BEFORE THE

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

CALIFORNIA WATERFIX WATER RIGHT CHANGE PETITION HEARING	)))

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

BYRON SHER AUDITORIUM

1001 I STREET

SECOND FLOOR

SACRAMENTO, CALIFORNIA

PART 1B

Thursday, October 27, 2016

9:00 A.M.

Volume 24

Pages 1 - 288

Reported By: Candace Yount, CSR No. 2737, RMR, CCRR
Certified Realtime Reporter

Computerized Transcription By Eclipse

California Reporting, LLC - (510) 224-4476
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APPEARANCES

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present:

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

Staff Present:

Diane Riddle, Environmental Program Manager
Dana Heinrich, Senior Staff Attorney
Kyle Ochenduszko, Senior Water Resources Control Engineer

PART IB

For Petitioners:

California Department of Water Resources:

James (Tripp) Mizell
Thomas M. Berliner
Jolie-Anne Ansley
Robin McGinnis

The U.S. Department of the Interior:

Amy L. Aufdemberge, Esq.

INTERESTED PARTIES:

For The City of Roseville, Sacramento Suburban Water District, San Juan Water District, The City of Folsom, Yuba County Water Agency and The City of Roseville:

Ryan Bezerra

For Biggs-West Gridley Water District (BWGWD) and Glenn-Colusa Irrigation District (GCID):

Andrew M. Hitchings

APPEARANCES (CONTINUED)

For East Bay Municipal Utility District (EBMUD):

Jonathan Salmon

For Sacramento County Water Agency:

Aaron Ferguson

For The City of Sacramento:

Wesley A. Miliband

For The Carmichael Water District:

Aaron Ferguson

For State Water Contractors:

Stefanie Morris

For San Luis & Delta-Mendota Water Authority:

Rebecca R. Akroyd

For California Sportfishing Protection Alliance (CSPA), California Water Impact Network (C-WIN), and AquAlliance:

Michael Jackson

For Central Delta Water Agency, South Delta Water Agency (Delta Agencies), Lafayette Ranch, Heritage Lands Inc., Mark Bachetti Farms and Rudy Mussi Investments L.P.:

John Herrick, Esq.

I N D E X

I N D E X (Continued)

CITY OF SACRAMENTO:

Thursday, October 27, 2016 9:00 a.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: (Banging gavel.)

Good morning, everyone, and welcome back to the continuing saga.

I am Tam Doduc with here -- For the record, also here today: Our Board Chair Felicia Marcus, Board Member Dee Dee D'Adamo, and Mr. Ochenduszko is there. I believe we'll -- Miss Heinrich is down there, and I believe we'll be joined by Miss Riddle later today.

Our usual standard announcements, to keep it short:

Alarm: Stairs, park. Otherwise, flag one of us. We'll direct you to a vestibule.

Speaking: Use the microphone. Turn it on. Otherwise, we won't hear you and you will be ignored.

Court reporter: Check with her if you want a transcript earlier than the conclusion of Part IB.

And always, and most importantly, in order to avoid really irritating the Hearing Officer, please take a moment right now and put all noise-making devices to silent, vibrate, do not disturb.

THE REPORTER: Oh, I need to do that.

CO-HEARING OFFICER DODUC: Yes, the court

reporter needs to do that, too.

So, before we resume with Mr. Bezerra, let's do some scheduling updates.

As I said yesterday, we want to try to sort of fly by the seat of our pants with respect to scheduling, given the number of parties, given the unpredictability of direct and cross-examination. So I will strive to, at the beginning of the day and probably after our lunch break, to do a quick check-in and alert parties that are coming -- that are expected or potentially will be called upon in the next few days or so.

And, like I said, I'll give you some time, not a lot of time, but some time to send an e-mail to us if you see a potential scheduling conflict.

Be patient. We're not going to get back to you immediately because some of us are in the hearing, but we will get to you as soon as possible.

Do not -- You do not have to repeatedly send in your request. You don't have to phone us. And you definitely should not be sending an e-mail to all the parties complaining about our incompetence if we don't get back to you immediately. Trust assured that we will review the materials and will try to make adjustments as we can.

So with that, today, we will hear from --

Actually, Mr. Bezerra will conclude his -- He will conduct his redirect of Mr. Weaver, and then, upon conclusion of Group 7, Panel 7, we will move to Group Panel -- Group 7, Panel 6.

Upon the completion of Group 7, Panel 6, we will move on to the group that's in the second order of direct, and that is the combined 7 and 15 panel.

Are those parties here?

(Mr. Ferguson raises hand.)

CO-HEARING OFFICER DODUC: Excellent. Thank you, Mr. Ferguson.

And assuming we get through that today, we will go to the fourth order, meaning Group 9.

Is Group 9 represented here today?

MS. NIKKEL: North Delta?

CO-HEARING OFFICER DODUC: North Delta, yes.

MS. NIKKEL: Meredith Nikkel for the North Delta Water Agency. They'll be ready today, probably after lunch, but we'll see how it goes.

CO-HEARING OFFICER DODUC: Group 10, the City of Brentwood has requested to be moved to November 3rd, so we will hear from them then.

The remainder of Group 10, which I won't name them, but includes one witness, Mr. Gilbert Cosio, we will take up after Group 9, so potentially today,

potentially tomorrow.

We received yesterday an e-mail request from Sacramento Regional County Sanitation District. They are Group 13. They are requesting to be moved to November 3rd and we will accommodate that request.

So that means Group Number 15, the rest of Group 15, including the -- this is the EBMUD-only panel -- you should be ready to go tomorrow. I don't think we'll get to you today but definitely be ready to go tomorrow.

Group Number 17, the San Joaquin River Exchange Contractors Water Authority, you are very interested. You're calling DWR witnesses.

So please get in touch -- I believe Mr. Ochenduszko is trying to get in touch with you.

And Group 17, we might get to you tomorrow, so you need to be prepared for that.

And then, best of all cases, if we are really moving rapidly, we might get to the tenth order, which would be Group 19 and 20, Joint Panel Number 1.

I think in the best optimistic estimate, that's probably all we might get to tomorrow -- by the end of tomorrow.

So all those parties that I just mentioned, you have until noon today to send us an e-mail if there is a

scheduling problem. Otherwise, we will expect you to be prepared to go tomorrow; that is, if we don't get to you before noon.

All right. And then we'll -- we'll do another check-in later today and as well as tomorrow. But that means that, going through the order, next week, all the orders -- all the groups that are listed in order Number 11 -- wow -- well, 11 through 16, at least, should be prepared to go, and we will revisit that. That would be Group 18 -- I'm sorry -- Group 19, 20, 24, 21, 22, 27, meaning just Dr. Paulson (phonetic), and 30. Again, we will revisit that.

And I know that Mr. Brodsky actually has sent in his request, so I'll need to review Mr. Brodsky's request with respect to Group 30.

That's the best guesstimate I can do for now.

Any questions?

All right. With that, Ms. Bezerra -- Mr. Bezerra.

Mr. Hitchings.

MR. HITCHINGS: Good morning, Chair Doduc. I just want to thank you for accommodating the request of Sac Regional County Sanitation District. Thank you very much.

CO-HEARING OFFICER DODUC: You're welcome.

Mr. Bezerra, you have redirect of Mr. Weaver.

MR. BEZERRA: Yes, we do.

CO-HEARING OFFICER DODUC: Please begin.

MR. BEZERRA: Thank you.

JEFFREY WEAVER,

called as a witness for the City of Roseville, Sacramento Suburban Water District, San Juan Water District, The City of Folsom, Yuba County Water Agency and The City of Roseville, having been previously duly sworn, testified further as follows:

REDIRECT EXAMINATION BY

MR. BEZERRA: Mr. Weaver, you ready to go?

WITNESS WEAVER: Yes.

MR. BEZERRA: State your name for the record.

WITNESS WEAVER: Jeffrey Weaver.

MR. BEZERRA: You have taken the oath?

WITNESS WEAVER: Yes.

MR. BEZERRA: Mr. Weaver, after yesterday's hearing session, have you reviewed the water classifications for 1932 and 1933 as presented in Petitioner's California WaterFix modeling?

WITNESS WEAVER: Yes, I have.

MR. BEZERRA: Did you determine you miscalculated the water type for Water Year 1932?

WITNESS WEAVER: Yes, I did.

MR. BEZERRA: And what is the Water Year type for Water Year 1932 in Petitioner's WaterFix modeling?

WITNESS WEAVER: It is indeed a critical year.

MR. BEZERRA: Thank you.

Could we please refer to Exhibit ARWA-102 and Slide 5, please.

(Document displayed on screen.)

MR. BEZERRA: And Mr. Weaver, what does this slide depict?

WITNESS WEAVER: This slide shows -- The upper figure shows Folsom Reservoir storage for calendar years 1932 and 1933. It shows the Project Proponents' model output for all five alternatives.

