP.

We fundamentally disagree with that statement. And for this analysis we have reviewed MBK's modeling even with the measures implemented by MBK which we do not agree with which more aggressively export upstream stored water. Despite those things, their modeling does not show any significant impact on legal users of water because water deliveries to Sacramento settlement contractors, Exchange Contractors, Refuge Level 2, Feather River service area contractors, are provided at substantially similar levels to the no action.

This is consistent with the testimony and modeling provided in the petitioners' modeling.

CO-HEARING OFFICER DODUC: And, Mr. Munevar, because this is not -- your presentation is not part of the record, or at least I don't believe you intend to introduce into the record, for each slide please do identify the specific DWR exhibit and page to which you're referring. It's on the slide, I see, but you actually need to say it for the record and for the transcript.

WITNESS MUNEVAR: Okay. Fair enough. So the slide in front of you is from DWR-86 23 Figure 3 on Page 5. And what we've done in this particular figure and subsequent figures --

CO-HEARING OFFICER DODUC: And I'm sorry.

That would be DWR-86 Errata?

WITNESS MUNEVAR: Errata, yes. Thank you. Errata Figure 3, Page 5.

And in our direct testimony last year, we presented a similar set of results in which we looked at the petitioners' modeling and the no action and WaterFix scenarios and the delivery to various legal water users.

In this case, what is being shown is the deliveries to State Water Project Feather River service area agreement contractors. The modeling is entirely from MBK's modeling. The black bar represents the no action deliveries from MBK's modeling. And they are represented as a long-term average in the first block, wet to above normal, below normal, dry, and critical, moving to the right.

The second bar is the MBK's version of Alternative 4A, H3-plus. And the third bar in each of the groupings is an alternative implementation that MBK has developed in terms of Alternative 4A in terms of operating for Delta outflow.

As can be seen on this graph and the subsequent graphs, the California WaterFix scenarios, which are the second and the third scenarios in each of these panels, provide essentially identical deliveries,

or essentially the same deliveries as the Feather River service area contractors across each of the water year types.

The next slide shows figures from DWR-86 Errata, Figure 1 and Figure 2, Page 4; both on Page 4. On the left are deliveries to CVP settlement contractors using the same color scheme as was presented on the first slide. And on the right are CVP North of Delta refuge delivery. And again, the same outcome here, that across the year types the California WaterFix scenario, as simulated by MBK, provides the same level of delivery as the no action. And that is true for both the settlement contractors and the North of Delta refuge.

On the slide that's presented here, which is DWR-86 Errata, Figure 4 and Figure 5, both on Page 6, on the left are CVP Exchange Contractors, delivery to the CVP Exchange Contractors, and on the right are CVP deliveries to South of Delta refuge. In each case, the California WaterFix scenarios are providing similar or identical level of delivery as the no action, even using MBK's modeling.

So in short, even if we are to assume MBK's modeling is correct, which we do not, there is no evidence of injury to legal users of water, as

presented in these slides.

I'll move to my second major point of rebuttal. Sacramento Valley Water Users and other protestants have relied upon modeling performed by MBK to support arguments again the petitioners' modeling. MBK modeling includes several changes to the petitioners' modeling. Of all the changes, MBK changes to three interrelated inputs account for the majority of the differences between MBK's modeling and the petitioners' modeling.

All these of MBK's changes that are identified in those three interrelated inputs were discretionary and were meant to prioritize higher South of Delta allocations and deliveries over the protection of upstream storage.

In my opinion, these changes are fundamentally flawed because they are not consistent with operational behavior and operations of the State Water Projects, as indicated by Mr. Leahigh previously. And the discretionary operations that were included in MBK's modeling are applied inconsistently between the no action and the WaterFix, thereby introducing a bias in the comparative analysis and creating the appearance of the California WaterFix having project-related impacts and risks to water users.

I'll go into that somewhat further.

Hearing Officer, would you like me to state the reference on the slides as well for these ones?

CO-HEARING OFFICER DODUC: Yes, please.

WITNESS MUNEVAR: Okay. So this is DWR-86 Errata, 7 -- 7:21 through 8;3.

As I mentioned, all three MBK's -- major changes that MBK implemented in their modeling were meant to prioritize higher South of Delta deliveries over the protection of upstream storage. These changes include the unreasonable foresight in allocation logic, the lack of changes in San Luis rule curve to reflect the existence of the California WaterFix, and an erroneous use of Joint Point of Diversion in setting and meeting aggressive allocations.

The magnitude of these changes are on the order of 200,000 acre-feet additional exports in MBK's modeling relative to the petitioners' modeling.

Mr. Bourez testified that these changes were made to make the discretionary decision in the model more accurate and better balanced. In my opinion, these changes are fundamentally flawed for two reasons: They're not consistent with the operations of the projects, their discretionary operations are inconsistently applied, and the application of them in

fact led to modeling that is much less realistic than what was proposed by the petitioners' modeling.

We'll skip one slide in the interest of time.

This is referencing DWR-86 Errata, 7:21.

In addition, MBK's modeling and Mr. Bourez's testimony, he stated their modeling did not consider climate change or sea level rise effects, and Mr. Bourez states that the MBK modeling carries over far more water than the petitioners' modeling. Mr. Bourez incorrectly assumes that this is due to the WaterFix and fails to mention that the reservoir dead pool conditions under petitioners' H3 and no action are the result of climate change and sea level rise effects. And as will be shown in Ms. Parker's testimony, when the petitioners' models are run with the same hydrologic inputs as MBK's model, i.e., without climate change and sea level rise, the upstream storage results are similar to MBK's results. And more importantly, results are similarly or slightly improved compared to the no action.

DWR-86 Errata, 7:21. Transparency and reproducibility of results is a basic tenet in water resources modeling. We find that MBK's modeling does not meet these standards. MBK modified standard allocation logic, and they prepared modeling that

cannot be reproduced by other modelers.

In fact, in my 20 years of modeling the SWP and CVP system and working with the CalSim model over that period, the MBK modeling that's presented in this -- in the previous testimony was the most predetermined and outcome-based modeling I've observed. They claim that their changes to discretionary operations were to produce a more realistic operation. However, their changes to assumptions made the model less realistic.

MR. O'BRIEN: Excuse me. I'm going to interpose an objection.

CO-HEARING OFFICER DODUC: Hold on a second. Please come up to the microphone.

MR. O'BRIEN: Kevin O'Brien for the SVWU.

I believe Mr. Munevar is not sticking to his written testimony. The last statement about his 20 years of modeling was not in his written testimony. If he's going to ad lib, that violates the rules of this proceeding.

CO-HEARING OFFICER DODUC: Mr. O'Brien, his qualification, his experience was submitted as part of the record.

MR. O'BRIEN: That's not the issue, respectfully. The issue is whether the witness is here to summarize his written testimony. Those are the

rules we follow, and when witnesses deviate from the written testimony, it introduces unfair surprise into the proceeding.

CO-HEARING OFFICER DODUC: So let me be clear. You are specifically objecting to that one statement which you believe to be not in his rebuttal testimony?

MR. O'BRIEN: So far, yes, that one statement.

CO-HEARING OFFICER DODUC: Is everyone standing up joining in in the objection? Is there something new you would like to add?

MR. O'BRIEN: I'm objecting on behalf of the Sacramento Valley Water Users.

CO-HEARING OFFICER DODUC: And I see Ms. Meserve, Mr. Bezerra, Mr. Aladjem, and now Mr. Jackson.

MS. MESERVE: Osha Meserve for Land. I actually have a slightly different objection that I'd like to raise with you.

CO-HEARING OFFICER DODUC: Before you do, is there anyone else who wishes to join in in Mr. O'Brien's objection, just so that we have it captured?

MR. BEZERRA: Yes. Ryan Bezerra.

Specifically, Mr. Munevar just stated in his 20 years of experience he has never seen more

predetermined modeling than he has seen here, and I do not believe that is a statement that is in his written testimony, and I also believe it is rather argumentative.

CO-HEARING OFFICER DODUC: So it's the "predetermined" part that you're objecting to, not his 20 years of experience?

MR. BEZERRA: Correct.

CO-HEARING OFFICER DODUC: Mr. Aladjem.

MR. ALADJEM: David Aladjem, City of Brentwood. I would join Mr. O'Brien and Mr. Bezerra's objections but also note that is a representation based on his experience that was not included in the testimony, and that is a surprise testimony to which we are objecting.

MR. JACKSON: Group 31 joins in the objection for the same reasons that have been expressed.

CO-HEARING OFFICER DODUC: Thank you.

MR. COOPER: Dustin Cooper on behalf of Anderson Cottonwood Irrigation District and other protestants. I would join in the objection. I would add an additional ground.

The first slide that was presented by Mr. Munevar said something to the effect of MBK's modeling shows no injury to legal users of water.

That's inconsistent with his testimony. His testimony says there's no significant impact.

CO-HEARING OFFICER DODUC: So noted.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: Ms. Meserve.

MS. MESERVE: Thank you. I object to the -- sorry -- the petitioners' being allowed to show a different slide show than was presented as evidence, specifically when our parties presented -- brought to the hearing PowerPoints that were comprised of parts of their presentations. We were precluded from using this conglomeration or, you know, a newly presented compilation that related back to those prior exhibits.

And so I'm looking around the room and seeing people trying to sort through to get to where they're talking about.

And, you know, when we were presenting our cases in chief, our -- at the last -- we had brought similar slide shows as to what we're seeing here, and we were forced to have our experts rely on the original documents that were submitted with the case in chief and not allowed to use a summary such as being used here.

And so I would say that that is an inconsistency in the manner of presentation that's been

allowed. And if the Hearing Officers were to allow such a procedure, at the very least they should be required to submit it in advance so that all those of us preparing for cross-examination can see where they're focusing their testimony.

So I just -- I object to them being allowed to, last second, bring in different documents the way they have.

CO-HEARING OFFICER DODUC: Actually, let's discuss that because I thought what they were doing is actually quite efficient.

My understanding is that these slides are excerpts from your existing documents and exhibits that are already in the record. What you're attempting to do is, rather than having Mr. Long and Mr. Hunt jump from page to page, they simply compiled it into one document for ease of access.

Now, they're not presenting or at least they shouldn't be presenting new slides with new information. In essence they're simply, I'm hoping, making better, more efficient use of the time.

MS. MESERVE: I believe the last protestant just pointed out that there was a difference. And yes, with respect to my expert, Mr. Tudel, for instance, he attempted to bring four slides that were excerpts and

that were marked with where each came from, and he was not allowed to use that condensed slide show. He was forced to have --

CO-HEARING OFFICER DODUC: My recollection is that your exhibits were different than what was actually submitted in the exhibit, that there were changes, modifications made.

MS. MESERVE: That's incorrect, with respect to Mr. Tudel at least.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: Yes, I'd just like to join with that objection and do so on due process grounds.

This hearing has two sets of standards; one for the petitioners, one for the respondents. And it is a procedural and substantive violation of due process.

CO-HEARING OFFICER DODUC: Mr. Jackson, as the Hearing Officer responsible for ensuring a fair hearing, on what grounds are you suggesting that there are two different set of standards?

MR. JACKSON: It was just exactly explained by Ms. Meserve. There is information that I haven't seen, and I've looked at all of -- all of the evidence. There's information and the previous aside about 20 years that is nowhere in their testimony.

CO-HEARING OFFICER DODUC: That was an -- a verbal statement by Mr. Munevar to which an objection has been lodged to which we have not responded or ruled. Please do not accuse me of something which has not happened, may not likely happen.

MR. JACKSON: If it doesn't happen, that would be good.

MS. MORRIS: Stefanie Morris, State Water Contractors.

CO-HEARING OFFICER DODUC: Ms. Morris.

MS. MORRIS: I just -- on these objections, the written testimony is submitted. I don't think Mr. Munevar is expressing a new or different opinion. I think that it's unrealistic to expect someone to summarize their written testimony without reading it directly in, which is not what the Hearing Officer asked for. They were supposed to submit it and summarize it. So they may choose a different word, but so long as the opinions don't change and the substance is the same, it seems to me ridiculous to make Mr. Munevar say the exact same words.

CO-HEARING OFFICER DODUC: Mr. Bezerra, I'm assuming you have a response to that.

MR. BEZERRA: Yes. Thank you. Ryan Bezerra.

I tend to agree with Ms. Morris that a summary

may be a little different, but when Mr. Munevar testifies in his 20 years of professional experience he's never seen more outcome-oriented modeling, that's rather a large departure from a summary of his written testimony. And we should probably stick to the facts of what's presented in this proceeding rather than characterizing other witnesses's professional efforts.

CO-HEARING OFFICER DODUC: All right. Mr. Mizell, Ms. Aufdemberge, or Mr. Berliner, any last comments you wish to make on these objections?

MR. MIZELL: No. I will simply restate that the citations provided on each and every slide provide the location for the direct quotations.

CO-HEARING OFFICER DODUC: And they are the direct, exact quotation -- well, with the exception of the highlighting, has nothing changed?

MR. MIZELL: The highlighting is added for focusing the individuals to the statements we're talking about rather than the having to give line numbers and read it into the record. We thought it would be more efficient for people to focus on their own.

CO-HEARING OFFICER DODUC: Anyone else?

(No response)

MS. HEINRICH: Yes. Someone mentioned

something about a difference in the heading, different words used; "impact" versus "injury." And I missed that. Is there a discrepancy between the presentation and --

CO-HEARING OFFICER DODUC: I think it was a question from Mr. Cooper.

MR. COOPER: Yes. Thank you. Dustin Cooper.

I'm sorry. I was going off memory. I was trying to locate it in Mr. Munevar's testimony. My recollection, because it stuck out to me, was that his description of MBK's modeling showed no significant injury. The first slide that was presented in this particular document, that I think is first time I've seen it is today, said "no injury." That, in my mind, is a significant difference.

CO-HEARING OFFICER DODUC: All right. It is noted. All the objections and various responses to those objections have been noted.

Mr. Munevar, please continue, unless this is a good time for a break.

WITNESS MUNEVAR: We probably have about 20 minutes between Ms. Parker and myself to get to a good stopping point. If you'd prefer to push through, we can do that.

CO-HEARING OFFICER DODUC: Then you also have

Dr. Nader-Tehrani as well.

MR. MIZELL: That's correct.

CO-HEARING OFFICER DODUC: All right.

MR. MIZELL: I was going to ask. Armin, can you find -- sorry -- Mr. Munevar, can you find a place in between where you are now and where Ms. Parker presents to break, at the next indexed bullet point?

WITNESS MUNEVAR: Yeah. So if we could go maybe seven minutes or so, and then we can break then.

CO-HEARING OFFICER DODUC: All right. Let's do that.

WITNESS MUNEVAR: DWR-86 Errata, 9:9. The CalSim II allocation logic, that logic, that determines how much the water to allocate for contractors, attempts to emulate decisions made by the operators and use uncertain forecasts similar to what Mr. Leahigh testified in determining those allocations.

In general, the CalSim allocation logic includes two main steps. The first is to determine project allocations based on current storage and forecasts of available supply for the remainder of the year.

And in the CalSim, there are essentially rules or curves called the Water Supply Index, Demand Index, and the delivery carryover curves, which take that

available supply, determine how much could be allocated for FERC and contractors.

The second main step in the allocation logic is to reduce South of Delta allocations, if needed, based on San Luis storage and export capacity. And those are generalized from a broad range of hydrologic and operational conditions.

So this is the standard allocation logic which has commonly been used in CalSim and is used in the petitioners' modeling for both the no action and the WaterFix.

DWR-86 Errata, 9:9. MBK's modeling fails to follow the standard allocation logic. They modified the allocation logic in several ways.

They first began with the initial estimates as the standard logic. Then they determined estimates of export capacity by an iterative process in which actual exports from previous runs were input as estimates into the next iteration.

This process is akin to knowing a future result, then rewinding the clock to make decisions to achieve the results. This approach is inappropriate for planning models because it provides the model with foresight that operators would not have when making allocation decisions.

Even after making those iterative adjustments, there were times in which MBK made manual adjustments to increase the allocations or bypass the export estimate logic altogether; and when they were bypassed altogether, they essentially ignored that export estimate part of the allocation logic.

This MBK modeling approach is severely flawed and is not reproducible by any other model.

DWR-86, Errata 9:9. Sorry. This is 11, 19 through 28. In fact MBK's export estimate logic changes were reviewed and rejected by DWR in 2015 due to the use of unreasonable amounts of foresight in projecting future conditions.

MBK's approach results in a monthly time series of export estimates that are tuned closely to actual exports only possible by knowing the actual exports ahead of time.

The petitioners' standard CalSim II modeling approach considers similar information as the operators in setting export estimates -- current storage, conservative forecasts of available supply, conservative assumptions of future regulatory requirements such as Old and Middle River flows -- and then relate them to dependent variables such as allocatable supply or hydrologic indices.

MBK's changes induce a bias between the alternatives, and it would be inappropriate to incorporate them into this comparative analysis.

Move past 1 in the interest of time.

Just as an example, this is a DWR-86 Errata, Page 13, Figure 6. This is an example of the export estimates as used in the MBK modeling for the California WaterFix scenario. It's -- each year is in the first column, then January, February, March, April and May. And the values represent an estimate, presumably, of the available export through the allocation period.

All of the ones that are highlighted in red and reflected by 9999, are areas in which -- are years in which the export estimate was essentially ignored in the modeling and allocations were made independent of that export estimate.

The second major point of the three is the -- this is DWR-86 Errata, 14, 3 to 5, and 21 to 25.

"MBK formulated their rule curve for San Luis Reservoir to achieve an operational strategy to divert as much surplus as possible and to operate upstream CVP and SWP reservoirs conveys" -- "to operate upstream CVP and SWP reservoirs to convey surplus water when possible." And that's a quote.

The San Luis rule curve in the model is an operational target that is used to represent operational decisions to move water from upstream reservoirs to South of Delta storage. The San Luis rule curve could and should change when the ability to capture surplus water or export stored water has changed due to regulatory or infrastructure modifications such as WaterFix.

MBK's implementation and application of the San Luis rule curve ignores the changes in operational flexibility that is afforded by the California WaterFix and that their prioritization of conveying upstream stored water overshadows the additional goals of California WaterFix to maintain upstream storage flexibility.