And then the lower figure shows the American River flow below Nimbus Dam for the same period using the same colors to represent the five alternatives.

MR. BEZERRA: Thank you.

With Water Year 1932 being a critically dry Water Year, how instructive is plaintiffs' modeling of the 1932-1933 cycle in understanding the impacts of the California WaterFix Project?

WITNESS WEAVER: The -- The fact that it's a critical year is not -- doesn't necessarily change -- it does not change my position. We have a -- a full reservoir at the end of May of 1932, and then an empty

reservoir -- or reservoir minimum pool in the latter parts of Water Year 1933.

MR. BEZERRA: So, just to confirm, even though Water Year 1932 is actually a critically dry Water Year, Folsom Reservoir nonetheless fills to full capacity in all scenarios in May of 1932; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: Thank you.

So, the fact that the Water Year is a critically dry year in 1932 makes no difference on whether or not Folsom Reservoir fills to capacity.

WITNESS WEAVER: It does not appear to make a difference, no.

MR. BEZERRA: Okay. Could we please refer to Exhibit DWR-552, please.

(Document displayed on screen.)

MR. BEZERRA: This was presented as a cross-examination exhibit yesterday.

Mr. Weaver, do you recognize Exhibit DWR-552?

WITNESS WEAVER: Yes, I do.

MR. BEZERRA: And what is Exhibit DWR-552?

WITNESS WEAVER: This is an excerpt from the CDEC where they list out the historical Water Year indices.

MR. BEZERRA: And do you understand that this

reflects the CDEC Water Year index classification for the Sacramento Valley for the years depicted on this exhibit?

WITNESS WEAVER: Yes, that's correct.

MR. BEZERRA: Thank you.

Could we please refer to Page 2 of Exhibit DWR-552.

(Document displayed on screen.)

MR. BEZERRA: And could we scroll down to the years 2014 and 2015. Thank you very much.

Mr. Weaver, do you see the -- the Water Year type classifications for the Sacramento Valley index for 2014 and 2015?

WITNESS WEAVER: Yes, I do.

MR. BEZERRA: And what do you understand those classifications to be?

WITNESS WEAVER: They are both critical years.

MR. BEZERRA: So, 2014 and 2015 are critical years.

WITNESS WEAVER: That's correct.

MR. BEZERRA: Thank you.

In light of the fact that you've now determined that, in Petitioners' WaterFix modeling, Water Years 1932 and 1933 are both critically dry years, does the change to a critically dry year in 1933 cause that cycle to resemble 2014 and 2015 more closely?

WITNESS WEAVER: It does in that you have two sequential critical years.

MR. BEZERRA: Thank you.

Could we please refer back to Exhibit ARWA-102, Slide 5?

(Document displayed on screen.)

MR. BEZERRA: Thank you.

Mr. Weaver, yesterday, you testified that, in Petitioners' California WaterFix modeling in June and July 1932, the With-Action scenarios drew down Folsom Reservoir relative to the No-Action scenario; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: And what was the amount of the relative drawdown in those months in the With-Action scenarios?

WITNESS WEAVER: It was approximately 200,000 acre-feet.

MR. BEZERRA: And what percentage of Folsom Reservoir storage capacity is this drawdown?

WITNESS WEAVER: That's roughly 20 percent.

MR. BEZERRA: Does the fact that 1932 actually is a critically dry Water Year in the Petitioners' California WaterFix modeling affect your analysis of how much drawdown there is in the With-Action scenarios in those months?

WITNESS WEAVER: No, it does not.

MR. BEZERRA: Thank you.

Yesterday, you testified that the Petitioners' California WaterFix modeling demonstrated a persistent drawdown of Folsom Reservoir from July 1932 to February 1933; correct?

WITNESS WEAVER: That is correct.

MR. BEZERRA: Does the fact that 19 -- Water Year 1932 is a critically dry year affect your conclusion regarding that persistent drawdown in Petitioners' California WaterFix modeling?

WITNESS WEAVER: No, it does not.

MR. BEZERRA: Does the fact that you have determined that 1932 is a critically dry year affect your conclusion that Petitioners' California WaterFix modeling shows that Folsom Reservoir is drawn down in the With-Action scenarios relative to the No-Action scenarios going into Water Year 1933?

WITNESS WEAVER: No, it does not.

MR. BEZERRA: Yesterday, you testified that, in Water Year 1933, beginning in March of 1933 through August of 1933, that you believe Petitioners' California WaterFix modeling did not realistically depict the operations of Folsom Reservoir in those months; correct?

WITNESS WEAVER: In -- In several of those

months, yes, that's correct.

MR. BEZERRA: Does the fact that Water Year 1932 is a critically dry year in Petitioners' California WaterFix modeling affect your conclusions regarding the modeled operations between March of 1933 and August of 1933?

WITNESS WEAVER: No, it does not.

MR. BEZERRA: Thank you.

I'd like to move on to a subject Mr. Berliner raised yesterday. This also relates to model conditions in Water Year 1933.

Do you recall that Mr. Berliner asked you whether hydrologic modelers generally maintain modeling assumptions except for those associated with the Proposed Project?

WITNESS WEAVER: Yes.

MR. BEZERRA: Do you also recall that Mr. Berliner asked you whether hydrologic models generally do not apply different operational rules in different years?

WITNESS WEAVER: Yes.

MR. BEZERRA: Okay. If we could please refer to Slide 7 of Exhibit ARWA-102.

(Document displayed on screen.)

MR. BEZERRA: Again, what is your opinion about

how realistically Petitioners' Water -- California WaterFix modeling depicts the operation of the American River stream-flow offramp in 1933?

WITNESS WEAVER: I believe that the offramp in the Proposed Project -- proposed action alternatives overestimates the -- both how low the minimum requirement would be -- would be lowered and the corresponding recovering storage.

MR. BEZERRA: Okay. Thank you.

Could we please refer to Exhibit ARWA-100 and specifically Paragraph 22.

(Document displayed on screen.)

MR. BEZERRA: And, Mr. Weaver -- Mr. Weaver, this is the -- this is a portion of your testimony; correct?

WITNESS WEAVER: That is correct.

MR. BEZERRA: Is the American River stream-flow offramp the conditions summarized in Paragraph 22 of your testimony?

WITNESS WEAVER: Yes, it is.

MR. BERLINER: I have an objection.

CO-HEARING OFFICER DODUC: Hold on a second, please.

Mr. Berliner.

MR. BERLINER: This is beyond the scope of the

cross. We did not ask about Paragraph 22 and we didn't ask about offramps.

CO-HEARING OFFICER DODUC: Close enough, Mr. Berliner.

Let's proceed.

MR. BEZERRA: Thank you.

So just to repeat the question: Are the conditions summarized in Paragraph 22 of your testimony the American River stream-flow offramp?

WITNESS WEAVER: Yes, they are.

MR. BEZERRA: And, to the best of your knowledge, in Petitioners' California WaterFix modeling, can that offramp apply in any year?

WITNESS WEAVER: It can apply in any year in which storage is forecasted to be below 200,000 acre-feet.

MR. BEZERRA: To the best of your knowledge, in Petitioners' California WaterFix modeling, is that offramp a consistent assumption for all years?

WITNESS WEAVER: Yes, it is.

MR. BEZERRA: And I -- You may have just answered this, but what are the conditions that trigger that offramp?

WITNESS WEAVER: If the model forecasts Folsom Reservoir storage to be below 200,000 acre-feet at any

time in the subject -- next 12 months.

MR. BEZERRA: That offramp, then, is triggered in the modeling only in years when that condition occurs; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: But it could be triggered in any year in the modeling; correct?

WITNESS WEAVER: There are no years explicitly excluded from the offramp.

MR. BEZERRA: Okay. Thank you very much.

Could we please refer back to Exhibit ARWA-102 and Slide 7, please.

(Document displayed on screen.)

MR. BEZERRA: Thank you.

Mr. weaver, as depicted on this slide, when does the American River offramp, when is it triggered in Petitioners' WaterFix modeling?

WITNESS WEAVER: It's initially triggered in March 1933 under the proposed action alternatives, and then it's subsequently triggered in, I believe, June and July of 1933 and, I think -- and August, I believe.

MR. BEZERRA: And does the fact that 1932 is a critically dry Water Year in Petitioners' California WaterFix modeling change how that offramp applies in the 1933 Water Year?

WITNESS WEAVER: No, it does not.

MR. BEZERRA: Thank you.

Do you recall yesterday Ms. Akroyd asking you about whether long-term averages in modeling smooth out the results?

WITNESS WEAVER: Yes, I do.

MR. BEZERRA: Is it necessarily the case that an averaging always smooths out results?

WITNESS WEAVER: That is the nature of averaging.

MR. BEZERRA: Thank you.

Could we please refer to Slide 14 of ARWA-102.

(Document displayed on screen.)

MR. BEZERRA: Mr. Weaver, based on your determination that, in the Petitioners' California WaterFix modeling, 1932 is a critically dry year, is there anything on this slide that you would like to revise?

WITNESS WEAVER: Yes. The second bullet, rather than indicating that the storage deficit pushes through an end of below-normal year, I would rephrase that to say storage deficit persisted through the end of a critically dry year into the following critically dry year.

MR. BEZERRA: So, the first bullet beginning

"Excessive releases," you would not change that conclusion; correct?

WITNESS WEAVER: No.

MR. BEZERRA: And the third bullet beginning "A large portion of the storage recovery," you would not change anything in that bullet; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: And the fourth bullet beginning "Inappropriately large releases," you would not change anything in that bullet; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: And the fifth bullet beginning "After being drawn down to the minimum allowable storage in 1933," you would not change anything about that bullet; correct?

WITNESS WEAVER: That's correct.

MR. BEZERRA: Okay. Could we please refer back to your testimony, Exhibit ARWA-100, please and, in particular, Paragraph 33.

(Document displayed on screen.)

MR. BEZERRA: Mr. Weaver, in this Paragraph 33, based on your determination that, in Petitioners' California WaterFix modeling, the Water Year 1932 is a critically dry year, is there anything in Paragraph 33 you would like to revise?

WITNESS WEAVER: Yes. I would revise in the third line starting in the middle, rather than saying a below normal year followed by a critically dry year," I would say "a critically dry year followed by another critically dry year."

MR. BEZERRA: But you would retain the language that that cycle remains particularly instructive; correct?

CO-HEARING OFFICER DODUC: Hold on, Mr. Bezerra.

Mr. Berliner?

MR. BERLINER: I want to understand: Is the witness now changing his opinion?

CO-HEARING OFFICER DODUC: Mr. Bezerra?

MR. BEZERRA: No, he's not changing his conclusions.

CO-HEARING OFFICER DODUC: He is correcting the Water Year classification in his analysis.

MR. BEZERRA: Correct.

MR. BERLINER: I understand that. But in the context of the sentence, the witness indicates he identified a particular cycle of years, which was a below-normal year in a critically dry year as being particularly instructive. So it's very unclear to me.

The witness did not pick 1932 and 1933 as a

critical and a critical. He picked it as a low normal and a critical. Apparently there must be a reason for that. And he indicated that sequence was particularly instructive.

It seems to me, if he's now saying, "I picked a critical year followed by a critical year," that's an entirely different year type which he's now contending is particularly instructive, which seems like a very different sequence of years.

I appreciate the earlier testimony that he offered regarding his graphs and his opinions regarding drawdown, but this seems to be very contrary to what he testified to yesterday and seems to me to be a different opinion.

CO-HEARING OFFICER DODUC: Mr. Bezerra.

MR. BEZERRA: I believe we clarified that already.

Mr. Weaver testified that the particularly instructive thing about this cycle is that Folsom Reservoir fills in the spring of 1932 and then is drawn down by the With Project scenarios in the remainder of 1932 and 1933.

CO-HEARING OFFICER DODUC: Mr. Weaver, were there any factors associated with your selection of years '32 and '33 as being particularly instructive that would

not apply now that '32 has been designated as a critical?

WITNESS WEAVER: The -- The elements that led me to believe that this was a particularly instructive sequence of years was that this is the only sequence of years that has a full reservoir in one year followed by a drawn-to-minimum reservoir pool in the second year.

So the fact that it was a below-normal year followed by a critically dry year was -- that was -- that was a -- I'm not -- I wouldn't characterize as coincidental, but it was a part of the analysis and -- But the fact that the reservoir was full, there was a clear distinction between the proposed Action Alternative operations and the No-Action Alternative, and the reservoirs were drawn to minimum pool in the next year, that those were all the elements that led this to being particularly instructive.

CO-HEARING OFFICER DODUC: Mr. Berliner, anything to add?

MR. BERLINER: You recall that yesterday I asked Mr. Weaver as to whether he looked at other sequenced years during the 82-year cycle, and he indicated that he did, but that because this was a below to normal followed by a critically dry, this was -- to use his words -- particularly instructive.

He didn't say that he looked through all of the

year types to find a full reservoir followed by a drawn-down reservoir in a critically dry year. That's an entirely different discussion. The discussion was based on hydrologic conditions of a below-normal year and a critically dry year.

So it seems to me that the responses to his questions yesterday were quite different than the proposal he's making now to change the language in Paragraph 33.

CO-HEARING OFFICER DODUC: Mr. Bezerra.

MR. BEZERRA: First of all, I believe Mr. Weaver just explained the particularly important fact.

In particular, I assume this Board is interested in how the reservoirs would actually be drawn down with the California WaterFix Project rather than Water Year classifications.

Mr. Weaver explained the importance of the fact that Folsom Reservoir fills in 1933, whatever the Water Year classification, and, moreover, Mr. Berliner obviously is free to conduct whatever recross he'd like to conduct.

CO-HEARING OFFICER DODUC: All right. Thank you.

Mr. Berliner, I will take your objection under

consideration but will allow Mr. Bezerra to conclude -- to proceed and conclude his redirect for now.

MR. BERLINER: Thank you.

MR. BEZERRA: Referring -- Mr. Weaver, referring to Paragraph 34 in your testimony.

This paragraph states your conclusions of your analysis; correct?

WITNESS WEAVER: That is correct.

MR. BEZERRA: Now that we've determined that Water Year 1932 is a critically dry year in Petitioners' California WaterFix modeling, do you want to revise any of the conclusions in Paragraph 34?

WITNESS WEAVER: No, I do not.

MR. BEZERRA: Thank you very much.

That concludes our redirect.

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

Mr. Berliner, do you have recross?

MR. BERLINER: I'll be very brief.

CO-HEARING OFFICER DODUC: Okay.

Just to check in: Ms. Morris, recross?

MS. MORRIS: Short.

CO-HEARING OFFICER DODUC: Miss Akroyd, recross?

MS. AKROYD: No.

CO-HEARING OFFICER DODUC: Mr. Herrick, recross? No.

All right. So then Mr. Berliner followed by Miss Morse.

RECROSS-EXAMINATION

MR. BERLINER: Good morning, Mr. Weaver, Mr. Bezerra. Tom Berliner on behalf of the Department of Water Resources.

Mr. Weaver, do you understand that as an expert testifying here today, you do not have an attorney-client relationship with Mr. Bezerra?

WITNESS WEAVER: I mean, no, I'm not clear on that distinction.

MR. BERLINER: As a -- As a matter of law, when an expert testifies in a proceeding as an independent expert, they do not have an attorney-client relationship with the attorney who represents the party that's offering the testimony. You're here as an independent expert to give your opinions regarding whatever matters are in front of you.

Do you understand that?

MR. BEZERRA: We'll stipulate to that.

CO-HEARING OFFICER DODUC: So stipulated.

MR. BERLINER: Thank you.

MR. BERLINER: Mr. Weaver, after we left last

night, did you have conversations with Mr. Bezerra or any other attorney regarding your testimony yesterday?

WITNESS WEAVER: Yes, I did.

MR. BERLINER: And what was the nature of those conversations?

WITNESS WEAVER: I was instructed to uncover to look to see what I had done previously and see if, indeed, the -- the error that was pointed out was, in fact, correct.

MR. BERLINER: And what did you do?

WITNESS WEAVER: I pulled up my old analysis that I -- and took a look at it and confirmed that it was -- in fact, had an error in it.

MR. BERLINER: And did you check the 82-year cycle to determine whether or not there was another full year at Folsom followed by a drawn-down year --

WITNESS WEAVER: Yes, I did.

MR. BERLINER: -- regardless of year types?

And did you look at the entire 82-year cycle?

WITNESS WEAVER: I did.

MR. BERLINER: So in no instance in the 82-year cycle did you find a full reservoir followed in a subsequent year by a significant drawdown?

WITNESS WEAVER: I did not.

MR. BERLINER: Do you have an understanding as

to why the California WaterFix would have drawn down Folsom Reservoir in 1933?

MR. BEZERRA: Objection: That misstates the testimony. The drawdown occurs in 1932 and persists in 1933.

MR. BERLINER: I'll stand corrected on that.

WITNESS WEAVER: Could you please repeat the question?

MR. BERLINER: Yes. Do you have any understanding as to why the reservoir would have been drawn down starting in 1932 and continuing into 1933?

WITNESS WEAVER: I . . . have -- I have not dug into issues outside of the American River to what might have led to that drawdown.

MR. BERLINER: Based on your modeling, are you aware of any obligation on the part of Reclamation to keep a certain reservoir level in Folsom Lake?

MR. BEZERRA: Objection: Misstates the testimony.

Mr. Weaver has not conducted original modeling for his testimony. He has merely reviewed California WaterFix modeling presented or made available by the Petitioners.

MR. BERLINER: I was not asking in the context of new modeling. I'm just asking as a matter of fact in

the CalSim model.