And the last two slides -- and we'll break at this point.

The last of the three points in terms of the allocation process and where there are significant flaws in MBK's modeling is the use of Joint Point in setting -- Joint Point of Diversion in setting CVP allocations.

MBK's used additional Joint Point of Diversion capacity in setting allocations for the California WaterFix scenario. Also, only in that scenario, they

modified the timing and priority of cross-valley canal wheeling. They considered Joint Point of Diversion in order to maximize their allocations. And their use of Joint Point moved water from upstream storage -- stored water from upstream storage.

These three assumptions are speculations on the part of MBK and are not consistent with operational decisions which generally do not include Joint Point of Diversion in allocation setting.

I think that is the point at which I will stop and transition to Ms. Parker. So probably a good stopping point.

CO-HEARING OFFICER DODUC: Thank you. Before we take our lunch break, though, let me ask Ms. Spaletta to come back up.

Ms. Heinrich has some questions for you, I believe, with respect to your objections voiced earlier.

MS. SPALETTA: Yes.

MS. HEINRICH: Sorry about that, Ms. Spaletta. I just wanted to make sure that I captured your objections and the status of them correctly.

So going back to Ms. Sergent's written testimony, according to my notes, you objected to Lines 1 through 16 on Page 4 as duplicative, and I

believe that objection was overruled by Hearing Officer Doduc's oral ruling.

And then you also objected to Lines 17 through 20 on that same page as unsupported opinion?

MS. SPALETTA: That's correct.

MS. HEINRICH: Do I have that right? Okay.

And then on Page 5, Lines 7 through 10, you objected to that testimony unless the maps that are referenced are made available.

MS. SPALETTA: That's correct.

MS. HEINRICH: And then the next objection that I have is on Page 14, Lines 12 through 23. You joined in North Delta's objection, which I believe still is outstanding, to this testimony regarding the North Delta contract on several bases; first, that it -- that Ms. Sergent doesn't have personal knowledge of the intent of the parties, that the parties' intent is not relevant. And then I believe there's a third basis that I didn't catch.

MS. SPALETTA: Sure. I think the first question is whether the intent is relevant because if you don't have a finding of ambiguity in the contract on a relevant issue, then the issue of intent is not relevant.

If there is a finding of ambiguity in a

particular provision, then the question of intent is relevant, but then you have to ask yourself what types of evidence is admissible to prove the intent of the parties.

And so it was my objection that an unfounded, self-serving opinion of intent by someone who was not a party to the negotiations would not be that type of admissible evidence.

Now, in response, Mr. Mizell indicated that Ms. Sergent had reviewed the historic files at DWR and that formed the basis of her opinion. And I have no doubt that Ms. Sergent is familiar with the historic documents that DWR houses. However, we have a problem, which is the rest of us don't have access to them.

So just like with the maps, you know, one of the creatures of this proceeding is that we have expert witnesses who are not subject to discovery prior to their testimony. So if we were in a normal trial, we would have asked them to produce all of the records to support their opinion at their deposition and we would have had an opportunity to review them. We don't get that opportunity here.

So to make sure that the proceeding is fair, if an expert is going to express an opinion based on some underlying information, that information needs to

be available to the other parties.

Now, we had a similar situation here with Mr. Leahigh. His charts were very interesting, but we don't have the underlying data that was used to create the chart.

So this is really a standing objection that,

if we're going to have an expert summarize information, that information needs to be available to the parties.

MS. HEINRICH: Okay. Then I didn't have any other objections.

I noted that you cross-examined Ms. Sergent regarding her testimony beginning on Page 21 and continuing through -- let's see. That was Page 21, Line 17, continuing on to Page 22, Line 11. But I didn't note that you had -- actually had an outstanding objection or a motion to strike.

MS. SPALETTA: Well, I think that there would be an objection on the ground of lack of foundation and legal conclusion, but I believe that the Hearing Officer has made clear they don't want those technical objections and we should point that out on cross and they will give it due weight.

MS. HEINRICH: Very good. Thank you.

MS. SPALETTA: Thank you.

CO-HEARING OFFI CER DODUC: Thank you,

Ms. Spaletta.

Mr. Cooper.

MR. COOPER: Thank you. Dustin Cooper.

If I may briefly return to the issue of the objection to Mr. Munevar's summary of his rebuttal testimony.

I would like to withdraw my additional ground for objection. I had a chance to look at Mr. Munevar's testimony. At Page 2 the introduction to this subject in his rebuttal testimony, he says MBK's modeling shows no injury to legal users of water, and then in his narrative description of that, he also says it does not show any significant impact on legal water users. So I'll withdraw my additional ground for objection. I do, however, join in the other grounds. Thank you.

CO-HEARING OFFICER DODUC: And on that objection in particular to Mr. Munevar's statement that in 20 years of experience he's never seen such result-oriented modeling, the objections are sustained, and that statement will be stricken.

With that, we will take our lunch break. We will return at 1:15.

(Luncheon recess taken at 12:13 p.m.)

AFTERNOON SESSION

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(Whereupon, all parties being duly noted for the record, the proceedings resumed at 1:15 p.m.)

CO-HEARING OFFICER DODUC: Good afternoon, everyone. It is 1:15. We are back in session.

And before we resume, a couple of things. First of all, we received an e-mail from Ms. Suard, Group 41, that Snug Harbor would like to conduct cross-examination of this panel. And so she has requested 30 minutes, so we'll add her to the queue before Ms. Womack.

And then, again, before we resume, Mr. Munevar, we appreciate your attempt this morning to try to improve the efficiency by introducing your PowerPoint.

Unfortunately, it has resulted in some 19 confusion and some -- let's just say it was a distraction. And even though you claim that it pulled directly from your rebuttal testimony that was submitted by the deadline, obviously there's been a rush of people trying to determine if that was the case or not, and also because you added some heading and some footer and some highlighting, what we would like

to do is sustain the objection afforded by Ms. Meserve, to strike it and not allow to you continue to use the presentation that you have prepared.

And for future presenters, please note that, if you are going to use a PowerPoint, you need to make sure that you submit the PowerPoint by the deadline. Or, if you wanted to extract from what you have submitted verbatim, meaning submitted from a PowerPoint, and just pull out excerpts from it without making any additional changes, like in Mr. Munevar's case of adding headers and footers and highlights, then you may do so.

But it is important for all of us, in order to proceed efficiently, that we not get sidetracked by even well-intentioned attempts to introduce late materials and late documents to which then we all to have scramble and try to make sense of.

So, again, appreciate your intent, Mr. Munevar, but you are directed to discontinue use of that PowerPoint, your testimony to date, I believe, you refer directly to the testimony that you submitted in writing. And so we will rely on that only. Okay?

I think we're ready to resume. Did I use the right word? Sustaining the objection?

MS. HEINRICH: Yes.

CO-HEARING OFFICER DODUC: Got it.

And were there any other outstanding objections based on the slew of objections that were made to Mr. Munevar's testimony? I believe we ruled on all of them, and Mr. Cooper withdrew one. Okay. So we're good.

And you may continue. I believe it's Ms. Parker's turn now.

WITNESS MUNEVAR: Yes. So just to recap what I did testify to before the break was I was focusing on the modeling of discretionary actions in MBK's modeling for Sacramento water users, and I was hitting on three points, of which Ms. Parker will dive into some more detail on at least two of them: the use of unreasonable foresight in the allocation logic; the lack of adjustments to the San Luis rule curve to reflect the California WaterFix; and the use of Joint Point in setting the allocation logic.

With that, I will hand it over to Ms. Parker.

WITNESS PARKER: Thank you, Mr. Munevar. So I will be building on topics raised by Mr. Munevar's testimony, summarizing my own rebuttal testimony on issues that are of concern to Reclamation on the information that was provided in the protest

phase.

So in lieu of using the PowerPoint which pulls directly from my testimony, could we pull up my testimony? And I will refer to specific pages and sections from that as I go through my oral presentation.

So I think that's DOI-33 Errata.

And we'll first go to the bottom of Page 1. So to start with -- and this spans the 10 comments on -- between Pages 1 and 2. So first, addressing the issue of the complaint about storage conditions in petitioner's modeling.

CO-HEARING OFFICER DODUC: Hold on, Ms. Parker.

MR. BEZERRA: Just one clarification, I noticed as this was pulled up, we're talking about DOI-33 Errata with tracked changes, which is different than DOI-33 Errata. So if that's what we're working from, that's fine. I just want to make sure we know what we're working from and record's clear as to what this discussion is about.

CO-HEARING OFFICER DODUC: What are we working from?

WITNESS PARKER: I believe there is one copy of DOI-33 that is posted.

CO-HEARING OFFICER DODUC: And then DOI-33 Errata?

WITNESS PARKER: There is an errata. It does -- what is posted on the FTP site does have tracked changes in it. There was another copy that was submitted that does not have the tracked changes in it, but that's not posted, so that's not what I'll be referring to.

CO-HEARING OFFICER DODUC: But you're referring to DOI-33 Errata?

WITNESS PARKER: Yes, as what is posted on the website. Okay.

So let's start with the concern that multiple other parties who relied on MBK modeling criticized petitioners' model results for low storage conditions including instances of dead pool in CVP reservoirs.

MBK stated -- go down the -- MBK stated that their model runs were, quote, "much more conservative in protecting against the dry year than petitioners' modeling in both alternatives," end quote.

But the comparison of petitioners' modeling to MBK modeling is not appropriate since they were done with different info data sets. If climate change hydrology that is used in petitioners' modeling is replaced with the historical hydrology inputs that are

used by MBK, the claim of storage impact no longer has validity.

So if you go down to Figure 1b, which is the next figure.

Okay. So just to set this up, petitioner ran their BA models using a scenario of climate change hydrology, which is often called Q5. Petitioners have also run the BA no action and H3-plus scenarios using historical hydrology inputs. These runs have been called "historical" or "no climate" or "Q zero." All of those names are interchangeable. And we have used those studies to now make a more reasonable comparison to MBK's CalSim runs.

So with that distinction clarified, let's look at Figure 1b, which shows Shasta storage exceedance. So the blue lines in this plot show the BA results, and we acknowledge that those results lower than the red lines which show MBK results. But by changing only the hydrology in the BA models, this results in the green lines instead. So these are the no climate results.

These are above MBK's storage conditions. Petitioners' studies, both the Q5 and the historical Q0, no climate studies, also demonstrate that the WaterFix condition is not any worse than the no action condition. So the dotted lines that you see in the

plots are no lower than the solid lines.

The inset plot at the bottom left of this graph shows the higher end of the exceedance plot, and we can see that, under historical climate used for both scenarios, the BA and in MBK's modeling, there are no additional instances of dead pool in petitioner modeling when the scenarios are run with the same climate as MBK. So the results are a very similar depiction of extremely low storage conditions.

So if you will scroll down to Figure 2.

Okay. So the same message from the previous figure continues here. This figure shows totals CVP North of Delta storage exceedance. And the hydrology impact -- and basically this shows that the hydrology impact is not just felt at Shasta but across North of Delta CVP storage where you can see that, given the same input hydrology, the petitioners' operation maintains storage conditions mostly at or above those that MBK has promoted. It also shows that the operation of the WaterFix does not cause lower overall storage conditions than the no action condition.

In subsequent slides or in subsequent figures, we will talk about the reasons that MBK's storage conditions are lower for their WaterFix alternative. But for now, the take-home message is that the low

storage conditions to which protestants object are primarily due the result of input hydrology.

So Reclamation disagrees with the assertion of Sac Valley water users that the WaterFix will cause lower delivery North of Delta and lower storage conditions.

And I will discuss the modeling mechanisms, the specific modeling mechanisms, that MBK used to achieve the adverse delivery and storage impacts of the WaterFix that they claim relative to the no action. And this is the central focus of Reclamation's rebuttal.

If you would scroll down, please, to those two bullets right there. So No. 1, the two key areas where MBK used logic that we disagree with are a predetermined control of allocations which affected 80 percent of the years in the model simulation and, No. 2, their reliance on late summer Joint Point of Diversion export of dedicated CVP storage release in order to fulfill the South of Delta allocations that they predetermined in the WaterFix scenario.

So first of all, that is 65 years out of the 82-year period of record where you're looking at the decision of a person and not of a model in order to accomplish the operation that MBK projected for the

WaterFix operation. Well -- in order to depict the impact of the WaterFix relative to the no action; let me be clear there.

Second of all, they needed to assume operations that run contrary to Reclamation's stated operations practice.

So scroll down, please, to Figure 3.

All right. So this figure provides an extremely short course in CalSim CVP allocation logic because I'll be using these terms in my subsequent discussion.

So a water supply assessment, as Mr. Munevar testified, is developed that is based upon storage plus forecasted inflow. And this leads to the definition of a delivery target. This is what the system can reasonably deliver, given the current year's conditions for storage and inflow. This is the green bar in the figure.

This can often be lower than the cumulative Reclamation demand, which is shown as the multicolored bar to the left of the green bar. So -- I'm sorry, to the right of the green bar.

So in order to get this multicolored bar down to the same size as the green bar -- so to be clear, the different colors in that bar represent the

different obligations that Reclamation has, contract obligations to settlement, exchange, refuge, and service contacts. Okay?

So to get that bar down to the size of the green bar, we make cuts to each category following a specific set of rules. The bars to the left of the plot show the reduction, the reduced amounts of contract allocation. And it also shows the elements of each category that have been cut from the total contract obligation.

The key takeaway from this plot or from this figure is that -- is that calculation in the middle, which shows that the allocation is calculated as the difference -- as the delivery capability divided by the total contract amount. Okay? So the CalSim model logic calculates allocation based on an assessment of water supply and the associated delivery capability.

Can you scroll down to, I think, the next set of bullets. That right there. Okay.

So to augment CalSim's inherent capability to calculate allocations, MBK used four mechanisms which influenced allocations to CVP ag service contractors. One manipulation was to simply look up the allocation for a particular year from a table, completely bypassing the process in the bar that we just -- in the

plot that we just saw.

Another was to correct the delivery target. So that's the green bar in the previous figure. They corrected the delivery target by adjusting it up or down by as much as 800,000 acre-feet with that amount being another element looked up from the table.

Third, the time series of exports estimates that was trained in MBKs iterative process could be adjusted manually or set to a value that would ensure that something else would control the allocation.

And finally, in a few years, there are hard coded exceptions in the actual CalSim code. And what we would like to point out is that, in any year where any of these mechanisms controlled the allocation of either the North of Delta, the South of Delta, the no action, or the with project WaterFix action, that had the ability to affect the perceived impact of the WaterFix. Okay? So that is the whole point of what we we're trying to show here.

Can you scroll down to the big table. Keep going. That right there. Okay.

So this table uses Xs to distinguish which mechanisms were used for the elements that I've just discussed -- North of Delta, South of Delta, no action, and WaterFix scenarios.

The lighter columns -- you don't have to look at the -- you don't have to be able to distinguish the fine print. I know it's fine print.

The lighter columns are the North of Delta; the darker columns are South of Delta; the red columns are no action; blue columns are the WaterFix one. So I know the fine print's hard to see, but the take-home message here is I've concatenated all of the Xs that are used in any particular year into one of those left-hand [sic] columns there. And the take-home message here is simply how many adjustments are made to how many of these elements in each individual year.

So they had a chance to get from zero to four Xs in any year, and there are so many years with so many Xs. I'd like also to point out that, in any year where there was not a predetermined control of allocation, there was also the impact of the trained time series.

I know we've been through this in MBK's cross from the previous phase. And, in fact, those -- that approach has been used in other Reclamation studies, but it is not a mechanism that DWR has approved of, and we would take exception to using it in the WaterFix application.

So throughout the entire period of record,

there is a persistence -- a perfusion of Xs in that concatenated column.

If you would scroll back up to the code example that I put up there -- I'm a modeler, so love putting code in -- I was happy to have the opportunity to put a code example in here.

So this is the code that MBK wrote to define the North of Delta CVP ag service allocation. And what you can see is that, for some specific cases for specific years, rather than following any of the other mechanisms, the North of Delta allocation was simply set to be no less than the South of Delta allocation. The code singles out years during the '30s drought for this special consideration.

I'm not aware of any other CalSim application to any other particular study where code was written to hardwire these kinds of model decisions for a specific year. I mean, effectively, this is no different than predefining it in the table look-up, but to me, it's one other mechanism that demonstrates a concerted effort to influence the study in one -- one of no action or the WaterFix and influence the depiction of the effect of the WaterFix.

So from all of this effort with all of these mechanisms, what difference did it make?

So if we could scroll down to the first set of plots -- I believe it's Figure 4. That right there.

So in these plots which show CVP ag allocations in MBK's studies, the upper plot is for the North of Delta; the lower plot is for the South of Delta. So in the North of Delta plot, we see predominantly higher no action allocations than in their Alt 4A study. And we can see this because the green bars are often and significantly higher than the blue bars.

Conversely, in the lower plot, this shows that, South of Delta, the WaterFix allocations are substantially higher than in the no action. And we see this because the blue bars are often and substantially higher than the green bars.

And I think this was MBK's whole point, was to show that the WaterFix would cause reduced North of Delta water supply and storage conditions while creating large benefits south of the Delta. Reclamation takes issue with this due to the methodology that was employed to reach these results. This was not an outcome of a consistent model logic but rather the personal intervention of the modelers using the mechanisms that I just detailed.

Let's go to the next figure. Now let's look

at the differences between what MBK achieved and what the allocations would have been without any manipulation. This plot shows only the years which were affected by MBK given their predetermination methodologies. And it displays the difference between the allocations that MBK decided and what was calculated by the petitioners' historical climate runs.

We're looking at the differences that are calculated "MBK minus no climate." So any time the bar is positive, MBK study had higher allocations. So most of the bars are in fact positive in most years, and this indicates a more aggressive outlook on allocation in their modeling. And this is a point to which Ron Milligan has already spoken.

Second, please note that the upper plot of North of Delta conditions reveal the dominance of positive green bars, which indicates more aggressive allocation in the no action than in the WaterFix run. This sets up MBK's outcome of reduced North of Delta delivery with the WaterFix. Conversely, the South of Delta plot shows consistent and substantially high blue bars. This reflects MBK's efforts to drive more South of Delta delivery with the WaterFix relative to no action.