CO-HEARING OFFICER DODUC: Please answer.

WITNESS WEAVER: There are certain elements, such as the offramp, that are intended to restrict operations to maintain storage in the reservoir, but there are no explicit storage requirements.

MR. BERLINER: Thank you.

I don't have any other questions.

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

Ms. Morris.

What surprise do you have for us today?

MS. MORRIS: I don't have any surprises.

RECROSS-EXAMINATION

MS. MORRIS: Stefanie Morris, State Water Contractors.

Good morning, Mr. Weaver.

WITNESS WEAVER: Good morning.

MS. MORRIS: I have just a few followup questions.

I would note that I would join Mr. Berliner's objection to the amending of the testimony as surprise new opinions.

Mr. Weaver, did the CVP exports increase during the June 1932 to February 1933 period under the CWF

scenarios compared to the No-Action Alternative?

WITNESS WEAVER: I did not look into that, no.

MS. MORRIS: Would it surprise you that the CWF/CVP experts are lower in these months compared to the No-Action Alternative?

WITNESS WEAVER: I don't know the export operations well enough to be surprised or not.

MS. MORRIS: Okay. Don't you think the Water Year type could influence the CVP reservoir balancing in the CalSim II modeling, as you noted in your testimony?

WITNESS WEAVER: I'm not aware of Water Year-specific balancing requirements.

MS. MORRIS: Okay. In the California WaterFix modeling that you reviewed, isn't it true that the offramp criteria that you described is the same and is consistent between the No-Action alternatives and the California WaterFix scenarios?

WITNESS WEAVER: That is correct.

MS. MORRIS: So if the Folsom storage is different because of the different balancing results between CVP Reservoirs, could the offramp be triggered differently between No-Action Alternative and CWF scenarios?

MR. BEZERRA: Objection: I believe that misstates the testimony.

I believe that the offramp is triggered in March of 1933 before the reservoir balancing occurs.

CO-HEARING OFFICER DODUC: Ms. Morris, what was your question again?

MS. MORRIS: If the Folsom storage is different because of different balancing results between CVP Reservoirs -- I didn't specify a year -- could the offramp be triggered differently between the No-Action Alternative and the California WaterFix scenarios?

WITNESS WEAVER: A storage differential between alternatives, regardless of how -- what causes the storage differential, could lead to different implementation of the offramp condition.

MS. MORRIS: Okay. I have no further questions.

CO-HEARING OFFICER DODUC: Thank you, Miss Morris.

MR. BEZERRA: I have no recross. I just have one point of clarification regarding the evidentiary objection Mr. Berliner and Ms. Morris made.

I believe it only applies to Mr. Weaver's testimony regarding Paragraph 33 of his written testimony. They did not raise that objection relevant to Paragraph 34 of his testimony.

CO-HEARING OFFICER DODUC: Ms. Morris.

MS. MORRIS: For my objection, at least, it would apply to 34 because 33 is describing above what he did and then he's saying, in 34, based on what he did and what was instructive, looking at that below-normal year to a critical year informed those three opinions.

CO-HEARING OFFICER DODUC: Your last word on this, Mr. Bezerra?

MR. BEZERRA: Yes. His testimony was that he would change something in Paragraph 33. His testimony was that he would not change any of his conclusions in Paragraph 34.

CO-HEARING OFFICER DODUC: Thank you.

With that, I will take under advisement the objections.

There are, I believe, several other outstanding objections with respect to Group 7's exhibits and testimony and we'll roll this one into that as well that will be ruled on later.

MR. BEZERRA: Thank you very much.

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

That concludes Group Number 7's Panel 7.

Let's take a short five-minute break, and I will ask Group 7's Panel 6 to assemble.

(Recess taken at 9:37 a.m.)

(Proceedings resumed at 9:41 a.m.:)

CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. We are back in session and we're now on Panel 6.

MR. MILIBAND: Thank you, hearing Board Doduc.

Board Chair Marcus, Board members and staff, Wesley Miliband with City of Sacramento.

Consistent with my approach yesterday, I do not have an opening statement but, instead, would rely upon the statements provided by Mr. Lilly on behalf of the outset of Group 7's cases in chief last week, as well as Mr. Bezerra's statement from earlier this week.

From my understanding Mr. Bezerra might have a short brief statement relating to parts of this panel so my question would be whether or not the Hearing Team would like to hear that now or at the beginning of -- just before the direct testimony from these witnesses.

CO-HEARING OFFICER DODUC: Why don't we wait on that, then.

For now, I'll ask all the witnesses to please stand and raise your right hand.

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BRETT EWART, MICHAEL GRINSTEAD, STEVE NUGENT, JAMES PEIFER, MICHAEL PETERSON JR., ROBERT ROSCOE and DAN YORK, called as witnesses for the City of Sacramento, Carmichael Water District and Sacramento County Water Agency, having been first duly sworn, were examined and testified as follows:

CO-HEARING OFFICER DODUC: All right. Mr. Miliband, please begin.

MR. MILIBAND: Thank you.

DIRECT EXAMINATION BY

MR. MILIBAND: Good morning, Mr. Peifer.

Would you please state your name for the record and also spell your last.

WITNESS PEIFER: My name is James Peifer, P-E-I-F-E-R.

MR. MILIBAND: Are Exhibits CITYSAC-1 and -19 true and correct statements of your written testimony?

WITNESS PEIFER: Yes.

MR. MILIBAND: Is Exhibit CITYSAC-2 an accurate statement of your professional credentials and experience?

WITNESS PEIFER: Yes.

MR. MILIBAND: Were Exhibits CITYSAC-3 and -18 prepared by you or at your direction?

WITNESS PEIFER: Yes.

MR. MILIBAND: Are Exhibits CITYSAC-11, -12, -13, -14, -15, -16 and -17 true and correct copies of documents reflecting the City of Sacramento's water rights?

WITNESS PEIFER: Yes.

MR. MILIBAND: Are Exhibits CITYSAC-22, -23 and -24 true and correct copies of the documents each of those purport to be?

WITNESS PEIFER: Yes.

MR. MILIBAND: Are Exhibits CITYSAC-33 and -34 the comment letters submitted by the City on the BDCP and DEIR and DEIS?

WITNESS PEIFER: Yes, they are.

MR. MILIBAND: Mr. Ewart, good morning.

WITNESS EWART: Good morning.

MR. MILIBAND: Would you please state your name for the record and spell your last.

WITNESS EWART: My name is Brett Ewart, E-W-A-R-T.

MR. MILIBAND: Is Exhibit CITYSAC-4 a true and correct statement of your written testimony?

WITNESS EWART: It is.

MR. MILIBAND: Is Exhibit CITYSAC-5 an accurate statement of your profession credentials and experience?

WITNESS EWART: It is.

MR. MILIBAND: Thank you.

Mr. Baker, if I could request that Exhibit CITYSAC-3 be brought up on the screens.

(Document displayed on screen.)

MR. MILIBAND: Thank you.

Mr. Peifer, referring to Exhibit CITYSAC-3, would you please explain the substance on the first page of this exhibit.

WITNESS PEIFER: Certainly.

The City of Sacramento is a legal user of water and Sacramento provides local water service to a population of 485,000 residents along with several commercial, institutional and industrial customers.

In addition, Sacramento serves water to several wholesale agencies -- excuse me -- wholesale and wheeling customers, including Sacramento County Water Agency, Sacramento Suburban Water District, California American Water Company and Fruitridge Vista Water Company. We provide wholesale service to Sacramento International Airport.

Sacramento diverts water at two treatment plants: One on the American River, roughly 7 miles above the confluence of the American and Sacramento River; the other location is on the Sacramento River just downstream

from the confluence. In addition, Sacramento produces groundwater.

The collective water production capacity from these treatment plants and wells is adjusted to meet seasonal demands. In general, our highest demands occur in July, and demands start to taper off slowly as the summer progresses going into the fall until December, often the month with the lowest demands. Demands slowly go up again until spring when they quickly increase.

I'll add, during the summertime, all of those facilities are needed to produce water.

Sacramento has a pre-1914 appropriative right off the Sacramento River and five appropriative Permits. One of those Permits allows Sacramento to divert Sacramento River water with a priority date of 1920.

The other four Permits allow Sacramento to divert American River water with priority dates ranging from 1947 to 1954.

MR. MILIBAND: Thank you, Mr. Peifer.

Mr. Baker, would you please bring up Exhibit City of Sac 18.

(Document displayed on screen.)

MR. MILIBAND: Thank you Mr. Baker.

Mr. Peifer, would you please explain what City of Sac Exhibit 18 depicts and what your understanding is

as to how this exhibit relates to City of Sacramento's water rights.

WITNESS PEIFER: This exhibit is a map identifying the retail water service area for the City of Sacramento and locations of our wholesale and wheeling customers, including Sacramento Suburban Water District, Sacramento County Water Agency, California American Water Company and Fruitridge Vista Water Company.

The collective place of use boundary for the American River Permits is presented on the exhibit.

The place of use boundary for the Sacramento River Permit is the same as the Sacramento city boundary.

MR. MILIBAND: And, Mr. Baker, one last time, please, if you'd go back to CITYSAC-3.

(Document displayed on screen.)

MR. MILIBAND: And the second slide, please.

(Document displayed on screen.)

MR. MILIBAND: Mr. Peifer, turning back to this exhibit, would you please explain the substance that's before us on CITYSAC-3, Page 2.

WITNESS PEIFER: Yes.

Sacramento has a permanent operating contract with Reclamation in which Reclamation operates their facilities to ensure availability for the City's diversion of water at the City's facilities on the

American and Sacramento Rivers.

For the American River, the contract requires Reclamation to store and release water as needed to maintain sufficient water downstream for the City's diversions while on the Sacramento River. Reclamation's required to operate Shasta as not to interfere with the City's diversions.

The water made available under the contract is the City's own water rights water. The City does not receive CVP water under Reclamation's water rights.

I'll also add that this -- that we maintain strong partnerships within the region and with Reclamation to ensure delivery of water as being coordinated and well managed. An example of this partnership includes being a member of the Water Forum.

MR. MILIBAND: And are you familiar with evidence that's been offered in this proceeding by MBK witnesses, as well as Mr. Weaver of HDR?

WITNESS PEIFER: Yes.

MR. MILIBAND: And is this the type of information that you typically rely upon to assess potential implications to the City's water rights or supplies or operations of the City's water system?

WITNESS PEIFER: Yes, it is.

MR. MILIBAND: Based upon your professional

experience, what is your opinion as to how California WaterFix impacts the City of Sacramento?

WITNESS PEIFER: Based on the analysis performed by MBK, we understand that the Project assumes -- the Project analysis assumes reservoir operations that significantly underestimate the amount of water that the Project would be capable of exporting.

If more water is exported, less water is available -- or less water will be retained and carried over in upstream reservoirs.

The Petitioners have suggested that there will be no changes in reservoir operational criteria, but the Petitioners have not indicated specifically how the reservoirs will be operated.

MBK's analysis as well as my own independent understanding of the Project increasing export capacity forced us to consider that the future operations could harm the City of Sacramento.

It is possible that the reservoirs will be operated to release water to the point that, at times, Reclamation would not be able to release sufficient water to meet Sacramento's diversion needs.

If less water is retained and carried over in upstream reservoirs, reduced reservoir releases also could result in lower water surface elevations at the

City's intakes. This could cause phenomena such as vortexing or cavitation that would damage the City of Sacramento's intake pumps.

The WaterFix could increase the frequency of Lower American River flows below the so-called Hodge Flow conditions. And as I understand the Petitioners' analysis, it did not analyze for Hodge Flow impacts which could require the City to reduce diversions for wholesale customers -- or for its wholesale customers.

The Hodge Flow conditions were originally established in a court decision to covering potential water deliveries to East Bay MUD through the Folsom South Canal.

If the water -- In the Water Form Agreement, the City of Sacramento agreed to limit surface water diversions at the Fairbairn Water Treatment Plants on the American River when the river falls below the Hodge Flow conditions. This limitation is also included in the City of Sacramento's American River Water Right Permit terms.

The Water Form Agreement, for the most part, prohibits the delivery of surface water to wholesale customers during Hodge Flow events.

If increased water exports increase the frequency of Hodge Flow conditions, this will result in reduced water sales to wholesale customers. This is an

economic impact to the City of Sacramento by having those water sales reduced.

MR. MILIBAND: Thank you.

I have no further questions at this time.

CO-HEARING OFFICER DODUC: Mr. Bezerra.

MR. BEZERRA: Good morning. For the record, my name is Ryan Bezerra and on this panel I represent Sacramento Suburban Water District.

The District's General Manager Robert Roscoe will be providing his testimony in a moment. It's essentially self-explanatory, so this will not be a long statement.

I just want to make the point that Sacramento Suburban Water District is a member of both the Sacramento Valley Water Users group and the American River Water Agency's group and relies on the Opening Statements and testimony presented by those groups.

DIRECT EXAMINATION BY

MR. BEZERRA: Mr. Roscoe, could you please state your name for the record and spell your last name.

WITNESS ROSCOE: Robert Roscoe, R-O-S-C-O-E.

MR. BEZERRA: Have you taken the oath in this hearing?

WITNESS ROSCOE: I have.

MR. BEZERRA: Mr. York, could you please state

your name for the record and spell your last name.

WITNESS YORK: Dan York, Y-O-R-K.

MR. BEZERRA: And have you taken the oath in this hearing?

WITNESS YORK: Yes.

MR. BEZERRA: Mr. Roscoe, is Exhibit SSWD-1 your testimony in this hearing?

WITNESS ROSCOE: Yes. I do have one correction I'd like to make to -- it's non-substantive, but I think it needs to be corrected for the record.

MR. BEZERRA: Okay. Could we please pull up Exhibit SSWD Exhibit 1.

(Document displayed on screen.)

MR. BEZERRA: Mr. Roscoe, could you please explain that correction.

WITNESS ROSCOE: On Page 2, please, Table A.

(Document displayed on screen.)

WITNESS ROSCOE: In Table A, in the year 2013, it indicates 409 acre-feet, a relatively small amount of water in our Conjunctive Use scheme obtained from PCWA.

That water was actually Section 215 spillway water. The source was the Bureau of Reclamation.

All the rest of it remains the same, delivery through the M&I intake at Folsom Lake, treated by San Juan Water District. I just want to -- We should

have technically had one more column for Section 215 water.

MR. BEZERRA: Mr. Roscoe, is Exhibit SSWD-2 a correct statement of your qualifications?

WITNESS ROSCOE: Yes.

MR. BEZERRA: Are Exhibits SSWD-3 through SSWD-14 referenced in your testimony?

WITNESS ROSCOE: Yes, they are.

MR. BEZERRA: Mr. York, is Exhibit SSWD-16 a correct statement of your qualifications?

WITNESS YORK: Yes, it is.

MR. BEZERRA: Thank you very much.

Could we please pull up Exhibit SSWD-3.

(Document displayed on screen.)

MR. BEZERRA: And Mr. Roscoe, based on Exhibit SSWD-3, could you please summarize your testimony.

WITNESS ROSCOE: Thank you.

Slide -- The next slide, please.

(Document displayed on screen.)

WITNESS ROSCOE: Sacramento Suburban Water District is a result of the merger of two long Water Districts, Arcade Water District and Northridge Water District. Both those Water Districts formed in the mid-1950s to serve the growing Sacramento suburbs.

In 2002, those two Water Districts merged to

form Sacramento Suburban Water District. And on this graph -- And it is also shown in my testimony SSWD-5. It's pretty much the same picture.

McClellan Business Park and -- is an area just northeast of McClellan Business Park (sic) where Watt Avenue and Union Pacific Railroad, that kind of trapezoidally-shaped piece, was a part of Arcade. And for the purposes of this slide, it was the previous Arcade Water District.

For our water supply purposes, it's part of our north service area, and I'll talk about that a little bit more.

But, technically, this slide should have had that trapezoidal piece shaded pink. It doesn't change any of our water supply issues.

But significantly for these purposes, both predecessor Districts, Arcade and Northridge, rely 100 percent on groundwater pumped from the local groundwater Basin, the North American subbasin as defined by the Department of Water Resources.

Both Water Districts participated in the Sacramento Area Water Form process, and both predecessor Water Districts independently pursued amending their water supply portfolios to include surface water supplies used in a conjunctive use fashion: Taking surface water

when it was available, resting the wells, banking that water in the groundwater Basin in lieu of pumping.

And those were significant investments for both Districts. And our future water supply for Sacramento Suburban Water District relies on our ability to continue doing that.

Next slide, please.

(Document displayed on screen.)

MR. BEZERRA: And this slide depicts Sac Suburban Water District as well as certain wells and vulnerables.

WITNESS ROSCOE: Thank you.

Sacramento Suburban Water District now is shown in blue in the middle. Our District serves about 175,000 population.

Our District spans from the Sacramento -- excuse me -- the American River north to the Placer County line. The two black dots circled in red represent groundwater monitoring wells that are operated to evaluate impacts on groundwater in our region.

So the two traces are nearly identical and are representative of groundwater levels in this portion of the North American Basin.

And what this depicts very graphically is shown on -- The blowup of this is on the next slide, please.

(Document displayed on screen.)

WITNESS ROSCOE: What this shows very graphically is the long-standing roughly two-foot-per-year drawdown in groundwater that was occurring for the 50 years prior to the mid-1990s.

That's one of the reasons the Sacramento Water Forum has a groundwater element in it. It was recognized that this was not sustainable in the long term and something -- some change in the groundwater pumping had to be done.

Both predecessor Districts invested in conjunctive use productions that occurred right after the merger of these Districts in 2002.