It is the combination of forced higher North

of Delta allocation in the no action and forced higher South of Delta allocation in Alternative 4 that was a key driver in the depiction of delivery impact to North of Delta water users in MBK's studies.

So let's summarize. I believe there's a couple of bullets further up that summarize how many Xs. Keep going. Sorry. Keep going.

Above the table -- right there, the very top, at the top where the Xs are. Yep. Okay.

So let's summarize. The CVP ag allocation was adjusted in some way in either the North of Delta, South of Delta, no action, or Alt 4 80 percent of the time. In more years than not, more mechanisms were used to influence this allocation. MBK says that a single run took weeks to prepare, and I am absolutely sure that it did, given the deliberation that was clearly at work here.

It's my opinion as a modeler that MBK's 19 studies look like a handcrafted narrative that was created to support the conclusion that the WaterFix would have undesirable impacts on North of Delta delivery and storage as opposed to an appropriate transparent, reproducible comparative modeling study.

I also find it impossible to believe that expert modelers, which MBK folks are, who have decades

of experience working on the CVP-SWP system did not allow some measure of perfect foresight to affect their decision points in any given May.

Could you scroll down to the beginning of the discussion on Joint Point of Diversion.

Okay. So scroll down to the first plot.

Okay. Thank you.

So in order to achieve the deliveries associated with their high South of Delta ag allocations, MBK'S modeling relied heavily on Joint Point of Diversion conveyance of CVP water through Banks Pumping Plant. Other people have already spoken to this already.

What I'm showing here are the details of that operation. The columns in this plot show the average annual CVP South of Delta ag delivery. And what we can see is that the boxed portions at the top of each column indicate the contribution to that CVP South of Delta ag delivery that are provided by Joint Point of Diversion exports. And we can see that a large portion of the benefit that MBK achieved are in fact satisfied by Joint Point pumping.

Next slide down.

This is where we skipped pages and things got out of hand. Okay. That plot right there.

This plot shows that the primary source of water for this additional Joint Point of Diversion export is in fact from a release of stored water as opposed to a diversion of Delta surplus. This is also a -- an operation that CBO has testified, that moving stored water from North of Delta facilities is -- especially in the late summer when it typically happened in MBK studies, is not an operation that they would typically strive for.

In addition, just fundamentally, when CVP is making its allocations in spring, it does not count on the availability of Joint Point of Diversion capacity being available. So they will not make high allocations, assuming that Joint Point of Diversion capacity will be there for us to take advantage of.

So on both of those two grounds, our analysis is that this operation as depicted in MBK's modeling is unrealistic.

So just to show the late summer concentration of MBK's Joint Point of Diversion -- can you just scroll down to the next figure. So this combination of four slides or four plots shows that the dotted red line, which is MBK's Alt 4A export of Joint Point of Diversion water, is indeed concentrated in the July-through-September time frame.

And as Ron Milligan has testified, this is probably unrealistic given that most of it comes from a release of stored water that is not an operation that CVP, at this time, would say is reasonable.

Okay. Next plot.

So this plot is a XY plot that shows Joint Point of Diversion wheeling of storage release positioned against the Shasta storage condition. All of the small red dots are the multiple instances of export of Joint Point storage release in MBK's Alt 4 study.

And the message from this plot is that many of those releases actually take place at fairly low Shasta storage conditions when, again, our representatives from Central Valley operations have stated that that is not an operation that they would typically prefer to make.

So my testimony is intended to convey that Reclamation rebuts the claim of harm claimed by MBK modeling results, given my analysis which shows that MBK manually manipulated the allocations in their studies and needed to force operations that are at odds with Reclamation practice in order to achieve their outcomes of reduced delivery to North of Delta water users and lower storage conditions under the WaterFix

operations.

I disagree with the use of those modeling mechanisms that I have detailed, and I therefore disagree with their conclusions.

I will have more testimony at the end of our presentation to talk about American River water agency claims.

For now, I'll turn it back to Mr. Munevar to proceed with other elements of his analysis.

MS. AUFDEMBERGE: Ms. Parker, if I could just interject. This is Amy Aufdemberge. We think we heard an inadvertent error in your testimony, and we just wanted to correct that really quickly.

When you were referring to Table 1, "Details 15 of Manual Adjustments" --

WITNESS PARKER: Yes?

MS. AUFDEMBERGE: I think we heard you say that the Xs were summed in the left-hand column?

WITNESS PARKER: I'm sorry, I meant the right-hand column.

MS. AUFDEMBERGE: Thank you very much.

CO-HEARING OFFICER DODUC: Thank you.

WITNESS MUNEVAR: Okay. In lieu of the PowerPoint, though, if you could bring --

CO-HEARING OFFICER DODUC: You can put your

microphone much closer.

WITNESS MUNEVAR: I'm sorry. I'm struggling from a cold too.

If we could open DWR-86 Errata, which is my testimony. And if we could go to Page 18, Figures 7 -- start with 7. We'll go 7, 8, and 9, please.

Okay. Thank you.

So as both I indicated previously and Ms. Parker indicated, there are a number of changes to the petitioners' model made by MBK. Through a sensitivity analysis, I'm looking at individual changes that were made. We found that three changes are responsible for most of the differences in results, two of which are discretionary and were previously rejected by the agencies.

So what we've done in Figure 7 -- Figure 7, 8 and 9, Figure 7 is a replication of the petitioners' modeling, and these are annual exports on the left by water year type and then on the right by month.

And I will only focus the Board on the -- on the column to the right -- on the left graph that says "all." If we could just focus there for the moment.

In the petitioners' modeling, we indicate that there's been long-term average increase in exports under this particular scenario. H3-plus would be

around 226,000 acre-feet as compared to the petitioners' no action. That's the gray bar on the right of the figure on the left. Sorry.

If we go to this Figure 8, just below that, we see MBK's modeling in the depiction of changes from their WaterFix simulation versus their no action. And under that particular scenario, we see a long-term average increase in exports of about 491,000 acre-feet of long-term average exports.

And then if you scroll to Figure 9, what we've done in Figure 9 is we started with MBK's modeling and rolled back those three areas that we found to be severely flawed in the analysis. First one was to incorporate the effects of climate change. So we incorporated climate change and sea level rise back into the MBK modeling.

We rolled back the San Luis rule curve operation to that of the petitioners. And third, we rolled back the allocation logic and associated assumptions for Joint Point of Diversion.

And when we make just those three changes, you can see that the long-term average increase in the WaterFix scenario as compared to the no action is around 280,000 acre-feet, which is much more similar to what was demonstrated by the petitioners' modeling.

The next point, if we could go to Figure 11. MBK presented a two-year example, operational period of 1993 to '94, that purported to show impacts of the California WaterFix operations in the wetter year, 1993, that would carry over into the following dry year of 1994.

It is my opinion that MBK's two-year example operation suffers from the same flaws that were previously outlined. Specifically their incorrect assumption related to use of Joint Point in unreasonably exporting stored water.

The figure that is shown here includes three lines: the first line, which is labeled MBK NAA, which is the original MBK no action run. The next line is the MBK alternative 4A; that's the blue one on this graphic. And then the third line is an adjustment to MBK's California WaterFix Alternative 4A by just reverting the Joint Point of Diversion assumption. And we're looking at combined Jones and Banks exports for that two-year period.

You can see the difference between the blue and the green line in particular in August is substantially impacted just by that one assumption. We've only rolled back one assumption in this particular analysis.

And when you make that change, you see that exports are not as high as MBK purports -- and particularly in summer, which is a movement of stored water from upstream storage.

Figure 11 just below that shows the same lines. I'm looking at Shasta storage. So in MBK's modeling, they had the no action in red, their Alternative 4A in blue, and showed large drops in storage associated largely with that Joint Point of -- use of Joint Point of diversion.

When we roll back just that one assumption, we end up with a lesser impact on storage.

I think the others I can speak to without the graphics, so...

There were other arguments by Sacramento water users, purporting that the boundary analysis that was conducted by the petitioners failed in its purported purpose of bounding the range of potential effects of WaterFix. And the boundary analysis that was presented as part of the petitioners' WaterFix assumed consistent discretionary operations across the -- across the scenarios to depict the same level of flexibility for the upstream carry-over storage conditions across the scenarios. The purpose of the boundary analysis was not to perform a trade-off or to present hypothetical

extreme possibilities of CVP and SWP operations with the WaterFix.

The next point I'd like to address is TUCPs in CalSim. I think I can do this without references there as well.

Mr. Bourez and -- both Mr. Bourez and Dr. Paulsen's contention was that representation of TUCPs in CalSim would be appropriate and should be implemented.

It is our contention that it's not possible to represent the measures that may be in response to very specific drought conditions that might have very different actions that implement -- that adjust to the specific events.

CalSim relies on generalized rules and a coarse representation of project operations under adjusted hydrologic conditions to reflect future demands and land use. It does not include specific operations to extreme events. When used in a comparative analysis based on those generalized rules, one can determine the impact of a project over those extreme conditions.

So as long as the project does not exacerbate distressed water supply conditions in comparison to the no action, the project is not deemed to cause any new

impacts.

Couple more points here. If we could go to Figure 18 in DWR-86 Errata.

You can scroll up to the first of those plots. Figure 14, I believe it is. Perfect. Thank you.

Some protestants had argued that the climate change scenarios have not been analyzed to a broad range of climate future conditions. This information in these plots is as presented -- I believe it's in Biological Assessment, Appendix 5 -- 5A. I will confirm that.

And what's shown here are different climate scenarios. So all of the runs that were done previously were what Nancy -- Ms. Parker had mentioned as Q5 or kind of this central tendency climate future.

As part of the WaterFix, we also analyzed the extreme ends of that. So we have what is -- what is called -- forgive the poor naming convention -- but Q2, which is the warmer and drier scenario; and Q4, which is the less warm but wet scenario. Those are kind of the bounding of the climate futures.

And in each one of these panels here, we're showing -- in the Figure 14 shows CVP settlement deliveries for a no action under the identical -- Q0 is essentially historical climate, Q2 is a

particular future climate, and Q4 is another future climate.

And when comparing the WaterFix to the no action under the identical climate assumptions, we continue to find that we have no -- no impacts, additional impacts that are caused by the WaterFix; that we have impacts that are due to climate change but not by the WaterFix.

Figure 14 is the CVP settlement.

Figure 15 is CVP North of Delta refuge deliveries.

Figure 16 is Exchange contractors.

Figure 17 is CVP South of Delta refuges.

And Figure 18 is Feather River settlement contractor deliveries.

So there's a significant amount of uncertainty associated with future climate change and sea level rise, but after considering a broad range of future climate change scenarios, WaterFix does not appear to cause any new effects compared to the no action one when measured appropriately.

If we could go to Figure 19, please.

Mr. Ringelberg in his testimony argued that the proposed project would establish essentially the equivalent of drought conditions on the Sacramento

River. This testimony cites rules for Level 3 post-pulse bypass operations and then states most of the time flows would be governed by these bypass criteria.

The argument fails to recognize that there's substantial variability in river flows and that the Level 3 bypass rules are only triggered after excessively wet periods. In fact, during the 1993 year which is depicted in this figure, the shading indicates which bypass rule is in place.

And so there is a post-pulse -- a pulse flow protection period. There's a Level 1, which is the early shading. Level 2 is the next step up, which allows slightly higher diversions for the same amount of flows. And Level 3 doesn't trigger until after substantially wet events and continuous wet events.

In fact, during 1993, the 13,000 cfs that was indicated by Mr. Ringelberg was exceeded 87 percent of the days in this particular simulation.

So this flow variability is extremely important and was not acknowledged in Mr. Ringelberg's arguments. And for these reasons, it is invalid to assume that there would be drought-like conditions caused by the North Delta diversion.

There were several arguments related to --

from protestants related to climate and sea level rise assumptions and comparison of the WaterFix to existing conditions without climate change and sea level rise.

We argue that the same climate and sea level rise assumptions should be used to determine the effects of the project; climate change will or will not happen regardless of whether the WaterFix is constructed or not; and that the basis for comparison should always have an equivalent climate basis when comparing the California WaterFix to a no action.

So I think that concludes my presentation. There's a few points from Ms. Parker here.

WITNESS PARKER: Thank you. I have a couple more issues to bring up rebutting specific testimony from American River Water Agency protestants.

So if we could bring back DOI-33 Errata, please. And scroll to -- towards the last third of that document.

I believe it should be Figure -- keep going to Figure 8, maybe.

Actually, it would be best to go back to the beginning of the storage discussion at the beginning of the document, where there is a -- it's probably Figure 1c. All right.

So American River Water Agency witnesses

claimed that petitioners' modeling showed Folsom at dead pool in one out of every ten years, and that's not true. BA model results do include dead pool at Folsom, but it's five years out of the 82-year period of record, which is three short of 1 in 10.

ARWA witnesses were informed by MBK modeling, and we've already discussed that the perception of storage effect being related is related to the use of climate change hydrology in petitioners' BA modeling rather than the historical hydrology that was used in MBK's modeling.

What this plot -- which we've seen the similar plot for Shasta, but this is the same exact thing for Folsom. What this shows is that, similar to the Shasta thing, petitioner modeling done with historical hydrology does not show substantially more dead pool conditions at Folsom than MBK modeling, and also shows limited impact to storage conditions as a result of the WaterFix.

Now, if you could please scroll down to the bottom of the document.

There is a table right there. Okay.

So ARWA witness Jeff Weaver also presented protest testimony claiming that Folsom would be drawn down in critical years as a deliberate outcome of

WaterFix operations, and he came to this conclusion by focusing on a single two-year sequence of operations at Folsom in 1932 and 1933.

I would propose that this is actually a good example of Mr. Weaver's own assessment in his testimony that, quote, "Results from a single CalSim II simulation may not necessarily correspond to actual system operations for a specific month or year," end quote.

To show the outlier nature of this specific model outcome, I looked at all of the Folsom draw-downs for critical years following critical or dry or below-normal water years. What this table shows is BA results and MBK results for comparison that pull out the maximum and minimum Folsom storage for each of the years that we're looking at. And the draw-down for each of the studies is calculated from that maximum and minimum storage condition.

The specific year that Mr. Weaver pulled out is highlighted in yellow with the specific complaint highlighted in orange. The draw-down that Mr. Weaver has cherry-picked is not only the second-highest draw-down in this table but the second-highest draw-down in the entire period of record.

Let's note, too, that MBK studies, in

comparison, to which many protestants -- from which many protestants drew their own conclusions, that both the MBK studies, the no action and the Alternative 4A study, both achieved even higher draw-downs in 1932 based in large measure on the -- a similar release in July of that year.

I maintain that this is not an appropriate criticism of the model or of the WaterFix operation since it's an outlier condition that occurs within an extended period of extreme drought, and it's not a behavior explicitly caused by the WaterFix.

Mr. Weaver's related claim was that the BA 13 modeling does not appropriately represent the flow management standard off-ramp, but the logic used in the BA studies is exactly the same as that used in MBK studies with which American River Water Association or agency members apparently had no issues.

The precise complaint was that there was an unreasonable swing in release conditions at Nimbus in the summer of 1933 when releases changed from 512 cfs to 3,470 cfs, and then back to 778 cfs over a July-August-September period.

I would simply argue again that this is a 24 cherry-picking of an unusual outcome of modeling results. The table in --

If you scroll down one more page. Keep going. That table there.

So what I've done is I went through all of the modeling results that I've been analyzing for the BA studies done with Q5 hydrology, the no climate scenarios and MBK scenarios, and I looked at all of the instances where there were either a low-high-low flow sequence or a high-low-high flow sequence. And these are the totals from the entire period of record. And I would submit that there's no additional egregious swings in petitioner modeling relative to MBK modeling, and there's no additional elements of swings in -- or behavior like that as a cause of the WaterFix either.

So neither the flow complaint nor the 1932 draw-down complaint should serve as an appropriate foundation from which to conclude that the WaterFix would cause enduring impacts to storage at Folsom or to flows in the American River.

And that concludes my rebuttal testimony.

CO-HEARING OFFICER DODUC: Next.

WITNESS NADER-TEHRANI: Good afternoon, Hearing Officers, Board Members, Board Counsel and Board Staff. My name is Parviz Nader-Tehrani.

If you can bring up Exhibit DWR-50, please. I

would appreciate the staff helping me now with the slides.

And, well, I want to mention that there is an errata submitted. What you're looking at here is actually just three slides, and I'm going to explain.

There are three slides in my presentation that has the wrong legend, and it says "Daily Average," but they should have said "Monthly Average." So these were corrected in the slides, as you see here.

But in the interest of time, I would suggest that we just stick to the DWR Exhibit 50 and not the errata. Errata just contained those three slides, and it was meant to just correct the legend, and that's it. The numbers didn't change. The figures really didn't change.

So my testimony today would be focusing on water quality and water levels. These are all related to the DSM-2 modeling related to California WaterFix. And this is the rebuttal testimony.

So, please, next slide.

The -- I will focus on this -- this list of six items you see on the screen. I'm not going to read those -- the list here. This is on Slide 2.

So the first item I'm going to be looking at is the effect of Head of Old River Gate on water

quality in South Delta.

So next slide, please.

This is Slide No. 3. This is kind of a reminder of what I showed last year in my explanation about California WaterFix and water quality. This is DWR-513, Figure EC5. And what you see here are monthly average ECs at this location, Old River, Tracy Road. These are long-term monthly averages. You see five bars. You've seen these figures many times.

The one item I was just going to point out to, if you notice that there are large increases -- or somewhat large increases associated with Boundary 2 which represent the right-most line for the months of March, April, and May. And back then, I made the statement that I feel that these increases are mainly due to a difference in the Head of Old River Gate operation, but I didn't have any model runs to back it up.

So next slide, please.

This is South Delta Water Agency Exhibit 77, 21 Page

That's my Slide No. 4. This is Dr. Burke's testimony. So what he did, Dr. Burke did, he basically looked at the difference in the daily average EC for Boundary 1 versus the no action.

So any posi- -- and so the vertical axis here

is just a difference in EC. So positive number would reflect increased EC.

So my first point about this slide is I would consider this an inappropriate use of the model. I have -- in my written testimony, I have a specific list of what I feel are the appropriate and inappropriate use of the model. And my main reason for considering this an inappropriate use of the model is just looking at the daily, you know, differences; differences in a single day, you know, in the entire 16 years.

Second point I'd like to make is the larger differences that are labeled -- as you can see, they are mostly March and April. So they are consistent with the timing that I reported in my testimony -- are the times where you have a more aggressive operation of the Head of Old River Gate.

So next slide.

So it is my belief that the increase in EC at 19 Old River, Tracy Road during the months of March through May are mainly due to the difference in Head of Old River Gate operation. And in order to illustrate that, I -- we've done two new DSM-2 studies specifically for Boundary 2 and H3 scenarios. And in those, we just simply changed the Head of Old River Gate operation to make it consistent with the no action

alternative. So that was the only change here.

Next slide, please.

In the interest of time, I'm just going to focus on Lines 1, 4, and 5.

So once again, these are the similar type of analysis showing month -- long-term monthly average ECs.

So Line 5 is the same Boundary 2, unadjusted. Line 4 is the -- you know, the new model run for where the Head of Old River Gate operation was changed to be the same as no action.

And now that you consider -- you know, compare EC results for the Line 4 and 5, you see that the larger EC increases that were reflected for the months of March, April, and May basically disappear. In fact, when you consider -- compare Line 4 against no action, which is the revised Boundary 2, you see they're actually very similar.

So confirming the hypothesis that I earlier made that the difference in water quality that you see at Old River at Tracy location is mainly due to the difference in the Head of Old River Gate operation, and it has nothing to do with the North Delta diversions.

Next slide.

My second item here would be looking at the

effects of Fall X2 on both water quality and water levels.

Next slide, please.

And you already know that the Fall X2 is basically part of the U.S. Fish and Wildlife Services BiOps. It was issued in 2009, and it requires higher outflow, basically, in fall months of wet and above-normal water years.

All operational scenarios considered for this 10 petition considered -- it was -- they included Fall X2 except for Boundary 1. And as it turns out, Fall X2 can have a significant effect on water quality and water levels.

Now, why is that important? It is because a number of protestants mainly focused their attention on water quality differences associated with Boundary 1 compared to NAA, and I felt it was important for me to illustrate to you that the water quality changes that you see under Boundary 1, the increases are mostly attributed to this one particular item, which is the Fall X2.

Next slide, please.

So as I said, there is an errata here. So the label, the legend should say "Monthly Average," and it does say "Daily Average," and that's incorrect.

Everything else is correct here.

So to illustrate the effect of Fall X2, what I've shown you here is a four-year time history of chloride concentration. I remind you that the simulations that are done with DSM-2 are all based on EC, and then there are conversions that are made to chloride. So these are monthly average chloride concentration at the city of Antioch, four years, 1984-1987. I only have two lines here. One is Boundary 1, and one is no action.

So as you can see -- well, let me also make the point 1984 and 1986 were wet years. 1985 is a dry year. 1987 is a critical year. So by definition, Fall X2 corresponds to wet and above-normal years. So as such, 1984 and '86 would have Fall X2 under no action but not under Boundary 1. But 1985 and 1987, there would be no Fall X2.

So you see this peculiar behavior by the model where the two diverge in the wet years that are shown here. And, as you can see, they are similar except when it comes to the month of September of '84 where the two diverge. And then the -- so for the remaining fall months, the two diverge, but then they converge again.

1985 is a dry year; no Fall X2. And in fact,

you see very similar water quality comparing Boundary 1 versus no action.

1996, wet year, once again you see a divergence because mainly of Fall X2.

1987, critical year, once again you see that those two converge.

So I believe it's important to recognize that the majority of the increases of EC that's -- water quality as measured in EC and chloride associated with Boundary 1 are mostly related to Fall X2.

So next slide, please.

This is same exact period, except now I've added three additional lines representing H3, H4, and Boundary 2. Now all of a sudden, because those other three scenarios, they all include Fall X2, you see that they're -- in fact, you compare those three new scenarios that I talked about. You see that the water quality at Antioch as measured in chloride are very similar or better compared to no action for all four years. In fact, Boundary 2 seems to show that they're much better, actually, than -- in terms of water chloride concentration at the city of Antioch.

One important fact here to note is that Fall X2 was issued in 2009, and in -- as far as I know, it was never fully implemented. 2011 came very close, but

since then, we've never had a year where it was fully implemented. So the water quality you see associated in the no action scenario, for example, for 1984 and 1986, would not be reflective of historical conditions because in those years, historical conditions, Fall X2 was not in place.

Next slide.

This is a four -- different four-year window, 1978 to '81. This is just to illustrate that I haven't picked some specific year to illustrate a point.

You see 1978 was an above-normal year. 1980 was an above-normal year. 1979 was below normal. '81 was a dry year. So you see basically a similar distribution as was illustrated earlier, confirming that the large increases in EC and chloride concentration are mostly attributable to Fall X2 not being included as part of Boundary 1. And of course, if Fall X2 remains as part of the BiOps, Boundary 1 would have it and, therefore, the line you see here would be much closer to H3 and H4 scenario.

Next slide, please.

Now, here I'm going to be focusing on the effect of Fall X2, actually, on the water levels. This is Dr. Burke's testimony, Exhibit 77 on Page 24. And this is a water level change at -- the location is

downstream of North Delta diversion.

You may recall when I was presenting the model results, I stated that the largest reduction in water levels are expected to be at the down- -- the third intake, and this happens to be the same location.

And in my testimony back then, I used the probability distribution, and I stated that I expected, based on the 16 years of simulation, that there will be about a foot to 1.2-foot reduction during high flow period, and about half a foot during low flow period.

Dr. Burke here, based on what I understand, he used a 15-minute output of DSM-2 for those two scenarios, Boundary 1 versus no action.

So again, two points that I want to mention. Once again, I would consider this sort of analysis inappropriate because Dr. Burke used the 15-minute output. And there's -- again, there is good description in my written testimony as to why I would consider that to be inappropriate.

Second point is that Dr. Burke made the point that there could be large reduction in water levels of up to four feet. So you do see those big numbers, big spikes down in terms of water level. And he was attributing this to the California WaterFix.

What he did not mention back then was that the

timing of those reductions -- and I want to explore that a little further as to why you see what you see here.

Next slide, please.

So continuation of Dr. Burke exhibits, South Delta Water Agency 77. I'm on Slide 13, by the way. On his Page 26, he's showing the same information in a probability distribution.

What you -- two points I want to make, on this plot. One, because of the inappropriate use of the model, you see that, first of all, the blue represents an increase of water level and the red represents a reduction.

So you do see, according to this analysis, that there are times where the WaterFix actually increases the water level. That's what I consider is a byproduct of his analysis, suggesting that there would be an -- actually an increase in water surface elevation associated with the North Delta diversion, which simply does not make sense.

Second point is the point -- if you see on the right side of the graph which dip down below about -- so you would see about 2, 3 percent of the time when the reduction in water level, the way he analyzed it, goes more than about 1.2, 1.3; so only 2, 3 percent.

But the question is what is the timing of those larger reductions? So I'm trying to illustrate why -- why you would get those larger reductions.

So next slide, please.

So based on the analysis by Dr. Burke, the three highest -- I took the three highest reductions in water levels, and I noted that the month and year in which they occurred. And it turns out all three of the larger reductions occurred in September of wet years; 1984, 1986, 1982. And this is again, he's comparing Boundary 1 against no action. So the number you see in the table is the Freeport flow as modeled in CalSim.

So you see under Boundary 1, September of '84, according to CalSim, there was 8,867 cfs flow coming down Freeport. Under no action, there was 29,541 cfs, resulting -- at one point in time in that September resulted in about a 4-foot reduction.

So the question is why is there such a large difference in the flow at Freeport? And the answer is Fall X2. No action was instructed to meet the Fall X2 criteria. In essence, it had to increase the flow in order to meet that Fall X2 criteria. Boundary 1 did not have the Fall X2 criteria, and as such, there was no need for that larger increase.

So the large difference -- it is my opinion

that the large difference in flow at Freeport directly related to Fall X2 not being implemented under Boundary 1.

Next slide, please.

This is a slide, again, further to illustrate why you would see that large difference in water level. So what I've done is, looking at three months, August to September and October of 1984 -- once again, this is a wet year. Two lines here, the lines represent the minimum daily stage at that same location downstream of the North Delta diversions.

So you see there is a large increase in that minimum daily stage corresponding to no action. In the month of September, that is absent in Boundary 1. Why is there a large difference? It's mainly -- again, going back, the model no action was trying to meet the Fall X2 and resulted in an increase in flow. And due to that, there would be an associated, obviously, water level increase.

So the reduction you see here is not as a result of the North Delta diversions. In fact, the North Delta diversion associated with Boundary 1 was -- would have been very little, nothing close to the 9,000 cfs capacity, yet you do see this large difference. And so this is, again, a byproduct of the way you do

the analysis that you see that.

So in my opinion, the North Delta diversions are not capable of reducing the water levels as -- as reported here. And it's mainly directly related to Fall X2.

Next slide, please.

Third point here is about the reverse flows at Freeport.

Next slide, please.

East Bay MUD claims that the WaterFix increases frequency and duration and impacts the timing of the significant reverse flow events. And from now on, I would label that as acronym SRFE, significant reverse flow events.

And so East Bay MUD claims that the WaterFix increases the frequency of these SRFEs at Freeport project intake and require added shut-downs.

I would disagree with this hypothesis, and I'm going to go over my reasoning as to why I disagree and I believe this -- the analysis that Dr. Bray showed was flawed.

Next slide.

So I'm taking this from East Bay -- the map from East Bay MUD, Exhibit 152, Page 29. So this is a map showing the East Bay MUD Freeport facility and also

the Sacramento Regional Sanitation District outflow. It also shows the location of the three proposed intake sites associated with California WaterFix. As you can clearly see, all the three points, diversion points, are downstream from their sites.

Next slide.

Dr. Bray authored two types of Analysis. One was based on CalSim II, looking at the flow at Freeport. In his second analysis, he focused on DSM-2, looking at the velocity output.

And I would explain why I would disagree with his conclusions on both types of analyses.

Next slide, please.

Using CalSim II, Dr. Bray argued -- and he used the threshold of an 8,000 cfs as a potential for SRFE. Well, it is kind of common knowledge that, in order to have SRFE, you would need a low flow. And he did some analysis, and he used that threshold as a potential for creation of SRFE.

So in doing so, he compared CalSim II flows, and he reported that the number of months that the flow at Freeport for any of the WaterFix scenarios was less than 8,000 cfs and flow at Freeport for WaterFix scenario was lower than the no action by at least 20 cfs.

Next slide, please.

But the question is is that an appropriate threshold? And so what the question then is, what is the probability of an SRFE when flow at Freeport is less than 8,000 cfs?

According to East Bay MUD testimony -- I believe it was Ms. Eileen White. She mentioned that there were -- they experienced four SRFE between April 2014 to December 2015.

I looked at CDEC for that same period. This happens to be a very dry period, very low flows. This is the sort of periods where you expect a larger frequency of the SRFE.

And I looked at CDEC and noticed that there were 371 days in this period where the flow at Freeport was lower than 8,000 cfs. So this is a crude -- my crude way of coming up with the probability, but according to the math, I'm showing there were four events, 371 days. So that gives me about a 1.1 percent probability of having an SRFE when the flow is below 8,000.

Next slide.

Furthermore, Dr. Bray did not consider the number of months where the opposite happened, where the Freeport -- flow at Freeport under WaterFix were below

8,000, but they're higher than the no action by 20 cfs. So he primarily reported the months that the WaterFix was lower than the no action, but not the opposite.

Next slide.

What I'm showing you here is the frequency of exceedance of flow at Freeport for all five operational scenarios including no action. This is flow at Freeport.

So the numbers that are smaller represent higher flow, lower probability of having higher flows and so forth.

So if you can look at this plot, you see that all operational scenarios including no action actually have a very similar distribution of flow at Freeport. In fact, you cannot visually tell for those lower flows where one is higher or lower than the other. There is really no difference or very little difference in the frequency of exceedance of flow, especially on the low flow situation at Freeport.

Next slide, please.

So if even if we take the 8,000 threshold of 22 flow that Dr. Bray used -- so I looked at the probability of Sacramento River flow, you know, being below 8,000 cfs based on the 82 years of CalSim II simulation. And in fact, as illustrated in this table,

the no action in fact has the highest probability, although they are very similar, but in fact it has higher -- highest probability of flows going below 8,000.

So this is why I think that CalSim approach that Dr. Bray offered does not make any conclusion in terms of the higher probability of SRFE at their facility.

Next slide, please.

In his second approach, Dr. Bray used the 11 DSM-2 output. So he used the 15-minute velocity output, and he computed the number of SRFEs based on the tides having a distance greater than 0.9 miles going upstream under reverse. So he's basically integrating the velocity output when the velocity is negative.

Next slide, please.

By the way, that 0.9 mile represents where an 19 SRFE event occurred under their protocol. This is my understanding of what their protocol calls for.

So in doing so, Dr. Bray offered two different analyses. The first one was based on no adjustments done to DSM-2 velocity output. And the second approach, he added a velocity bias adjustment.

Once again, I disagree with his conclusion

based on both of those analyses, and I would explain why I disagree with him.

Next slide, please.

So this is East Bay MUD 152, Table 2, Page 44. I'm on Slide No. 27. This is the time when Dr. Bray is not adjusting the velocity output. So this is the raw DSM-2 output. So he's showing the expected -- what he considered expected frequency of the SRFEs for different periods.

So there are three lines here. The first one is a two-year drought, '76-'77 drought. The second line represents the four-year drought of '87 to '91. And the third line is the entire 16 years of simulation.

So let's start from the bottom. The 16 years of simulation, you compare the frequency of SRFE for all operational scenarios under California WaterFix and compare it against no action. You actually see they all offer lower frequency of SRFE events.

You look at '76-'77. That's that two-year drought period. The only scenario that shows a higher frequency, according to Dr. Bray's analysis, is H4 which shows two higher -- two higher SRFEs in that 16-year period. All the other three operational scenarios are in fact showing a lower frequency of

SRFEs.

And the second line representing the four-year drought period, in fact, once again, all operational scenarios resulting in no action, lower frequency of SRFEs events.

Next slide, please.

So in the second analysis done by Dr. Bray, he makes an argument for a velocity not being accurate, and he used an offset of negative 0.23 feet per second to correct what he considered to be model's reverse flow under-prediction bias.

Next slide, please.

So this is the velocity plot for, basically, an eight-day time window in 1991, February. There are three lines you see here. The blue line represents the Freeport gauge velocity at Freeport. The dashed red line represents the DSM-2 output without his bias correction. And the third line represents -- the green line, which he basically shifted everything downward.

Now, a couple of points here. As far as -- if you had a velocity that's negative, that would be considered an -- a reverse flow, not necessarily an SRFE. But the point I'm trying to make is in doing so, even within this eight-day time period, there are four

events were falsely identified as reverse flow in this eight-day window, time period.

So let's just look at one of them. Look at February 11. You see the blue line on -- at the low point of velocity, it touches the zero line, but it doesn't go below zero. So really there was no reverse flow occurring on that day where he's now correcting the bias on DSM-2. So that day, the corrected -- you know, the bias-corrected DSM-2 would label that as a reverse flow. Again, not necessarily an SRFE, but again, it is a -- you know, considered as a reverse flow.

So once again, even in this eight-day window, it's clearly illustrating that his method of adjusting the DSM-2 introduces false reverse flows.

So next slide.

So as I said, this -- as you can expect then, when you make the velocities lower, this approach naturally would predict a much higher frequency of SRFEs.

Next slide.

This is Table 3, East Bay MUD 152, on Page 45 of East Bay MUD Exhibit 152. This is my slide No. 31.

So similar table. So just for a point of reference, you see that "596"? In his previous

analysis, that number used to be 113. So you see, basically, about a fivefold increase in the -- what he considers the frequency of SRFEs.

So once again, looking at the last line, this is the 16-year window. And you actually see all operational scenarios are showing a lower frequency of SRFE events as compared to no action. It's only in the '76-'77 where three of the four operational scenarios results in a higher frequency of SRFEs. Boundary 1 does not. In the four-year window, the dry period of '87 to '91, once again you see all operational scenarios result in a lower frequency of SRFE events.

Next slide.

So once again I questioned these numbers. You know, basically doing the simple math based on actual observations, according to East Bay MUD, Mrs. Eileen White, she explained that they experienced four SRFE events during that 21-month period.

So if you do the math, rough estimate, that would translate into 2.3 events per year. This is a very dry period. You would expect higher frequency of SRFEs during the low flow period.

Dr. Bray's DSM-2 bias-corrected analysis which uses the 16 years has a mix of high and low flow. You would expect to get a lower frequency than what you

found in that dry period. In fact, if you do the math, 596 SRFEs in 16 years associated with no action -- we're not talking about California WaterFix. This is just no action. It is 37.25.

I just cannot believe that number to be accurate. It's more than 15 times larger than what you expect in that extreme dry period.

Next slide.

So in short, I would consider Dr. Bray's analysis inconclusive and flawed, and it is my opinion that I do not expect an increased frequency of SRFEs for any of the WaterFix operational scenarios.

Next slide.

Next item here is the effect of WaterFix on water levels during low flows. So I touched on water levels, but I want to go in further details, primarily looking at low flows.

Next slide.

So you may recall this plot, and I briefly talked about this. This is DWR Exhibit 513. I presented this information last August, Page 11, based on 16 years of simulation. This is the location probability of exceedance of a daily minimum stage based on 16 years of simulation. The location is downstream of the three proposed intakes.

And as I stated earlier, my conclusion at the time based on the 16 years was that the reduction in water levels are about 1 foot to about 1.2 foot during high flows. That's the left end of this graph. And it's about half a foot on the right side. This is during the low flows. And this is based on the 16 years of simulation.

Next slide, please.

So we had a number of parties that were concerned about the reduction in water levels associated with WaterFix during low flows, you know, and they were citing their experiences in 2014-2015.

So what I decided to do is show a similar plot. This time I focused primarily in this two-year time window, '76-'77, which were extremely dry period. This is sort of year that would come close to the 2014-2015, that 16-year window.

And what you see is now you get a lot lower 19 reductions associated with WaterFix.