Since we've been purchasing surface water and resting our wells, you can see a remarkable difference in groundwater levels. We have arrested the long-standing drawdown of groundwater in the North American Basin. It is now recovering about a half a foot a year.

And at the very tail end of this slide you can see the effects of the drought as we had less access to surface water. And -- And we think we will return to this half-a-foot-a-year rise in groundwater level when this drought ends.

I will note that Sacramento Suburban is only one of the pumpers in this Basin. And so while we

believe that we have had a remarkable effect on the recovery of the groundwater Basin and the arresting of this long-term nonsustainable groundwater pumping, other purveyors in the region also have reduced their pumping and have contributed to this as well. We're not alone in this.

The next slide indicates --

(Document displayed on screen.)

WITNESS ROSCOE: -- those investments that we made to bring surface water into our system.

Because both predecessor Districts independently pursued their own Conjunctive Use Plans, Sacramento Suburban Water District inherited the projects of both predecessor districts.

I'll begin with our north service area.

We contract with Placer County Water Agency for supplies from their Middle Fork Project. Our current contract with PCWA involves up to 29,000 acre-feet of Middle Fork Project water.

We have a contract with the Bureau of Reclamation for a Warren Act contract short term, five-year contract presently. We've been working on a long-term contract for 12 years.

But, nevertheless, the Bureau wheels that water across Folsom Lake to the M&I intake located at the dam.

You heard testimony yesterday from several water surveyors that rely on that M&I intake, as do we. We contract with San Juan Water District for treatment capacity in their Peterson Treatment Plant. And when we have surface water, they generally have surplice capacity. It works out very nicely because we usually get surface water in the off-peak months, and they have treatment capacity in the off-peak months.

We invested very heavily in that red line across the north part of Sacramento. That's referred to as the Cooperative Transmission Pipeline. And Sacramento Suburban has a million-gallon-per-day capacity in that line.

The blue line that runs from CRC Park in our District are 40-inch smaller transmission lines, and we bring that surface water in and distribute it around the north part of our service area.

We separate the north and the south service area operationally because the Peterson Treatment Plant is not fluoridated, and so we separate what the -- the boundary between the former Arcade and the former Northridge District.

It's also separated because the PCWA Middle Fork Project water right extended into north Sacramento County, including the former Northridge Water District

and the Arcade North Highlands and McClellan Business Park portion of our District. It did not include the former Arcade Town & Country, so we need to keep that surface water in the north side of our District.

Turning to the City of Sacramento supply. We contracted with the City of Sacramento for access to treatment capacity in their Fairbairn Water Treatment Plant. The contract is for 20 million gallons per day with an option on a future 10 MGD should we choose to exercise it.

We use the City of Sacramento's Area D water rights and that water right exhibit was just recently shown by Mr. Peifer.

A significant portion of our south service area, the former Arcade Town & Country service area, is within the Area D water right service area, the place of use. And we have a contract with the City for a little over 26,000 acre-feet to bring surface water in from the City.

These work very nicely for conjunctive use supplies, but they have limitations on when we have access to both sources. The PCWA supply is available to us when unimpaired inflow to Folsom Lake is north of 1.6 million acre-feet, which is an average or wetter-than-average year. For us, that's roughly

60 percent of the year types when we have access to that surface water, and the trigger is on for the year or off for the year dependent on unimpaired inflow to Folsom Lake, and it's the March-to-November estimate of unimpaired inflow that counts for us.

The City of Sacramento supplies are also limited by instantaneous flow in the Lower American River as set by Judge Hodge, and you heard Mr. Peifer refer to the Hodge flows in the Lower American River.

When the river is above Hodge flows, we can take water from the City of Sacramento, treat it at Fairbairn, and then distribute it through our system through transmission mains that come under the American River from the Fairbairn Plant and then distribute them around in large-diameter transmission mains in our south service area.

Our south service area, again, is kept separate because the City of Sacramento fluoridates at the Fairbairn plant, and so we fluoridate our wells in the south service area. We don't fluoridate our wells in the north service area. We want to be able to tell our customers what it is that's in their drinking water and that is a -- a good practice that the North Division of Drinking Water Supports.

MR. BEZERRA: I believe, Mr. Roscoe, just a

clarification or question before we leave this slide.

WITNESS ROSCOE: Um-hmm.

MR. BEZERRA: The Placer County Water Agency supplies are diverted from Folsom Reservoir by San Juan; correct?

WITNESS ROSCOE: Yes, they are.

MR. BEZERRA: And the City of Sacramento supplies are diverted from the American River at the Fairbairn Treatment Plant near Howe Avenue; correct?

WITNESS ROSCOE: Correct.

MR. BEZERRA: Okay. Just wanted to clarify before we left this line.

WITNESS ROSCOE: Our access to surface water is through contracts with PCWA who holds the water right and the City of Sacramento who holds the water right.

Next slide, please.

(Document displayed on screen.)

WITNESS ROSCOE: Thank you.

This slide depicts the approximate aerial extent of contaminant constituents. My staff assembled this based on a number of exhibits from the Regional Water Quality Control Board.

This is essentially our estimate of all contaminants at all groundwater aquifer levels.

And what you see in here is very notably --

Number 1, it's very large and affects a very large area. Number 2, there are tongues of this plume that extend under the American River North into the North American River groundwater Basin.

And I believe that Carmichael Water District is going to testify on this as well.

This certainly has been a great impact on their District, and our District was very concerned that this has a potential to impact our District in the future.

That tongue of groundwater plume that is closest to our District boundary is driven by advective . . . force in the -- I'm sorry, I'm not on the word here.

But, basically, groundwater flows downhill also. And groundwater pumping in the middle of this Basin has created a cone of depression. The center of that cone of depression is -- depending on when it's calculated -- is near the south end of the runways at McClellan Business Park, Ancil Hoffman Golf Course, and -- and that plume is heading toward that low part in the groundwater Basin.

Our conjunctive use activities, in my opinion, have retarded this plume because we have elevated groundwater levels in advance of this leading edge of the plume. We need to continue to do that. That is not only

additional reliability for our groundwater supplies, which we are 100 percent reliant on in dry times, and it's important for cleanup activities on the plume.

Next slide, please.

(Document displayed on screen.)

WITNESS ROSCOE: I mentioned the North American Groundwater Basin. This is the extent of it. The Sacramento Groundwater Authority operates the portion of that basin and manages that basin and under -- the new Sustainable Groundwater Management Act is now the groundwater management agency for the SGMA.

We are in Sacramento Groundwater Authority. Our District is the largest groundwater pumper in the north portion of Sacramento County.

And I think our ability to do conjunctive use, our ability to arrest long-term drawdown in groundwater and see that recover, is in large measure due to our conjunctive use activities. Reduced pumping by other conveyers and their conjunctive use activities have certainly aided as well.

But, for the future compliance with SGMA, we have to have access to this surface water, and we are very concerned that Cal WaterFix will have an effect on our access to that surface water.

MR. BEZERRA: And, Mr. Roscoe, you led to this

briefly there, but why do you believe that the California WaterFix proposal may negatively impact the District's water supplies?

WITNESS ROSCOE: There -- There are actually a number of reasons:

Our two surface water supplies, beginning with our supplies from PCWA taken from the lake at the M&I intake from San Juan Water District and treated at their plant.

Cal WaterFix, their testimony by their Operators basically says that they are not going to necessarily operate to the modeling results that they presented.

That gives us great concern. How are they going to operate? We don't know. There's no conditions on how they're going to operate Folsom Lake proposed by Petitioners. If Folsom Lake is drawn down below the M&I intake, that affects our access to water.

But, importantly, if other water purveyors that pump from the same ground water basin and have dual supplies -- such as the San Juan family of agencies, including Fair Oaks Water District and Orange Vale Water District and Citrus Heights Water District, the City of Roseville that has surface water and groundwater capacity -- if they don't have surface water, they will pump more groundwater.

That has a direct impact on our ability to maintain a sustainable groundwater Basin. And that affects us. That has a direct effect of groundwater levels at the leading edge of this contaminant plume, and that affects us.

And, so, plans for our long-term sustainable water supply for my customers? This is a huge unknown and puts us in a position of having a lot of risk on our future water supply.

MR. BEZERRA: And do you have any concerns about how California WaterFix may affect the availability of American River water to Sacramento Suburban?

WITNESS ROSCOE: I knew I was going to get to the second one. Let me do that.

Our -- Our ability to get water from the City of Sacramento's Area D water supply -- taken by them at the Fairbairn Water Treatment Plant intake on the American River, treated at Fairbairn, and then delivered down the river to our District -- is dependent on when the river meets Hodge Flow criteria.

The modeling shown by Petitioners shows that there will be a lot lower flows in the American River a lot more often.

And so we're concerned that the Hodge triggers will be met more often and we will have a reduced access

to surface water supplies for conjunctive use operations in our south service area as well.