Now, why would that be? The reason is obvious because during low flows you actually are not able -- because of the bypass flow requirements, you would not be able to use the -- you would not be able to use those North Delta diversions at the same frequency as we would in the 16-year window, which has a mix of high

flow and low flow.

So focusing on the right end of this graph, this represents that dry period. I see actually visually they look the same. And I looked at the numbers, and the difference was in the range of about 0.1 to 0.15-foot reduction. Do the math. That would be 2 inches.

This is the location where you expect the highest reduction in water levels. As you get farther from this location, that change would tend to go smaller. By the time you get far enough, the reduction would be nonexistent.

The one thing I want to point out is this 2-inch is actually much smaller than the projected sea level rise that's expected. We assume that under early long-term there's a 6-inch of sea level rise. This is at the sea. But during low flows, that 6-inch sea level rise at the ocean would translate close to that same amount at this particular location.

Next slide, please.

My fifth --

CO-HEARING OFFICER DODUC: Hold on. Before you continue, what I'm going to suggest you do is finish this section, but then take a break before you get to Antioch because that's quite detailed from your

testimony.

WITNESS NADER-TEHRANI: Very good.

CO-HEARING OFFICER DODUC: So that way, the court reporter can take a break then as well. Okay? All right.

WITNESS NADER-TEHRANI: All right. Okay. Very good.

So my fifth item here is looking at the effect of WaterFix on North Delta water quality.

So next slide, please.

So here's a map of the -- showing the location of the seven points that are covered under the North Delta Water Agency contract with DWR, with one point I need to make that, following the negotiations with DWR, the location from Emmaton was moved to Three Mile. We're all aware of that.

Next slide.

So my first bullet item, "Terms of North Delta Water Agency contract is protective of North Delta Water Agency water quality," In fact, I'm --

CO-HEARING OFFICER DODUC: And, Doctor, please move the microphone closer.

WITNESS NADER-TEHRANI: I'm sorry. I'm relying on Mrs. Sergent's testimony. And I can cite the pages if you like, but basically I'm

relying on her testimony to make that statement.

Second bullet, water quality at five of the seven stations that are listed under the North Delta Water Agency contract have been historically fresh or fairly fresh even during extreme dry periods of 2014-2015. And you can actually refer to North Delta Water Agency Exhibits 14 to 19 and 21 to 26 to see that.

Now, there was an analysis offered by MBK that's under North Delta Water Agency Exhibit 32. And they did an analysis based on the H3-plus -- that's Alt 4A, basically -- H3-plus scenario using the 16 years of simulation. And it show showed the exceedance above the thresholds that are described in North Delta Water Agency contract relative to no action. They only showed two locations for that information. One was Three Mile Slough where they showed, according to their analysis, there were 20 additional days in that 16 years of simulation.

And you can see that in North Delta Water Agency Exhibit 32, Page 6, last paragraph. There were 20 additional days where the threshold of -- set forth in North Delta Water Agency contract that the thresholds would be exceeded more under California WaterFix Alternative 4A as compared to no action.

That's -- do the math. That would be an average of 1.25 days per year. I simply divided the 20 by 16.

At Rio Vista, there were 12 additional days. That's, again, dividing them. That's North Delta Water Agency Exhibit 32, Page 9, first paragraph. That's an average of 0.75 days per year. I would consider those to be small.

The one thing I want to make a point is that also based on -- I'm relying on the testimony of Maureen Sergent that we've never had an exceedance at Rio Vista. The only place where we had an exceedance, in recent years, at least, was at Three Mile Slough.

Next slide.

This is a map of from the Islands, Inc. 38 -- 15 Exhibit 38 showing the partial map of location where they divert water. And just for your reference, Rio Vista would be not shown on this map, and it would be someplace north -- I mean southwest of where this map is.

So next location -- next slide.

So I'm on Slide 41. So this would be related to effect of California WaterFix on Islands, Inc. Mr. Ringelberg mainly focused on water quality at Rio Vista to make his case. That's Islands, Inc. 25, Page 9.

And just for a point of reference, Rio Vista is about two miles to the southern tip of Ryer Island. That's the most downstream location of Ryer Island.

It is my opinion that water quality in and around Ryer Island has been fresh, even during recent drought. Water quality in Rio Vista does not represent the water quality in and around Ryer Island, and therefore, I do not expect that the California WaterFix would affect the water quality in and around Ryer Island.

Next slide.

CO-HEARING OFFICER DODUC: And I think --

WITNESS NADER-TEHRANI: That we'll stop.

CO-HEARING OFFICER DODUC: Yes. All right. Before we take our break, looking at the estimated time that Group 7 requested, unless they are much more efficient than they estimated, it looks like we will not get to anyone for cross-examination other than Group 7 today.

All right. With that, we will take a break, and we will resume at 3:05.

(Recess taken)

CO-HEARING OFFICER DODUC: All right. It is 3:05, and we are back in session with everyone having been caffeinated and otherwise relieved.

Before we resume with Dr. Nader-Tehrani, another note. EB MUD, Group 15, has e-mailed in requesting 45 minutes for their cross-examination. So we will add them to the list as well.

We're waiting for someone to e-mail in saying they withdraw their cross-examination request. We'll see. All right.

With that, Dr. Nader-Tehrani, please continue.

WITNESS NADER-TEHRANI: All right. So this is Parviz Nader-Tehrani. We are on Slide 42. This is the last item I'm going to be going over today, and that's Antioch water quality and the fingerprinting analysis that Dr. Paulsen had in her analysis.

So next slide, please.

According to Antioch 202, Exhibit 202, based on what I saw, the main focus of Dr. Paulsen's testimony was on Boundary 1 scenario in comparison to no action. And I've already gone over this with you that Boundary 1 does not contain the Fall X2 criteria, and Fall X2 criteria basically requires a higher outflow during fall of wet and above-normal years, resulting in water quality improvements.

Okay. Next slide, please.

So this is Antioch 202 on Page 24, Page 41 of 25 the pdf, the second paragraph. And I'm going to focus

starting on Line 6, starting from "For example."

So she's citing here that in March of normal water years, the fraction of Sacramento water decreases from 60 percent to 40 percent -- this is at the city of Antioch with scenario Boundary 1 implemented relative to, let's say, no action alternative -- while the fraction of contribution from San Joaquin River increases from 20 percent to 40 percent.

And she's using that information to make the 10 point that the increase, she feels, in fraction of San Joaquin water results in degraded water quality at the City's intake. And I do not agree with that assessment, and I'm going to show you why I disagree with that statement.

Next slide.

So I think we all know that the Sacramento River typically is fresh year-round, whereas San Joaquin River water quality really varies a lot, depending on the flow rates that are coming down, and it's typically fresh during high flows like we had this year. You know, wintertime when flows are higher, the San Joaquin River is pretty fresh, but there can be high EC during low flows. So the water quality varies a lot in San Joaquin River, depending on the flow rates that are coming down.

Next slide, please.

This is Antioch 202, Figure 7, Page 26. So here is where she is showing the San Joaquin River contribution. This is based on DSM-2 fingerprinting analysis for the different types of water years. So she grouped these into critical water years, dry water year, normal water year, and wet years. And normal water year would include below-normal and above-normal water years.

But let's examine the case that Dr. Paulsen stated in March of normal year. So now we're looking at the bottom left plot, looking at the orange line representing Boundary 1. And this comparison with the no action alternative, I'm just comparing that with the purple line.

So you see that the -- according to this, the contribution in the month of March from San Joaquin River goes from 20 percent to 40 percent. What does that mean? That means 40 percent of the water in the March of the normal years under California WaterFix comes from San Joaquin River under California WaterFix as opposed to the 20 percent under the no action alternative.

So -- but let's examine what that really represents.

Next slide.

So what I've done here is I took the modeling results for Boundary 1. So the horizontal axis here represents that if -- based on the fingerprinting analysis, the San Joaquin River volumetric contribution at Antioch. The vertical axis is the Vernalis flow. So each dot you see here represents one month of simulation in CalSim.

So now let's take the 40 percent contribution 10 line and look at all the blue dots that are at 40 percent. And you see in order to have 40 percent contribution coming from San Joaquin at Antioch, it takes a flow of 7,000 cfs or higher in order to get that kind of a contribution at the city of Antioch intake.

And next slide now.

And here I've done -- I've created a similar plot except now this time -- I'm on Slide 48 -- the vertical line represents the corresponding EC for Vernalis. So once again, the horizontal axis is the same, the San Joaquin River volume contribution from -- at the city of Antioch.

So once again, you look at the 40 percent 24 line, and you see all the -- in order to have a 40 percent contribution, that only occurs when the EC

at Vernalis is 300 or lower.

So once again, what we're talking about is at the times when you have a high San Joaquin contribution at Antioch only occurs during the times when the Vernalis flow is high.

And now if you focus on the left side of the diagram and you see there are times when the EC at Vernalis can be high and let's consider, let's say, EC of 700 and higher, that only occurs when the San Joaquin River contribution is only, like, 5 percent or lower.

So there is really no correlation with the EC contribution increase of San Joaquin and the resulting water quality at Antioch. There is simply no correlation. The increase of contribution of -- at San Joaquin purely occurs during high flow period where the Vernalis water quality is actually very similar to Sacramento River.

Now, if you go back two slides, I want to illustrate a point right here.

So remember, we were focusing on the bottom left plot. You see those larger increases. But now this time look at the critical water years and the dry water years. Those are the times when the Vernalis flow is low. Water quality is -- you know, EC levels

are higher. And in fact you see in those periods there is very little contribution from San Joaquin.

So the only times when you see a high contribution of San Joaquin flow, they only occur when the Vernalis flow is high. Vernalis water quality is pretty good. So there is -- in my opinion, that argument is not a valid argument.

Now let's move one more.

This is another point I wanted to discuss. So 10 Dr. Paulsen in Antioch 202, Figure 8, Page 27. Once again, what she's showing you here is again the result of DSM-2 fingerprinting analysis, looking at the Martinez contribution.

Now instead of San Joaquin, I'm showing you 15 Martinez contribution. The Martinez contribution basically represents the ocean water. That's the high salinity coming from the ocean.

So again, I'm just focusing on how Boundary 1 compares to no action. So she makes the point that there are larger increases of the Martinez water -- you know, contribution at the City's intake. And it is my belief that the -- you know, if you notice, most of the larger increases, when you compare the orange line to blue line, occurs during fall months of October, November, and on the right-hand side is September.

And I do explain in my written testimony that when you group them in the water year type, you will end up seeing the results of Fall X2 in all water year types. And I can explain why that is if you like, but I did explain in detail that, even though you are categorizing these into the water year types, the result of Fall X2 will potentially show up in all those water years, the water year types.

Next slide, please.

So once again, here I'm showing a four-year time window, 1978 to '81. This is now fingerprinting analysis, just showing the volume of Martinez water. So once again, Martinez water represents the ocean contribution. That's the more saline water. The higher that number, the higher the chloride and the EC you expect to see.

We're -- I'm comparing here Boundary 1 versus no action. You see a similar pattern as you saw earlier when I was showing chloride concentrations.

For the year 1978 and 1980, those are the years where it's above normal and, therefore, there is a Fall X2. And then you see that the Martinez contribution is the same prior to September, but, you know, September of '78, that's when the Fall X2 would require a higher outflow in order to meet the Fall X2

requirement. And as a result, you see a lower contribution from Martinez.

The same pattern happens in 1980. Same again, the two diverge because of the Fall X2. Look at '79, below normal. No Fall X2 in either of those scenarios. The resulting Martinez contribution is very similar. 1981, a dry year, very similar to the Martinez contribution.

Next slide, please.

All I've done here is same time window. This time I added only H3 scenario just to illustrate the point that H3 does have Fall X2. And now you compare H3 versus the no action. You actually see the Martinez contribution under H3 scenario is actually similar or lower than that of no action for that entire period. And in fact, that's what -- that's what you see here.

So once again, the -- Dr. Paulsen primarily focused her testimony on Boundary 1. And you should know that the differences that you see are often mostly affected by the Fall X2 action. And as long as Fall X2 action is there and it will be operated to, and you -- the red line would not represent that scenario, basically.

Next slide. Here I'm including Figure C5, which I -- you know, back -- this is from my testimony

at DWR-513, Page 9. I'm on Slide 52.

This is in response to the D1641 compliance of the 250 milligram per liter chloride objective at Contra Costa Canal. And I have a point in terms of why I'm showing that. Here you see again five lines. And we had a lengthy discussion about the -- that there are model exceedances and why I feel those model exceedances are mostly not real.

If you would look at -- this is at Contra Costa Canal. And you see that in fact even the no action scenario shows, you know, the water quality exceedance of the objective. But in fact when you look at this, you see H3, H4, and Boundary 2 actually show less of those exceedances when you compare to no action. And when you compare Boundary 1, it's actually very similar to the no action.

So under no action, even, you know, under no action, we expect to see similar water quality, meeting the water quality objective D1641 according -- even under Boundary 1.

So next slide.

This is the second water quality objective at the -- in water -- at Contra Costa Canal, requiring to leave the daily average chloride concentration of 150 milligram per liter, certain number of days a year, and

that depends on the water year type. You know that.

So the blue line represents the minimum number, and ideally you want to be above it. That means compliance. If you cross it, that means you basically are resulting in a situation where you're not meeting that objective.

So when I was presenting that back in August, I was making a number of points. One was that all operational scenarios seem to meet that criteria in all years except '77, where Boundary 2 met the requirement but the other criterias did not meet that criteria.

Second point I made was that H3, H4, and Boundary 2 seemed to do equal or better in terms of meeting that particular requirement.

Next slide, please.

Now, this is -- somewhat differs from what -- the information you see here. So Dr. Paulsen shows -- you know, attempts to make the same information here, showing -- so the slide, you know, starting from the left column, is water year, and then the threshold. And that's a number of days required, so ideally you want to be above that.

So let's just compare the no action versus Boundary 1. According to what Dr. Paulsen shows here, in fact, under Boundary 1, there are three years that

you do not meet that criteria. That's 1977, 1978, and 1991. Those are shaded. And then under no action, the same criteria is actually not met four years.

So back in -- when Mr. Berliner was doing the cross-exam of Dr. Paulsen, she -- she was asked to comment on that information, why is it different from our analysis. And her response I believe at the time was that she could not reproduce the results that I had. And I think I have the reason why she couldn't meet that -- you know, the same response.

If you look -- I believe she did that analysis based on water year, whereas this criteria is actually based on calendar year, and that makes a difference.

The criteria starts from the beginning of a calendar year. So the simulations -- and you look at the label, it does clearly say "Water Year," whereas, you know, the analysis should have been done under calendar year basis.

And in that sense, because the simulations ended in September of 1991, end of September, there were not enough days in 1991 to make an assessment of 1991, and yet she does provide numbers for 1991.

That kind of confirms my hypothesis that perhaps she did her analysis based on water year, but she can correct it if it's wrong. But based on what I

see, clearly it says water year, and I believe that explains why she's reaching a different conclusion. Even so, under her conclusion, Boundary 1 does meet that criteria, and actually one year less exceedance.

Next slide, please.

So my conclusions with respect to Antioch water quality is that with the exception of Boundary 1 all WaterFix operational scenarios show similar or better water quality at Antioch as measured in EC, chloride, or bromide. I believe Boundary 1 shows a higher EC at Antioch mostly because it does not include the Fall X2 action.

And the large increases from the San Joaquin River volumetric contribution under all WaterFix operational scenarios mainly occur during high San Joaquin River flows, and they're not expected to cause substantial increase in EC at Antioch, as I explained earlier.

Next slide.

This is a summary of everything that I've gone over today. The first bullet item, the salinity increase in South Delta under Boundary 2 is mainly due to a more aggressive operation of the Head of Old River Gate. Fall X2 has a significant effect on water quality and water level.

So when you look -- if you are purely focusing on Boundary 1, that's what you're going to see. And that's really what you should ask yourself; what is it related to? And it is my opinion that it's mostly realty to Fall X2.

Third item is most of the increases in EC and reductions in water levels associated with Boundary 1 -- and we already talked about that. Okay.

Next slide.

It is my opinion that WaterFix is not expected to increase the frequency of occurrences of SRFEs at East Bay MUD's facility. And then reduction in water level under WaterFix are expected to be very small during extreme low flow periods. I've gone over that.

Next slide.

It is my opinion that the North Delta water quality upstream of Rio Vista, including areas around Ryer Island, should continue to remain fresh under WaterFix. Water quality objectives described under the North Delta Water Agency contract are expected to be met at almost the same frequency under WaterFix. And I'm basing that on, actually, North Delta Water Agency's testimony itself.

I've done my testimony. I've now arrived at the same conclusion. And with the exception of

Boundary 1, it is my belief that water quality at Antioch under WaterFix for the most part is expected to be similar or better than the no action alternative.

Next slide -- I believe that may be it. Yep.

That concludes my testimony.

CO-HEARING OFFICER DODUC: Thank you.

Anything else, Mr. Mizell, Mr. Berliner, or Ms. Aufdemberge?

MR. MIZELL: No, thank you. That concludes our direct.

CO-HEARING OFFICER DODUC: That leaves you with 58 seconds for your last panel.

All right. Mr. Cooper, please start off for Group 7 with your cross-examination -- I believe of Mr. Leahigh.

CROSS-EXAMINATION BY MR. COOPER

MR. COOPER: Good afternoon. Dustin Cooper on behalf of nine protesting parties. They are Anderson Cottonwood Irrigation District, Reclamation District No. 1004, Western Canal Water District, Richvale Irrigation District, Butte Water District, Plumas Mutual Water Company, Paradise Irrigation District, South Feather Water and Power Agency, and Nevada Irrigation District.

My questions are exclusively for Mr. Leahigh.

They track Mr. Leahigh's testimony and the headings in his testimony. So I will have a series of questions regarding allocation, primary reasons for releases from Lake Oroville, use of existing pumping capacity, increased opportunities to capture excess flows as a substitute for stored water with the California WaterFix project, and then finally, Term 91 is not expected to change with the California WaterFix operation.

Mr. Emanuel, would you please display the 11 document I've identified as MLF-7, which I've handed out to the witness. It's Mr. Leahigh's rebuttal testimony with highlights. And if you can go to Page 2, Lines 10 through 13.

MS. McCUE: Has that been posted, or did you hand it to somebody?

MR. COOPER: No. It's on a flash drive. I handed it in earlier today.

Thank you. Page 2, Lines 10 through 13.

Mr. Leahigh, go ahead and read that to yourself, and then let me know when you're ready for a question.

WITNESS LEAHIGH: Yes, I've read it.

MR. COOPER: Okay. What do you mean specifically when you testified that the Sacramento

Valley Water Users' modeling incorporates more foresight than operators truly possess?

WITNESS LEAHIGH: Yes, that was part of my rebuttal testimony, oral testimony just now.

I talked about the uncertainty that exists in a number of the variables that we look in terms of -- not only in terms of making our allocation decisions but also the actual operations during the year.

CO-HEARING OFFICER DODUC: Mr. Cooper, was there a specific element that you are trying to get to? Because obviously he spent a lot of time, both in his verbal testimony as well as written, responding to the question you just posed. So is there a particular line that you were planning on focusing on?

MR. COOPER: Yes. I am just asking for the specifics of what he means when he makes that statement. I have follow-up questions about whether he's relying on the testimony of others when he makes that statement. If you like, I can ask that question.

CO-HEARING OFFICER DODUC: Let's go straight to that because we don't need him to reiterate what's already been submitted in writing.

MR. COOPER: Maybe -- I'll conclude, then.

Is there anything other -- when you make this statement that the modeling incorporates more

foresight, is there anything outside what you've already presented in your rebuttal testimony that you're relying on?

WITNESS LEAHIGH: I guess to the extent when I -- the statement about the foresight that was used by MBK to do their modeling, yes, I did rely on the conclusions of our modeling folks in terms of how they expressed the kind of hard coding, if you will, of the allocations into the modeling that was done by MBK. So that was -- that was the portion of the foresight that I'm describing.

MR. COOPER: So you're relying, then, on the testimony of Mr. Munevar and Ms. Parker?

WITNESS LEAHIGH: Partially, yes.

MR. COOPER: You have not been tendered as a modeling expert in this proceeding; isn't that correct?

WITNESS LEAHIGH: Yes, I believe that's correct.

MR. COOPER: If I can now shift your attention to the phrase you used, that the modeled operations are more risky. Very similar question.

What do you mean by that?

WITNESS LEAHIGH: So the context for "more risky" is, when you look at the results of MBK's modeling, it shows more movement of stored water from

upstream released for export than is common practice for State Water Project. And so that leaves lower storages upstream than is the practice of the projects, which would put project supplies at higher risk of lower allocations in drier years.

MR. COOPER: To your knowledge, do these modeled operations violate any provision in the water right permits for the State Water Project?

CO-HEARING OFFICER DODUC: Do you mean the operations as depicted in the MBK modeling?

MR. COOPER: Correct.

WITNESS LEAHIGH: No, I don't believe they -- I don't believe they -- I'm sorry. Can you repeat the question?

MR. COOPER: To your knowledge, do these modeled operations, referring to the MBK modeled operations, violate any provision in the water right permits for the State Water Project?

WITNESS LEAHIGH: No, I'm not aware that they do.

MR. COOPER: To your knowledge, do these modeled operations, that is, MBK's modeled operations, violate any provision in a biological opinion?

MR. BERLINER: Objection, vague as to the term "violation."

CO-HEARING OFFICER DODUC: Mr. Berliner, I'm sorry. I didn't catch that last part.

MR. BERLINER: I objected on the grounds that the term "violation" is vague when applied to the biological opinions.

CO-HEARING OFFICER DODUC: I don't know what that means.

MR. BERLINER: The biological opinions have many, many compliance points to them, and a violation would generally be as a result of a meet-and-confer with, let's say, the National Marine Fishery Service. So they're not necessarily red light/green light as to every provision there, so that's what I was getting at.

CO-HEARING OFFICER DODUC: Mr. Cooper, would you be satisfied with the term "inconsistent with."

MR. COOPER: Yes.

CO-HEARING OFFICER DODUC: Thank you.

MR. BERLINER: Thank you.

WITNESS LEAHIGH: As far as my cursory review of the results, I didn't see anything that looked to violate the biological opinions or was inconsistent with the biological opinions.

MR. COOPER: Are the MBK-modeled operations inconsistent with any of the RPAs in the biological opinions, to your knowledge?

WITNESS LEAHIGH: Not to my knowledge.

MR. COOPER: To your knowledge, does the MBK-modeled operations violate any of the provisions within Decision 1641?

WITNESS LEAHIGH: That part, I'm not sure, but I think some of the water quality results showed exceedances of D1641, salinity exceedances of D1641 in the MBK modeling, if I'm not mistaken.

MR. COOPER: The document you're referring to, is that a document that's been submitted in this proceeding?

WITNESS LEAHIGH: It is a document I've seen in this proceeding, but I -- offhand, I can't tell you which one it is.

MR. COOPER: Okay. To your knowledge, does the MBK-modeled operations violate any legal obligation applicable to the State Water Project?

MR. BERLINER: I'm going to object on the grounds of scope based on the prior objection that I made.

CO-HEARING OFFICER DODUC: Overruled. Mr. Leahigh can answer to the extent that he has knowledge and can answer that question.

WITNESS LEAHIGH: I'm sorry. Can you repeat that question?

MR. COOPER: Sure. To your knowledge, does the MBK-modeled operations violate any legal obligation applicable to the State Water Project?

WITNESS LEAHIGH: As -- no. I think -- so one of those legal obligations would be the -- satisfying the contracts to settlement contractors, and the MBK modeling indicates that those contract amounts were always met.

MR. COOPER: So I'm not sure I followed your answer. My question was does MBK's modeled operations violate any legal obligation. The answer you provided, as I heard it, was that MBK's analysis doesn't show any violation of the terms of the Feather River agreements, the diversion agreements.

WITNESS LEAHIGH: That's correct.

MR. COOPER: So let me repeat my question, then. To your knowledge, does the MBK-modeled operations violate any legal obligation applicable to the State Water Project?

WITNESS LEAHIGH: Well, I guess it's the -- the only other legal obligations that I can think of are the ones that you've already covered, which were the BiOps, D1641. The only one offhand that I couldn't think of was the -- meeting the contract, the settlement contract supplies. And so that's why I

referred to those in my answer to that last question.

MR. COOPER: So then is it fair to say that you're not aware of any legal impediment to the operations modeled by MBK?

WITNESS LEAHIGH: That's correct.

MR. COOPER: Is it then possible for the California WaterFix project to be operated in the manner modeled by MBK on behalf of the Sacramento Valley Water Users?

WITNESS LEAHIGH: Yes, that appears to be correct.

MR. COOPER: Returning to your rebuttal testimony, MLF-7, you used the phrase "practice of prudently conservative operations."

Aside from your rebuttal testimony, are these conservative operations written down anywhere that you're aware of?

WITNESS LEAHIGH: I'm sorry. Which page are you on?

MR. COOPER: It's displayed on the screen. It is Page 2, I believe.

WITNESS LEAHIGH: Oh, it's still there.

MR. COOPER: Lines 10 through 13 is where the -- Line 13, "prudently conservative operations."

WITNESS LEAHIGH: I'm sorry. What was the

question, again, made to that?

MR. COOPER: Aside from your rebuttal testimony, are these conservative operations written down anywhere that you are aware of?

WITNESS LEAHIGH: Yes. So the conservative operations that are being referenced here are essentially the water supply guidelines for State Water Project, for managing State Water Project supplies. And that, as I've noted in this -- in the rebuttal testimony, that's a balancing of dry-year supply with average annual delivery capability.

We do have an expression of that -- of that strategy as I've also referred to it, in reports that -- monthly reports that we provide to our State Water Contractors, which are assumptions that go into our allocation decisions. And it basically describes what our carryover targets would be for any given year for Lake Oroville.

MR. COOPER: So if I wanted to review this further expression of what you mean by the phrase "prudently conservative operations," I should refer to the reports that you deliver to the State Water Project contractors?

WITNESS LEAHIGH: Yes, that would be a place to look. The -- that's correct.

MR. COOPER: Anywhere else I could find them?

WITNESS LEAHIGH: Offhand, that's the only place I can think of.

MR. COOPER: DWR has not proposed any permit conditions to require this practice of prudently conservative operations to continue if the California WaterFix was constructed; isn't that correct?

WITNESS LEAHIGH: I would have no reason to believe they wouldn't.

MR. COOPER: But they have not, at least as of this date, submitted any proposed permit terms or conditions; isn't that correct?

MR. MIZELL: Objection. We've been over this a number of times with a number of different witnesses and questioners. The Department is not proposing any permit terms at this time.

CO-HEARING OFFICER DODUC: Yes, that has been stipulated previously.

MR. COOPER: It was, and that stipulation, if I recall, was about August of last year in a different phase of this proceeding or part of this proceeding. So if that's still the stipulation...

CO-HEARING OFFICER DODUC: Mr. Mizell, please stipulate.

MR. MIZELL: Yes. And I believe the

stipulation we had in August was that it would be produced in Part 2. We have not reached Part 2; therefore, the stipulation we previously filed should still be in effect.

CO-HEARING OFFICER DODUC: So noted.

And move on, please.

MR. COOPER: Okay. Mr. Leahigh, do you, as the chief of the State Water Project operations office at DWR, recommend permit conditions that require continued conservative operations of the State Water Project?

CO-HEARING OFFICER DODUC: I'm sustaining the objection I'm sure Mr. Mizell is about to voice.

Mr. Cooper, do not pursue this line of questioning further. The Department is not proposing terms at this time.

MR. COOPER: Okay. But that is not my question. My question is whether Mr. Leahigh would recommend such.

CO-HEARING OFFICER DODUC: No. I'm not allowing this line of questioning. Move on, please.

MR. COOPER: If I just may for the record state my response.

Mr. Leahigh has -- may or may not be a witness in Part 2. I don't know that. He has described some

of the operations as he would operate the project. We heard from Mr. Milligan that there's other possible operations. We've heard already from Mr. Leahigh that there's other possible operations of the project.

Without permit terms and conditions and Mr. Leahigh's input on those, we're really just speculating here. And I would like to hear Mr. Leahigh's opinion on this while we have the testimony in front of us. I don't know that he will be a witness in Part 2, when and if we ever get to the discussion over terms and conditions.

CO-HEARING OFFICER DODUC: Mr. Mizell, your objection for the record?

MR. MIZELL: Yes. I'd like to indicate that permit terms and conditions are not a part of Mr. Leahigh's rebuttal testimony. Therefore, it's beyond the scope. And to the extent that Mr. Cooper is asking Mr. Leahigh to speak for the Department, I'm not sure that John Leahigh would be comfortable speaking for the Department, given he hasn't discussed it with his superiors.

CO-HEARING OFFICER DODUC: The objection is officially and for the record sustained.

Now move on.

MR. COOPER: Okay.

We can now turn, same page, Mr. Leahigh, but to the Line 14 and 15 that I've highlighted, and let me know when you're ready for the question.

WITNESS LEAHIGH: Ready.

MR. COOPER: Okay. You list ten variables there. One variable that you do not list is current South of Delta export capacity constraints.

Is there a reason for that?

WITNESS LEAHIGH: There's not a reason for that. But generally any physical -- any physical capacity constraint is a restriction. So for example, the physical capacity of San Luis Reservoir, of Lake Oroville, physical capacity of our release capabilities from Lake Oroville, those are inherent into the analysis that we would do.

It's not mentioned here, but certainly this 17 isn't intended to be an all-inclusive list.

MR. COOPER: So then you would agree that physical limitations, including the current South of Delta export capacity constraints, do factor into current allocation decisions?

WITNESS LEAHIGH: Yes, it would factor in.

MR. COOPER: You would agree as well, then, that the California WaterFix would increase the opportunity to utilize full Banks Pumping Plant

capabilities, wouldn't you?

WITNESS LEAHIGH: Yes, during the periods that I expressed in my oral testimony in terms of I would expect it to increase our capabilities of capturing excess flows in the winter and the spring period, yes.

MR. COOPER: State Water Project could convey more previously stored water with this additional opportunity to utilize full Banks Pumping Plant capacity; isn't that correct?

WITNESS LEAHIGH: Not with our current strategy that's in place or the State Water Project contractors as I've described.

MR. COOPER: I'm intrigued by your use of the word "strategy." In other areas, you've said "policy"; in other areas, you've said "practice." Those are all different things in my mind.

Which on is it? Is it a policy, is it a strategy, or is it a practice?

WITNESS LEAHIGH: I think it's all of those things quite, frankly. I'm not an attorney, so maybe I use my words a little looser, but I think it is all of those things.

So just to be clear, when I'm talking about these trade-offs and the riskiness, it only has to do with the supply that's managed for State Water Project

purposes. It's not -- I'm not talking about increased risks to any of our other obligations.

And so we receive input from our contractors on that policy, that strategy on how we manage their supplies and how we -- that trade-off between the average annual deliveries versus dry-year reliability but for their allocation only.

MR. COOPER: Okay. Thank you. Returning to the ten separate variables that 10 you list in your rebuttal testimony, to your knowledge, 11 which of these ten variables are input to CalSim using perfect foresight?

CO-HEARING OFFICER DODUC: What was the last part, Mr. Cooper?

MR. COOPER: "Using perfect foresight."

MR. BERLINER: Objection, vague as to in what context we're talking about this.

Are you referring to the MBK modeling?

CO-HEARING OFFICER DODUC: That's how I understood it.

MR. COOPER: Well, that's a good point. Why don't we take both in turn as to petitioner's modeling and then any changes, to the extent of your knowledge, as to MBK's modeling.

CO-HEARING OFFICER DODUC: Now you have to

repeat the question for me.

MR. COOPER: Okay. Using the petitioner's modeling and looking at these ten separate variables, to your knowledge, which of these ten variables are input to CalSim using perfect foresight?

WITNESS LEAHIGH: So the ones that would be implicit as far as perfect foresight, those would include No. 3, which is the forecasted runoff, that the perfect foresight for the amount of exports that are going to occur during the summer, that assumes perfect foresight in terms of the runoff that's going to occur not only into Oroville but downstream of Oroville in terms of supplies that would be available to the projects to export. So No. 3, certainly.

The anticipated depletion rate in the Sacramento Valley, so No. 6. No. 7, the estimated Delta consumptive use because those will all affect the export rate, which is something we would not know ahead of time on exactly what level of export we would be able to achieve. And perhaps No. 9, to the extent that exports are predetermined for late spring period, so June in terms of knowing exactly what level of restriction would occur.

So I think that those are probably the main ones.

MR. COOPER: What about No. 5, Feather River service area delivery obligations, do you -- does the model use perfect foresight in determining whether it's a drought or non-drought year as defined under that agreement?

WITNESS LEAHIGH: Well, that one becomes locked in once we get past April 1st in terms of whether there'd be a shortage or not applied, the shortage criteria.

Now, the exact volume of deliveries that would be made would be -- there would be some uncertainty there. So, for example, we have a schedule of deliveries for those folks of -- for an unshorted condition and for a shorted condition. But that monthly-to-monthly pattern, to the extent that it's -- there would be some uncertainty related to the spring, for example, if we have a very wet spring, there might be a delay in when folks start taking delivery of those supplies. There's, you know, maybe the natural rain, other sources of water that's available to them that may alter that actual delivery pattern that's assumed.

So yes, certainly there would be some uncertainty associated with that No. 5 as well.

MR. COOPER: Okay. Let's maybe drop that one from the list.

I heard you answer the question regarding perfect foresight in the petitioner's modeling as saying yes to No. 3, No. 6, No. 7, and No. 9.

Is there any change if we now shift the question to MBK's modeling present in this proceeding? Is there any addition to the list that you just provided, to your knowledge?

MR. BERLINER: Objection. You omitted No. 5, which you just questioned him about and to which the witness responded affirmatively. So I'm unclear as to whether your question includes No. 5 or excludes it.

MR. COOPER: Well, I guess I didn't hear -- I heard equivocation. So maybe if Mr. Leahigh believes that No. 5 is determined with perfect foresight, we can add that to the list.

And then the same question, now turning to MBK's modeling, if there's any change in your answers.

WITNESS LEAHIGH: No. I was just expressing the uncertainty that does exist in No. 5, but it -- as far as MBK's foresight, perfect foresight, the answer to that question would be the numbers that you read off.

MR. COOPER: So there's no change, to your knowledge?

WITNESS LEAHIGH: I'm sorry. No change to

what?

MR. COOPER: The numbers that you answered with respect to the question on petitioner's modeling for No. 3, maybe No. 5, No. 6, No. 7, and No. 9.

WITNESS LEAHIGH: Correct.

MR. COOPER: Is there any change in your answer, now turning -- now assuming in MBK modeling?

WITNESS LEAHIGH: Now assuming MBK modeling? I am assuming MBK modeling.

MR. BERLINER: I'm sorry to interrupt, but it just occurs to me that the witness answered a question -- the witness answered a question that, when it was asked, I understood that Mr. Cooper was asking about perfect foresight regarding petitioner's modeling.

CO-HEARING OFFICER DODUC: It was?

MR. BERLINER: I think the witness's confusion now is that he answered that question as to the MBK modeling. I think it's appropriate to ask the witness some questions regarding that answer that he gave to make sure the answer he gave actually responded to the question that was asked. I'm not criticizing the question in any way. To me it was clear, but I don't think the witness gave a responsive answer.

CO-HEARING OFFICER DODUC: So now that I am totally confused, let me ask the question.

Mr. Leahigh, are these ten factors that you've listed here in your testimony regarding which one requires perfect foresight in conducting modeling, does it matter? Is there a difference between the modeling that would be conducted by petitioners or that was conducted by petitioners versus modeling conducted by MBK in terms of the factors that would require perfect foresight, to use your terminology?

WITNESS LEAHIGH: Okay. That's helpful. Thank you.

Yes, I think the difference in the petitioners' model versus MBK modeling in terms of perfect foresight, I believe the MBK modeling was using perfect foresight as it relates to No. 3, forecasted runoff. There would -- it would be implicit in the fact that they assumed they had perfect foresight in the amount of export. That's implicit -- that implies that they absolutely new the forecasted runoff that would occur.

And I know that there is -- the petitioners' modeling does not -- does not make that same assumption. So I think No. 3 would be the primary difference between the two approaches.