MR. BEZERRA: Thank you very much, Mr. Roscoe.

CO-HEARING OFFICER DODUC: Does that complete your direct, Mr. Bezerra?

MR. BEZERRA: Yes.

CO-HEARING OFFICER DODUC: Mr. Ferguson.

MR. FERGUSON: Good morning, Hearing Officer Doduc. Aaron Ferguson on behalf of Carmichael Water District and Sacramento County Water Agency.

I will be conducting the cross-examination (sic) of the representatives from each of those agencies that are on this panel.

First, I'll start with Mr. Steve Nugent of Carmichael Water District. We'll be conducting direct examination of these panelists. Thanks.

DIRECT EXAMINATION BY

MR. FERGUSON: So, Mr. Nugent, can you please state your name for the record.

WITNESS NUGENT: My name is Steve Nugent.

MR. FERGUSON: And is Exhibit CWD-10 your written testimony?

WITNESS NUGENT: Yes, it is.

MR. FERGUSON: And did you prepare and finalize that testimony?

WITNESS NUGENT: Yes, I did.

MR. FERGUSON: And is the purpose of your testimony to attest to the water rights held by Carmichael Water District and that are potentially subject to injury from the proposed California WaterFix Project?

WITNESS NUGENT: Yes, it is.

MR. FERGUSON: And do Exhibits CWD-2 through CWD-7 include true and correct copies of documentation of the water rights held by Carmichael Water District?

WITNESS NUGENT: Yes, it does.

MR. FERGUSON: And water use -- Oh, excuse me.

And do they also reflect water useage under those rights for the years 2011 through 2015?

WITNESS NUGENT: Yes.

MR. FERGUSON: Are CWD-8 and CWD-9 true and correct copies of maps you relied on in your testimony?

WITNESS NUGENT: Yes, they are.

MR. FERGUSON: And are you familiar with the MBK Engineers' Reports submitted by the Sacramento Valley water users in this proceeding?

WITNESS NUGENT: Yes, I am.

MR. FERGUSON: And are the MBK Engineers' Reports the types of information you review and rely on as Carmichael's Water District General Manager to assess

risks and impacts to Carmichael Water District's water supplies and operations?

WITNESS NUGENT: Yes, I do.

MR. FERGUSON: So, at this time, I'd like to ask you to summarize your testimony.

WITNESS NUGENT: Thank you.

Carmichael Water District was formed approximately a hundred years ago. We're located east of downtown Sacramento along the north side of the American River.

The District was originally formed to provide irrigation to farmers, but since that time, it really has migrated to serving residential customers. We serve a population of 37,900 souls.

Our water supplies for Carmichael Water District rely on both surface and groundwater. We divert surface water through a bottom-up wastewater treatment plant and we import groundwater through five groundwater wells.

Over the last 10 years, our highest water use was 2006 where we used 12,500 acre-feet and the lowest use in 2014, where we reduced that demand to 8,267 acre-feet.

Our surface water supplies, we have two licenses and one permit.

The first license is License 1387 with a priority date of 1915. It allows us to draw 15 cubic feet per second from January 1st to December 31st on the American River.

Our second license is License 8731 with a priority date of 1925. It's a 10 cubic-foot-per-second permit. We can draw water from May 1st to November 1st.

And our third is a Permit, which is 7356 with a priority date of 1948. It's 25 cfs, allows us to draw water from July 1st to December 31st, and we use this largely for peaking and when we exceed the two licenses previously identified.

For groundwater, we have used groundwater for the last 80 years of our hundred years of operation. Our average groundwater usage in our District is about 25 percent, although in recent years we've had as high as 60 percent.

Surface water facilities are critical to the operation of the Carmichael Water District for the well-documented contaminant plume that has already migrated under East Carmichael Water District.

Since the early '80s, the District has been monitoring the plume for surface water supplies. As we saw, the plume progressed underneath the American River into the Fair Oaks Water District?

That concludes my direct examination of
In the early '90s, we started monitoring our wells on a monthly basis to make sure contaminants didn't reach our facilities.
By 2003, the plume had migrated underneath Carmichael Water District, and we've been working with Aerojet Rocketdyne manufacturers to do what we can to halt the plume vibrating forward.
With the gradient -- With the water coming off Aerojet, you know, it's -- it's a very difficult process to do. But we have been working with them and we're hugely concerned, as this plume progresses across the region because of the hydraulic gradient, that we're going to be experiencing more loss to groundwater as we see this plume expand, which makes it critical for us to maintain our surface water rights.
Carmichael Water District's concern with the Cal~WaterFix Project is based on my review of the MBK's expert work, and the Petitioners' modeling does not assess effects on non-Project water rights holders, such as Carmichael Water District.
Accordingly, to MBK, potential impacts on non-Project water rights holders must be determined by evaluating model outputs, which we don't believe they have.

MR. FERGUSON: Thank you.

That concludes my direct examination of Mr. Nugent.

CO-HEARING OFFICER DODUC: Thank you very much.

Let's start cross on --

MR. FERGUSON: No. Now we need to move to Sacramento County Water Agency, please.

CO-HEARING OFFICER DODUC: Okay.

MR. FERGUSON: Mr. -- Mr. Peterson, can you please state your full name for the record.

WITNESS PETERSON: Michael Peterson.

MR. FERGUSON: Is Exhibit SCWA-19 your written testimony?

WITNESS PETERSON: Yes, it is.

MR. FERGUSON: And did you prepare and finalize that testimony?

WITNESS PETERSON: Yes, I did.

MR. FERGUSON: Is Exhibit SCWA-30 an accurate copy of your Statement of Qualifications?

WITNESS PETERSON: Yes, it is.

MR. FERGUSON: And did you assemble and rely on Exhibits SCWA-5 through SCWA-31 and SCWA-42 and -45 in preparing your testimony?

WITNESS PETERSON: Yes, I did.

MR. FERGUSON: Are you familiar with the MBK's

engineers' testimony and reports submitted on behalf of the Sacramento Valley water users in this proceeding?

WITNESS PETERSON: Yes, I am.

MR. FERGUSON: And are you familiar with the conclusions reached in the testimony of Dr. Benjamin Bray submitted as EBMUD-152 in this proceeding as well as the testimony of -- excuse me -- as well as the conclusions reached in the testimony of Mr. Forrest Williams submitted as SCWA-3 in this proceeding?

WITNESS PETERSON: Yes, I am.

MR. FERGUSON: And are you familiar with the conclusions reached in the testimony of Dr. Steffen Mehl that was submitted on behalf of the Agency as SCWA-50 in this proceeding?

WITNESS PETERSON: Yes, I am.

MR. FERGUSON: Okay. Are these the types of information that you review and rely on as SCWA-'s Agency Engineer to assess risks and impacts to the Agency's water supplies and operations?

WITNESS PETERSON: Yes, they are.

MR. FERGUSON: Thank you.

Mr. Williams, good morning.

WITNESS WILLIAMS: Good morning.

MR. FERGUSON: Mr. Williams, can you please state your full name for the record.

WITNESS WILLIAMS: Forrest Williams, Jr.

MR. FERGUSON: You need to turn your microphone on.

WITNESS WILLIAMS: Oh, I thought it was on. I apologize.

Forrest Williams, Jr.

MR. FERGUSON: Is Exhibit SCWA-3 your written testimony?

WITNESS WILLIAMS: Yes.

MR. FERGUSON: And is the purpose of your testimony for this panel to acknowledge that you contributed to the development of Michael B. Peterson's testimony?

WITNESS WILLIAMS: Yes, it is.

MR. FERGUSON: Okay. And is it your understanding that you will testify on a -- actually, the next panel concerning reverse flow issues you address in your testimony?

WITNESS WILLIAMS: Yes, that's correct.

MR. FERGUSON: Okay. Thank you.

Is Exhibit SCWA-32 an accurate copy of your statement and qualifications?

WITNESS WILLIAMS: Yes, it is.

MR. FERGUSON: Thank you very much.

Mr. Grinstead, good morning.

WITNESS GRINSTEAD: Good morning.

MR. FERGUSON: Mr. Grinstead, will you please state your name for the record.

WITNESS GRINSTEAD: Michael Grinstead.

MR. FERGUSON: Is Exhibit SCWA-46 your written testimony?

WITNESS GRINSTEAD: Yes, it is.

MR. FERGUSON: And is Exhibit SCWA-47 an accurate copy of your Statement of Qualifications?

WITNESS GRINSTEAD: Yeah, with one minor modification.

My time with the USDA Natural Resources Conservation Service as an Agricultural Engineer was actually in the Jackson, California, and Stockton, California, Field Offices which are close to Sacramento but not in Sacramento.

MR. FERGUSON: Okay. Thank you.

CO-HEARING OFFICER DODUC: I'm sorry. Did the court reporter get all that?

THE REPORTER: Um-hmm.

CO-HEARING OFFICER DODUC: Okay.