CO-HEARING OFFICER DODUC: Just No. 3?

WITNESS LEAHIGH: And perhaps No. 9 on the

BiOp restrictions.

MS. MORRIS: Stefanie Morris --

CO-HEARING OFFICER DODUC: Ms. Morris.

MS. MORRIS: -- State Water Contractors.

I'm just wondering, so we have a clear record. These really seem like modeling questions, and I see Mr. Leahigh struggling to try to answer these questions when all the modelers are sitting right here. And they have in fact looked at this and may be helpful in answering some of these questions.

So I'm not sure why these are being directed to Mr. Leahigh.

CO-HEARING OFFICER DODUC: Mr. Cooper, I believe you were following up on a statement made in Mr. Leahigh's testimony, but I'll allow you to respond to that.

MR. COOPER: I will -- that's exactly the case. Mr. Leahigh made the statement that the Sacramento Valley Water Users' case in chief incorporates more foresight than the operators truly possess.

What the question is trying to get at is, of the factors he lists here, what's the difference in the petitioners' modeling and the MBK modeling with respect to perfect foresight?

CO-HEARING OFFICER DODUC: Objection is overruled. Now that I have been trained to rule on objections with the proper terminology, the objection is overruled.

Mr. Leahigh, have you completed your answer with respect to -- you have identified, I believe, No. 3 and --

WITNESS LEAHIGH: Number 9.

CO-HEARING OFFICER DODUC: Number 9.

WITNESS LEAHIGH: Yes.

CO-HEARING OFFICER DODUC: -- as the two factors that you believe MBK incorporated that would have required perfect foresight?

WITNESS LEAHIGH: Correct.

MR. COOPER: Okay. Let's move on. Mr. Emanuel, if you would please go to Page 3, 17 Lines through 20.

And, Mr. Leahigh, if you don't understand the question, notwithstanding the clock ticking, I want you to take the time, understand it. If you need me to repeat it, feel free to ask.

So go ahead and take a moment to read the highlighted lines there, 18 through 20, and let me know when you're ready for the question.

WITNESS LEAHIGH: Yes, I'm ready.

MR. COOPER: When you use the phrase "Settlement Contractor," you're referring to the entities that hold diversion agreements with the State of California, correct?

WITNESS LEAHIGH: Yes.

MR. COOPER: What do you consider to be a conservative estimate for these Feather River entities?

WITNESS LEAHIGH: A conservative estimate would be that they would take the full volumes that are expressed in their contracts. So I was looking explicitly at the Feather River Settlement Contractors in this line.

MR. COOPER: Okay. Does your answer include both the irrigation season and the fall water provision of the agreements?

WITNESS LEAHIGH: Yes, it does, since the irrigation season supplies are explicit in the contract, so the conservative estimate is every drop would be taken. The fall supplies are a little difficult because that's essentially open-ended in terms of putting water to beneficial use. So we make estimates based on historical use during that time period.

MR. COOPER: Okay. Thank you.

Mr. Emanuel, if you now go to Page 6, please,

of the document identified as MLF-7, Lines 6 -- excuse me -- Lines 9 through 11.

Mr. Leahigh, go ahead and read that to yourself and let me know when you're ready for a question.

WITNESS LEAHIGH: Okay. I'm ready.

MR. COOPER: Do you consider deliveries to the Feather River entities pursuant to their diversion agreements to be non-discretionary?

WITNESS LEAHIGH: No. I was lumping those in with the -- yes, I'm sorry. I was including those deliveries to the settlement contractors as non-discretionary since it's a contract without -- yeah, that's correct. Very specific terms for shortages.

MR. COOPER: Okay. Thank you.

If we can now move to Page 7, Lines 8 through 18 10.

Mr. Leahigh, the policy you reference here, is that a written policy?

WITNESS LEAHIGH: That's -- that's the same strategy that we were talking about earlier -- strategy, policy, practice, what have you.

So my answer would be the same as before.

MR. COOPER: Okay. Who establishes policies

at DWR that govern operations of the State Water Project?

WITNESS LEAHIGH: That would be our office.

MR. COOPER: The operations office?

WITNESS LEAHIGH: Operations office, water operations office for State Water Project. But certainly we develop those policies with input from the State water contractors because this specific policy that I'm talking about here is the one that affects their water supply.

MR. COOPER: Okay. Can these policies be modified given new information?

WITNESS LEAHIGH: Yes.

MR. COOPER: Can it be modified given a change in circumstances?

WITNESS LEAHIGH: Yes.

MR. COOPER: Can it be modified if there are new or different staff people at DWR?

WITNESS LEAHIGH: Yes.

MR. COOPER: Did you discuss this policy with the petitioners' modelers to ensure that it is accurately reflected in the modeling of the various California WaterFix alternatives presented in this proceeding?

WITNESS LEAHIGH: So I'd say -- I say -- I'd

say yes. Over time, over the years, there's interaction between the modelers and the operators. And so we provide feedback to the modelers in terms of how well is CalSim simulating State Water Project operations over long term.

And so we continuously engage in -- in trying to improve the model to better reflect actual operating practice. And this -- and so we feel that the model captures this policy quite well when you look at the results.

MR. COOPER: Your last statement there, would that apply to all of the California WaterFix alternatives presented in this proceeding by the petitioners?

WITNESS LEAHIGH: By the petitioners, yes.

MR. COOPER: Mr. Emanuel, if you would please display DWR-852.

CO-HEARING OFFICER DODUC: Mr. Walter William Bourez.

MR. COOPER: Did you prepare this --

CO-HEARING OFFICER DODUC: Sorry. I got distracted by someone's ring tone.

What was the last question again, Mr. Cooper?

MR. COOPER: Does petitioners' modeling presented for the various alternatives in this

proceeding comply with this State Water Project policy? Mr. Leahigh answered "yes."

Okay. Mr. Leahigh, we're now on the document identified as DWR-852. The question is did you prepare this exhibit?

WITNESS LEAHIGH: This was prepared by my staff under my direction.

MR. COOPER: Is there a reason why you or your staff utilized the time period 2000 through 2016?

WITNESS LEAHIGH: I think that was the period in which historical data was readily available.

MR. COOPER: The gray line is total unmet demand. How did you or your staff calculate total unmet demand?

WITNESS LEAHIGH: That would have been the difference between our allocations and the requested demand for each of those years.

MR. COOPER: The gray line has gone from essentially zero in 2006 to over 6 million acre-feet in 2014. What is the cause of that significant swing in unmet demand, in your opinion?

WITNESS LEAHIGH: Primarily the drought. There's -- yeah, I'd say primarily the drought. And you can see that in the color coding of the year types.

MR. COOPER: In your opinion, would

construction of the California WaterFix project enhance DWR's ability to better satisfy unmet demands?

WITNESS LEAHIGH: Yes. I mean, of course, it would depend on exactly what the terms and conditions are, but certainly many of the scenarios would help satisfy more of the demands.

MR. COOPER: I want to hone in on the 2003 period. The total export line exceeds the unmet demand line. Do you see that?

WITNESS LEAHIGH: Yes.

MR. COOPER: And 2003 obviously is before the 2008 and 2009 biological opinions, correct?

WITNESS LEAHIGH: That's correct.

MR. COOPER: This would demonstrate that project operators are more aggressively releasing and exporting stored water in certain years, correct?

WITNESS LEAHIGH: No, incorrect.

MR. COOPER: Why?

WITNESS LEAHIGH: Well, I'm not sure why you draw that conclusion.

MR. COOPER: You're diverting water when your unmet demand line is below. So you're diverting more water than your contractors are saying they need.

WITNESS LEAHIGH: No. So maybe that's a misinterpretation of the graph.

So the -- even with the level of export that's occurring, there's still another level of unmet demand above and beyond that. So that's -- that's what's depicted here.

MR. COOPER: Help me understand that further. So where's this other level of demand?

WITNESS LEAHIGH: So -- so the -- we were very close, although not quite, in 2003, utilizing all of the available capacity. However, there continued to be -- I'm trying to see the scale on there. So that would be -- looks like there was still a million acre-feet of unmet demand in that year, because that's what's depicted in the gray -- on the gray curve.

MR. COOPER: Okay. Thank you.

Mr. Emanuel, would you please go back to MLF-7, Page 9. Okay. Lines 3 through 5.

Mr. Leahigh, you may need some context here. So please go ahead and review the highlighted section there and let me know when you're ready for a question.

WITNESS LEAHIGH: And it starts on the previous page, the highlighted section? Okay, yeah.

MR. COOPER: All right. So the question relates to your use of the phrase "carryover policies."

Very similar question. What carryover policies are you referring to?

WITNESS LEAHIGH: These are the same policies we've been discussing during this cross-examination, the policies for carrying over State Water Project contractor supplies.

MR. COOPER: And those would be reflected in the reports to the State Water Project contractors?

WITNESS LEAHIGH: Yes.

MR. COOPER: In your opinion, does DWR have sole discretion over Lake Oroville operations?

WITNESS LEAHIGH: Well, within all the legal obligations.

MR. COOPER: Does DWR have discretion to operate Lake Oroville and the California WaterFix project in a manner that would violate the terms of the various Feather River diversion agreements?

WITNESS LEAHIGH: I don't believe there's any linkage between the operations of Lake Oroville and our commitment in the settlement contract agreements.

MR. COOPER: Does DWR have discretion to operate Lake Oroville and the California WaterFix in the manner modeled by MBK Engineers on behalf of the Sacramento Valley Water Users?

WITNESS LEAHIGH: Do we have the discretion to operate it that way?

MR. COOPER: Yes.

WITNESS LEAHIGH: To the best of my knowledge. The fact that the -- all of the contract -- settlement contract demands were met, it would seem that it would be possible because that's consistent with our perfect record of deliveries for that contract.

MR. COOPER: So if we demonstrated to you that there was a reduction in contract deliveries to the Feather River entities, would that change your answer?

WITNESS LEAHIGH: Are you talking about a reduction in a modeling or --

MR. COOPER: Yes.

WITNESS LEAHIGH: Yes, it would change my answer.

MR. COOPER: That DWR would not have discretion to operate in that manner?

WITNESS LEAHIGH: We would not -- we would not operate as aggressively as MBK is depicting in their modeling if it -- if it shows not meeting those contractual obligations. It would -- that would not be the type of operation that we would pursue.

MR. COOPER: Okay. Does DWR have the discretion to change its policies for how it operates the State Water Project including if the California WaterFix were constructed?

WITNESS LEAHIGH: We have flexibility within

the bounds of our regulatory and legal obligations, yes.

MR. COOPER: Does DWR have the discretion to operate the California WaterFix in a manner that more aggressively relies upon re-diversion of previously stored water?

WITNESS LEAHIGH: Again, to the extent that it doesn't interfere with our other legal and regulatory

obligations, yes.

MR. COOPER: Does DWR have the discretion to operate Lake Oroville in a manner that reduces the reliability of Lake Oroville in providing the water supply set forth in the Feather River diversion agreements?

WITNESS LEAHIGH: No. I would consider those -- well, I would consider the agreements with the Feather River service area folks as a legal obligation.

MR. COOPER: My question is whether DWR has the discretion to change its operations that affects the reliability of Lake Oroville to comply -- and DWR to comply with the terms of those agreements?

WITNESS LEAHIGH: That's -- that's too vague of a question.

MR. COOPER: Okay. What makes it too vague for you? How can I try to --

MR. BERLINER: Well, I just -- objection. There's no obligation on the part of the witness to develop cross-examination questions for himself.

CO-HEARING OFFICER DODUC: Sustained.

Mr. Cooper, reduced reliance does not naturally imply that the contract obligations would not be met.

MR. COOPER: There is a clause in the Feather River diversion agreements that requires the State of California to reliably operate the facility.

So my question is does DWR have discretion to, essentially, re-operate the facility in a manner that's less reliable in accordance -- that in my view would be inconsistent with this contract principle?

CO-HEARING OFFICER DODUC: And I believe Mr. Leahigh has answered that they do not have the discretion to re-operate in a way that would violate that agreement.

MR. COOPER: Okay. Final discretion question. Does DWR have discretion at any time to alter the upstream operational parameters of its storage facilities?

WITNESS LEAHIGH: Can you better define "upstream operational."

MR. COOPER: This was a question actually

deferred to you by Ms. Sergent. She used that phrase in her rebuttal testimony and specifically her PowerPoint presentation. So I can't define it any further. If you don't know, that's a perfectly acceptable answer.

WITNESS LEAHIGH: Yes, I don't know under the context that we're talking.

MR. COOPER: Okay. Mr. Emanuel, would you please display Exhibit DWR-855.

Now, Mr. Leahigh, in referring to this exhibit at Page 10, Lines 8 through 11 of your rebuttal testimony, you state that this comparison shows that the ability to export available spring flows has been severely reduced. Some of this preexisting ability to export excess flows would be restored with the California WaterFix. This return of flexibility would make the projects less reliant on upstream storage to meet project objectives.

The question is, if the California WaterFix was constructed, would you expect the pattern of exports to return to something more akin to that shown in the 2005 report?

WITNESS LEAHIGH: Yes, generally, I would.

MR. COOPER: Now, Mr. Leahigh, you may want to refer to your handout of your written testimony before

you, because I've got a question about your use of the phrase "project objectives" in the section I just read. Again, that's at Page 10, Lines 8 through 11.

So the question for you, Mr. Leahigh, is is one of the objectives of the project to maximize Table A deliveries to the State Water Project contractors?

WITNESS LEAHIGH: It is an objective, although maximizing -- this is where the practice/policy/strategy comes in. It is a trade-off with that dry-year supply of State Water Project allocation. And so there continues to be a balancing of the two.

So I'd say the dry-year reliability aspect for State Water Project supplies also is an objective, and it's somewhat of a trade-off with maximizing the average annual deliveries to the State Water Project contractors.

MR. COOPER: If the California WaterFix were constructed and operating in the manner you describe in your rebuttal testimony, would you anticipate providing full Table A supplies at a greater frequency than without the California WaterFix in place?

WITNESS LEAHIGH: It would depend on what operating scenario, what terms and conditions are

approved with the project. So I can't -- I couldn't conclude definitively.

MR. COOPER: This was where I was going to ask a question about terms and conditions. Mr. Leahigh has referred to them. If your -- if the objection would be the same and the ruling would be the same, I'll move on.

CO-HEARING OFFICER DODUC: Move on, please.

MR. COOPER: Okay.

If we can, Mr. Emanuel, turn to Page 12, Line 3 of MLF-7.

"Essentially, the California WaterFix project is a storm water capture program writ large." By "storm water," do you mean unstored flows?

WITNESS LEAHIGH: Yes, just unstored flows that are in excess of other needs in the system, so

beyond the Bay-Delta standards, above and beyond any other legal users of water in the system.

MR. COOPER: So I interpreted the statement as you testifying that the California WaterFix would be operated when the Delta is in an excess condition.

Would you -- is that what you intended here?

WITNESS LEAHIGH: That's what this particular paragraph is addressing.

MR. COOPER: If the project is essentially a

storm water capture program when the Delta is in surplus, how would it be operated, if at all, when there is no storm water in the system to capture?

WITNESS LEAHIGH: So I describe that in great -- fairly good detail in terms of the section that talks about the Delta hydrodynamics remain largely unchanged. So that talks about how California WaterFix -- how the system would be operated in drier conditions. So, you know, I went into quite a bit of detail on that.

MR. COOPER: So let's focus on when the Delta is in a balanced condition for the next series of questions. Okay?

WITNESS LEAHIGH: Okay.

MR. COOPER: Would you expect that the operations of the North Delta diversion facilities would exceed the South of Delta permitted limitations during balanced conditions?

WITNESS LEAHIGH: No, I wouldn't foresee that in balanced conditions, no.

MR. COOPER: I am now on my last topic, Term 91. I see I've only got a few minutes left. I think I may just need a few minutes more to conclude. Okay. Mr. Leahigh, are you aware of the two conditions under which Term 91 can be implemented; that

is, balanced conditions and supplemental project water being released by CVP and SWP reservoirs to satisfy in-basin entitlements and requirements?

WITNESS LEAHIGH: Sorry. What was the beginning of that question?

MR. COOPER: Just -- it's basically a background question.

WITNESS LEAHIGH: Yes, yes.

MR. COOPER: The two conditions under which Term 91 may be imposed.

WITNESS LEAHIGH: Yeah. So Term 91 is imposed when the projects are making supplemental releases which exceed our exports. Yes.

MR. COOPER: So the two criteria, as I'm aware of them, are balanced condition and supplemental releases. Would you agree?

WITNESS LEAHIGH: Yes, I would agree with that.

MR. COOPER: According to your testimony, the California WaterFix is essentially a storm water capture project; that is, a project that diverts water during periods when the Delta is in excess, correct?

WITNESS LEAHIGH: Yeah. The vast majority of the yield that the project would create was -- is due to that element, yes.

MR. COOPER: Isn't it then correct that increased diversions of this excess flow by the California WaterFix project could cause the Delta to transition from excess to balanced condition?

WITNESS LEAHIGH: No.

MR. COOPER: Why not?

WITNESS LEAHIGH: Because the in-basin uses of the project would -- the in-basin uses would not change as a result of the project.

MR. COOPER: So let's say the system is in excess by 9,000 cfs, the exact amount of capacity in the proposed California WaterFix project.

If you diverted that full amount, 9,000 cfs, wouldn't you agree that that would transition the Delta into a balanced condition?

WITNESS LEAHIGH: It would transition it into a balanced condition, but it would not transition it into a Term 91 condition, which you talked about, which being in balanced condition alone is not enough to trigger Term 91.

MR. COOPER: Understood. I'm only asking about kind of the first element of the Term 91 equation.

WITNESS LEAHIGH: Okay.

MR. COOPER: So now let's focus on the second

element of the Term 91 equation.

If the State Water Project and CVP are complying with all applicable legal and regulatory requirements, isn't it true that the projects have discretion in deciding how much supplemental project water to release from project reservoirs?

WITNESS LEAHIGH: No. At that point, additional releases would not be supplemental flow to meet in-basin uses. I think under the scenario you're painting, there may be an additional release of storage for export, but that's different.

MR. COOPER: My question just goes to control over your releases. Do you have control -- if you're otherwise complying with all legal and regulatory requirements, do you have discretion over your supplemental project releases?

WITNESS LEAHIGH: The amount of supplemental project releases would be fixed because they would be dependant upon what the in-basin uses were and how much of those in-basin uses were not being met by natural flows. So that's a fixed amount. If we're not -- if the project is not changing those in-basin uses, then I wouldn't expect any change in the frequency or duration of Term 91.

MR. COOPER: Okay. That concludes my

cross-examination. Thank you.

CO-HEARING OFFICER DODUC: Thank you.

Does anyone else from Group 7 have questions for Mr. Leahigh? I'd rather ask now then wait until all three of you have completed.

MR. BERLINER: If I might ask a clarifying question. We still have a panel before us, so if there's a question for Mr. Leahigh that another member of the panel has input on, are they free to provide that input?

CO-HEARING OFFICER DODUC: Yes, if it's helpful to us in understanding the question at issue, definitely.

MR. BERLINER: Thank you very much.

MR. BEZERRA: First of all, for the record, Ryan Bezerra for City of Folsom, Roseville, San Juan Water District, Sac Suburban Water District.

Can I address the point that was just raised? We do have a panel. Our cross-examination is limited to the scope of each witness's testimony. Each witness is only supposed to be presenting his or her own testimony. To the extent that a panel member testifies on the subject of another witness's testimony, that is surprise testimony that is improper.

CO-HEARING OFFICER DODUC: And you may make

the objection then.

MR. BEZERRA: Okay. Very good.

CO-HEARING OFFICER DODUC: My understanding is that, since there is some interrelatedness with respect to this testimony, it might be appropriate, for example, for Mr. Munevar to answer a modeling-related question. So you may voice objection if that occurs.

MR. BEZERRA: Thank you very much.

CROSS-EXAMINATION BY MR. BEZERRA

MR. BEZERRA: I just have I think two questions.

If I could pull back up Exhibit MLF-7. And Page 2, Lines 12 through 13. Thank you.

Mr. Leahigh, you've talked quite a bit about the State Water Project's practice, policies, strategy and operations.

To the best of your knowledge, is there any legal reason why DWR cannot change those?

WITNESS LEAHIGH: Yes. They can only be changed to the point that we're not -- we do -- we continue to have regulatory and legal obligations. So we would -- that would certainly put bounds on, to the extent that we could change those -- our operations.

MR. BEZERRA: To the extent you could comply with all of those and change your operational policy,

is there any further impediment to changing that policy?

WITNESS LEAHIGH: In the abstract, I don't think so.

MR. BEZERRA: Okay. Thank you.

CO-HEARING OFFICER DODUC: No other questions from Group 7 for Mr. Leahigh?

(No response)

CO-HEARING OFFICER DODUC: Mr. Bezerra, you shouldn't have left yet. You requested quite a bit of time to conduct your cross-examination of Ms. Parker. We do have a hard stop at 5:00 o'clock, so I will ask you to find a nice break.

MR. BEZERRA: Yes, I think I can do that. I need to grab one more thing, and then we'll get going.

CO-HEARING OFFICER DODUC: Everyone can just stretch and rest for a little bit.

Court Reporter, are you doing okay for another half an hour?

THE REPORTER: Yes.

CO-HEARING OFFICER DODUC: All right. Please begin when ready.

MR. BEZERRA: Anything I can do to help.

CO-HEARING OFFICER DODUC: Your topics that you'll be covering with Ms. Parker?

MR. BEZERRA: Yes. They're a little out of order from what I had anticipated because I'm trying to fit in testimony today.

To start with today, I planned to ask Ms. Parker about --

CO-HEARING OFFICER DODUC: Why don't we just cover what you can -- what you plan to ask in the next 10 or 15 minutes?

MR. BEZERRA: Yes.

CO-HEARING OFFICER DODUC: Yeah. Go ahead.

MR. BEZERRA: The first matter I plan to ask her about is biological assessment modeling results and then, if we get to it, the portion of her testimony regarding what she calls "storage condition model results" that's in her testimony.

CO-HEARING OFFICER DODUC: Okay.

MR. BEZERRA: So, Ms. Parker, I'm going to provide you with a couple of documents. Ms. Parker, what I've provided you with are three documents marketed respectively Exhibit BKS-100, Exhibit BKS-103, and Exhibit BKS-104. Exhibit BKS-100 is simply a copy of your testimony Exhibit DOI-33 Errata, without the marked changes. So we'll pull that up.

So if you could please refer to Page 22 of 25Exhibit BKS-100.

Do you see the highlighted sentence, "I did look at every two-year sequence and maintain that the 1932-33 operation is not typical of other model results"?

WITNESS PARKER: Yes, I see that.

MR. BEZERRA: Does that mean that you reviewed every two-year sequence in the biological assessment modeling?

WITNESS PARKER: I may have been incomplete in writing that particular sentence. What I examined was all two-year sequences of critical years following critical dry or below-normal years because that was the type of sequence that Mr. Weaver used in drawing his conclusion.

MR. BEZERRA: Okay. But you have reviewed the biological assessment modeling results?

WITNESS PARKER: Yes, I have.

MR. BEZERRA: Can you please refer to Exhibit BKS-103.

WITNESS PARKER: Yes.

MR. BEZERRA: Can you please confirm that these are -- this accurately depicts results from the biological assessment modeling?

WITNESS PARKER: I have checked that, and it does correctly reflect those results.

MR. BEZERRA: Thank you. And can you please check Exhibit BKS-104? And does that also accurately depict biological assessment modeling results?

WITNESS PARKER: Yes. The exhibits you're referring to have the results from both the Q0 and the Q5 runs, and I have reviewed both of those results and corroborated those with your exhibits.

MR. BEZERRA: Thank you very much. I very much appreciate that preparation.

Okay. I believe your testimony was that you view the 1932-'33 modeling results for Folsom Reservoir storage as an anomaly; is that correct?

WITNESS PARKER: I believe I used the term "outlier."

MR. BEZERRA: You view them as an outlier?

WITNESS PARKER: Yes.

MR. BEZERRA: Thank you.

WITNESS PARKER: Let me make that a little more specific. Mr. Weaver's concern was related to the draw-down in Folsom Reservoir in that year. And he characterized that as an outcome of the WaterFix that he thought was not good.

So what I looked at was draw-downs in other critical years following other drier years and decided that that particular year's draw-down was not -- was an

outlier, given all of the other similar draw-down conditions within the -- those types of years in the period of record.

MR. BEZERRA: Thank you. So if we could please refer to Exhibit BKS-103 and in particular the first page of that. On this page in November of the 1932 water year, Folsom Reservoir is at 273- acre-feet in the no action alternative, correct?

WITNESS PARKER: Yes, that's correct.

MR. BEZERRA: And in November of the 1932 water year, Folsom Reservoir is at 146,000 acre-feet in the proposed action, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: So the proposed action level in that month is 127,000 acre-feet lower than the no action alternative level, correct?

WITNESS PARKER: Yes.

CO-HEARING OFFICER DODUC: What year are you referring to?

MR. BEZERRA: It is November 1931, which is part of the 1932 water year.

CO-HEARING OFFICER DODUC: Got it. Okay.

MR. BEZERRA: The reduction between the no action alternative and the proposed action in that month is approximately 45 percent of storage, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: And in your testimony, you refer to the WaterFix project as causing minimal impacts to Folsom Reservoir storage, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: Do you consider the draw-dawn in November 1931 to be minimal impact?

WITNESS PARKER: Well, I would qualify this by saying that it's not a draw-down in November of 1931. If you look at the difference between the conditions in October and the conditions in November, you see that the difference in the difference between the no action and the proposed action is actually only 8,000 acre-feet.

What you see is that that sequence began in August of the previous water year and initially was a drawn-down of 9-additional-thousand acre-feet, moving to 65,000 acre-feet, moving to 119- to 127-.

So it's a sequence of differences that accrue over time.

MR. BEZERRA: So in your opinion, is the draw-down as depicted for 19- -- from August of 1931 to November of 1931, as depicted on this slide, is that a minimal impact on Folsom Reservoir storage, in your opinion?

WITNESS PARKER: Given that the reservoir recovers in the following year -- and I would have to refer to my own testimony. I haven't memorized all the numbers. But the overall seasonal draw-down that was a characteristic of that particular year, it appears to be a difference between the two alternatives. I don't know that it's a severe difference.

Was that the word you used?

MR. BEZERRA: I think I was asking you if you considered it a minimal impact.

MS. PARKER: A minimal impact. I don't know that I would characterize it as minimal or maximal. It is a difference.

MR. BEZERRA: And on this slide, the recovery of Folsom Reservoir between November of 1931 and May of 1932 would have been dependant on the hydrology in that winter, correct?

MS. PARKER: That's true, among other things.

MR. BEZERRA: Among other things.

So if we could turn to the next page of Exhibit BKS-103, I'd like to refer you to -- August of 1934 is depicted on this slide.

In August of 1934, the reservoir level is 254,000 acre-feet in the no action alternative, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: And in the proposed action, the reservoir level in August 1934 is 90,000 acre-feet, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: Are you aware that 90,000 acre-feet is the modeled dead pool for Folsom Reservoir in the CalSim model?

MS. PARKER: I am aware of that.

MR. BEZERRA: So in 1934, Folsom Reservoir is at dead pool with the proposed action but in the no action alternative is 164,000 acre-feet higher, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: Do you consider this impact on Folsom Reservoir storage to be a minimal impact?

WITNESS PARKER: There is an impact on Folsom storage. I can't qualify it as minimal or maximal, but there is an impact on Folsom storage.

I would characterize this particular year within the simulation as occurring in the middle of the drought period of record. And we have discussed, I believe, in -- elsewhere in this proceeding, we have discussed the depiction of operations during extreme droughts as being very difficult for CalSim to model;

that droughts are unique. They have specific characteristics. It's difficult to depict what exact operations would have occurred under those conditions.

And so I'm -- 90,000 acre-feet is dead pool. We do not strive to have our model results reach dead pool. It's not a common result. But I'm not going to characterize it as a minimal impact or a bad impact. It's just -- it just is an impact of this particular model scenario. Does that help?

MR. BEZERRA: The California WaterFix would operate during future droughts, correct?

WITNESS PARKER: Yes, it would. If I could offer the perspective that droughts will occur with or without the California WaterFix. And we have seen model results that show that the California WaterFix does not have a large impact on operations during drought periods. We do not see a significant benefit from the WaterFix during droughts. So it is not in and of itself the operation of the WaterFix that causes CalSim to have difficulties in drought periods.

MR. BEZERRA: Just -- just to reiterate though, you consider 1934 to have been a drought year?

WITNESS PARKER: Yes.

MR. BEZERRA: And in this modeling from the biological assessment, in August of 1934, the proposed

action alternative is at 90,000 acre-feet and the no action is at 254,000 acre-feet, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: Thank you. I'd like to refer now to Exhibit BKS-104. This series of slides depicts model results from the Q5 (Central Tendency). If we could please refer to the first page of that, which is for water years 1923 and 1924.

Do you see that, Ms. Parker?

WITNESS PARKER: I do.

MR. BEZERRA: And in both scenarios, Folsom Reservoir fills to its maximum capacity of 967,000 acre-feet, correct?

MS. PARKER: That is correct.

MR. BEZERRA: And then there are different draw-downs of the water stored in the reservoir between May of 1923 and January of 1924, correct?

MS. PARKER: That is correct.

MR. BEZERRA: In January of 1924 in the no action alternative, Folsom Reservoir is at 361,000 acre-feet, correct?

MS. PARKER: Yes.

MR. BEZERRA: And in January 1924 in the proposed action, Folsom Reservoir is at 214,000 acre-feet, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: So the proposed action level in this month is 147,000 acre-feet lower than the no action alternative, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: And this is approximately a 40 percent reduction in storage in January 2014 -- excuse me -- January 1924, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: Thank you. In the Q5 modeling, water year 1924 is a critical water year, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: Do you consider a 40 percent reduction in Folsom Reservoir storage in a critical year to be a minimal impact?

WITNESS PARKER: No.

MR. BEZERRA: Thank you. Let's turn to Page 3, BKS-104. This depicts Folsom Reservoir storage in the water years 1981 and 1982.

In this modeling, the Q5 modeling, water year 1981 is a dry year, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: In that modeling in July of the 1981 water year, Folsom Reservoir is at 411,000 acre-feet in the no action alternative, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: And in that month in the proposed action, Folsom Reservoir is at 169,000 acre-feet, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: So in that month, the reservoir is 242,000 acre-feet lower in the proposed action than in the no action alternative, correct?

MS. PARKER: Yes.

MR. BEZERRA: That reduction is a reduction of over 50 percent, correct?

WITNESS PARKER: That is correct.

MR. BEZERRA: Do you consider a 50 percent reduction in Folsom Reservoir storage in a dry year to be a minimal impact?

WITNESS PARKER: No, I don't.

MR. BEZERRA: Thank you. In October of 1981, which is the first month of the 1982 water year, the no action level of the reservoir is 358,000 acre-feet, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: And in that month, the proposed action level of the reservoir is 208,000 acre-feet, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: Can you consider end of October storage at Folsom Reservoir to be carryover storage?

WITNESS PARKER: I suppose.

MR. BEZERRA: So in that month, between the no action alternative and the proposed action, the reduction in carryover storage is about 40 percent, correct?

WITNESS PARKER: Yes.

MR. BEZERRA: Thank you. Do you consider a 40 percent reduction in carryover storage in the first month following a dry water year to be a minimal impact?

WITNESS PARKER: Guess not.

MR. BEZERRA:: At that point, Ms. Doduc, I can stop. I could do another seven minutes on another topic, potentially, but I can stop at that point.

WITNESS PARKER: I do have some overarching -- can I just respond to this whole sequence of years?

CO-HEARING OFFICER DODUC: Go ahead.

WITNESS PARKER: It'll take two minutes.

So what I'd like to point --

MR. BEZERRA: Can I just object to the 23 procedure? If they would like to come back on redirect, that's fine, but I don't have a question pending.

So, I mean, if -- obviously the Hearing Officer has as much discretion as she likes to ask follow-up questions, but redirect is to bring questions back that they would like to explain.

CO-HEARING OFFICER DODUC: Thank you for recognizing my discretion, Mr. Bezerra.

MR. BEZERRA: Thank you.

CO-HEARING OFFICER DODUC: Ms. Parker, if you have anything of value you would like to add, please do so.

WITNESS PARKER: I would just like to clarify that, having examined all of the years that you provided results for in your exhibits, in my review of all of the years for all of the -- you basically provided several two-year snapshots of CalSim results for both the Q0 and the Q5 result sets.

I have reviewed -- I have reviewed all of the two-year sequences at this point. And what it looks like to me is that you have provided us with examples of every single year where Folsom had a marked reduction in storage under the WaterFix scenarios. There are other years within the period of record where Folsom has increased storage under the with project scenario.

There -- if we take the operation as a whole

for -- and I should also mention that it's good that you've picked out years that are not just dry where we've expressed that we -- the CalSim does struggle to display or to predict specific operations. But there are some wet years in here.

And if we look at CalSim results as a whole, we get a sense over a long-term planning perspective of what the impact is to CVP storage conditions. What we see and based on the plots that I had produced earlier, showed earlier in my direct testimony, is that on the whole, safety storage conditions are not adversely impacted by WaterFix operations.

Now, I will caveat that by saying that, if there is one facility in the system which shows more of an impact than others, it is Folsom because at the very driest end of the exceedance plots you will see some slightly lower storages in Folsom. You have been able to pull out some of the instances where that relationship is particularly true.

What I would offer is that these are not indicative of a specific algorithm or a specific logic that intends to draw Folsom down as a condition of the WaterFix operation. This is not part of the modeling. There's no logic in the model that specifically says we're going after storage in Folsom to put it in the

WaterFix and that's what's causing this.

Without looking at every single sequence that you show, which I will do tonight -- I could find out exactly what's controlling to cause those specific draw-downs in those specific years. But I could offer that it's probably a couple of things. It can be due to the fact that there is -- that it's the effect of a negative carriage water goal within the Delta where, in order to meet Delta water quality in the no action, we prevent --

CO-HEARING OFFICER DODUC: I would say rather than hypothesize at this point --

MS. PARKER: Okay.

CO-HEARING OFFICER DODUC: -- you may look into it, and then Mr. Mizell or Ms. Aufdemberge might offer that as part of redirect or surrebuttal.

MR. BEZERRA: Can I follow up with two questions based on her statement in the last two minutes?

CO-HEARING OFFICER DODUC: Okay. By allowing her to answer, then you get the chance to follow up, Mr. Bezerra.

MR. BEZERRA: Thank you. Just to save time, Ms. Weaver [sic], at Page 24 of your testimony, you state that Mr. Weaver's testimony shows that he has

cherry-picked a rare condition in 1932-'33, correct?

WITNESS PARKER: Yes, I do.

MR. BEZERRA: Do you consider the model results in Exhibits BKS-103 through -104 in those multiple years to also be cherry-picking rare results?

MS. PARKER: Yes, I do.

MR. BEZERRA: Is it your opinion that no impact to legal users of water can occur except as to annual average deliveries?

WITNESS PARKER: No, that is not my opinion.

MR. BEZERRA: Is it -- would you accept that there could be a legal -- injury to a legal user of water as a result of the implementation of California WaterFix in a single year where the WaterFix causes the reservoir to go dry?

MS. AUFDEMBERGE: Objection, outside the scope, and calls for a legal conclusion.

MR. BEZERRA: Ms. Parker just added rather dramatically to the scope of her rebuttal testimony by responding as to the multiple years of biological assessment modeling that she has now reviewed.

CO-HEARING OFFICER DODUC: Ms. Parker, are you able to answer without forming a legal opinion?

WITNESS PARKER: I don't think I'm able to answer that question.

CO-HEARING OFFICER DODUC: Thank you.

MR. BEZERRA: Thank you.

CO-HEARING OFFICER DODUC: All right. With that, we are adjourned for the day. We will resume at 9:30 tomorrow in the Coastal Room.

Thank you.

(Whereupon, the proceedings recessed at 4:58 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 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 14th day of May, 2017.

Deborah Fuqua

DEBORAH FUQUA

CSR NO. 12948