MR. FERGUSON: All right. Mr. Peterson, we'll return to you to have you summarize your testimony on behalf of the Agency.

WITNESS PETERSON: Okay. If we could bring up

SCWA-34.

I'll just briefly summarize my responsibilities as the Agency Engineer and my experience.

I'm currently a Registered Civil Engineer I've been employed with the County of Sacramento 29 years, the past five years as the Director of the County Department of Water Resources, as well as the Agency Engineer for the Sacramento County Water Agency.

As the Agency Engineer, I'm responsible for the SCWA- Zone 40 water supply utility, including developing surface and groundwater diversion contraction and conveyance facilities identifying and securing water supplies, exercising surface and groundwater rights, managing, ensuring, reliability of surface, groundwater, CVP supplies and remediated groundwater in a sustainable and balanced manner, and serving the existing and future demands of residences and businesses in developing areas of Sacramento County, including the City of Elk Grove and City of Rancho Cordova.

Do you have the next slide, please.

(Document displayed on screen.)

WITNESS PETERSON: This slide depicts the Zone 40 -- the Water Agency's Zone 40 service area.

The Water Agency itself was formed in 1952 by a special legislative act. It was authorized to create

benefit zones for the purposes of funding capital infrastructure and developing water supplies.

In 1985, the Water Agency formed Zone 40, the water supply service area, to achieve these objectives for the developing area at the Central -- Central Sacramento County. Currently, Zone 40 serves approximately 159,000 residents.

The Water Agency's developed the Zone 40 water Supply Master Plan and Water System Infrastructure Plan to project water demands, identify the necessary water supplies and plan associated infrastructure.

These plans are based on the adopted Land Use Plans of the County of Sacramento in the Cities of Rancho Cordova and Elk Grove.

These plans are also used by the Water Agency Board of Directors for decisions on financing, debt, operations, service levels, and infrastructure investments, including recent investments in the Freeport pump intake on the Sacramento River, the Vineyard Surface Water Treatment Plant, and additional considerable groundwater infrastructure.

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WITNESS PETERSON: This slide shows the -- a comparison of developed land use between 2010 and

build-out within the Zone 40 service area.

The Water Agency is responsible to meet the water supply demand through build-out of Zone 40. And, again, based on the Land Use Plans of the County of Sacramento and the Cities of Elk Grove and Rancho Cordova, the Water Supply Infrastructure Plan predicts that Zone 40 will ultimately serve approximately 480,000 residents and estimating build-out somewhere around 2050 -- 2052.

To meet this demand, the Water Agency has made and will continue to make significant investments in water supply infrastructure, including the expansion of our leading surface Water Treatment Plant from 50 MGB, million gallons per day capacity, to 150 million gallons-per-day capacity.

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WITNESS PETERSON: In order to meet the existing future demands, the Water Agency has -- it utilizes several sources of supply. The Water Agency utilizes groundwater produced within the Zone 40 service area, which is the area bounded by the dark blue line on the slide, which is located between the South American Subbasin, which is outlined in red, red dotted line.

The South American Subbasin itself largely

overlays the boundary of the Sacramento Essential Groundwater Authority's Groundwater Management Plan boundary, which is the shaded blue area, otherwise referred to as the Central Basin for management purposes.

The Central Basin boundary was established by the water flowing through a State process and was delineated based on county boundary, identified cones of depression, persistent recharge areas and the boundaries of other Water Districts.

The Sacramento Central Groundwater Authority's Groundwater Master Plan establishes a target sustainable yield for the Basin.

The Water Agency's groundwater production is consistent with the SCGA Groundwater Master Plan and recent groundwater production as high as 29,000 acre-feet per year and, at build-out, we anticipate production of up to 63,000 acre-feet per year depending on hydrologic conditions.

Water Agency also depends on a remediated groundwater supply through a 2010 agreement. Between the County of Sacramento, the Sacramento County Water Agency, and Aerojet, the Agency has a right to 8900 acre-feet of remediated groundwater from within the South American Subbasin that is treated and then discharged to the American River through Aerojet-operated facilities.

The Agency diverts that water supply under its agreement through the Freeport intake on the Sacramento River.

The supply is a high reliability to the Agency because it's generally not affected by drought. As well, this supply is accounted for in the SCGA Groundwater Master Plan is assumed to be returned to the South American Subbasin.

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WITNESS PETERSON: The Water Agency also utilizes surface water. The Water Agency has the right to divert 45,000 -- up to 45,000 acre-feet per year of CVP water through two contracts.

One is a contract for 15,000 acre-feet per year, which is actually part of a 22,000 acre-foot-per-year contract, a portion of which is subcontracted to the City of Folsom. In addition, the Water Agency has a SMUD assignment of CVP water of 30,000 acre-feet per year.

The Agency Water System Infrastructure Plan identifies a long-term average availability of our CVP supplies of just over 80,000 acre-feet per year.

The Agency also has an appropriative water right, which allows for diversion of up to 71,000

acre-feet per year at either the Freeport intake or the Sacramento River Water Treatment Plant for use in Zone 40.

This water right is subject to Term 91 and curtailment based on Delta priority. The Agency's plans anticipate a long-term average availability of the supply of 22,400 acre-feet per year.

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WITNESS PETERSON: In order to balance most beneficially the use of both -- of all the supplies the Agency depends on, the Agency is committed to implement long-term conjunctive use to maximize surface water -- to maximize surface water use in wet years and groundwater use in dry years.

The Agency was an active participant in the formation of the Water Forum Agreement. So the objectives of the Water Forum Agreement were to provide for additional service diversions, implement water demand management measures and achieve improved flow patterns to the Lower American River.

To this end, the Water Agency has already invested nearly half a billion dollars in service water infrastructure, inclusive of the Freeport intake and the Vineyard Surface Water Treatment Plan and anticipates

investing nearly the same amount again in the future to ultimately achieve certain build-out in the Zone 40 area.

The Water Agency also addition -- maintains an extensive groundwater production distribution system, which will continue to expand through build-out.

The long-term conjunctive use goal of the agency would seek to achieve approximately 70 percent surface water, 30 percent groundwater in wet and average years and, in dry years, 30 percent surface water and 70 percent groundwater use.

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WITNESS PETERSON: The agency is concerned for the potential injury as a result of the California WaterFix.

And based on expert analysis of the water -- the DWR and Bureau's WaterFix modeling, which was carried out by MBK Engineers on behalf of the Agency, we have -- we have concerns with the operations -- impacts of operations of the agency.

The analysis done by MBK identified inaccuracies in how the WaterFix modeling represents the operations of the State Water Project and the CVP. And based on this -- And based on independent expert modeling by MBK to address those inaccuracies, I understand that

the WaterFix -- it's my opinion that the WaterFix could have the following impacts on the agency:

The modeling shows reductions in CVP North-of-Delta deliveries in average and wet years.

Also, the modeling demonstrated, in the specific two-year hydrologic cycle, as an example, the deliveries North-of-Delta could be reduced by as much as 5 percent in the second year.

In addition, the modeling indicates average reductions in the end-of-September Folsom carryover storage of about 29,000 acre-feet. Additionally the modeling indicates an increase in the Term 91 curtailments.

The concern of the agency is that the impacts from the WaterFix will translate to reduced deliveries to the Water Agency. Reduced North-of-Delta deliveries will no doubt affect the Agency's ability to receive its water supply.

In addition, reductions in carryover storage in Folsom will likely reduce the ability of Reclamation to provide the Agency's CVP supplies and, further, the increase in the triggering of Term 91 will reduce and limit the ability of the agency to access any of its surface water supplies through the Freeport intake.

Restrictions and reductions in the availability

of surface water will cause the Water Agency to rely more heavily on groundwater than originally planned. This reduces -- reduces the effectiveness of our infrastructure investments that we've already made as well as those that are planned, cause potential increase in the Agency's assumed long-term average groundwater use and result in increased operational groundwater facilities.

Increased groundwater use by the agency could in turn change the Basin groundwater management assumptions that SCGA has identified in its Groundwater Master Plan relative to the sustainable yield of the Central Basin.

And recall that the Central Basin is utilized by multiple agencies, not just -- just -- not just the Sacramento County Water Agency.

In addition, you will hear or have already heard expert testimony regarding potential Project impacts to reverse -- due to reverse flow that affect the ability of the agency to divert water at Freeport and impacts to groundwater and surface water interactions along the Sacramento River affecting the availability of groundwater to the agency from within the South American Subbasin.

The modeling that I've reviewed helped form my

opinion and concern for the potential impacts of the Water Agency from the California WaterFix.

Thank you.

MR. FERGUSON: Thank you, Mr. Peterson.

That concludes my direct examination of the Agency.

CO-HEARING OFFICER DODUC: And does that conclude your direct for this entire panel?

MR. BEZERRA: Yes.

CO-HEARING OFFICER DODUC: Okay. Let's go ahead and take our morning break for the court reporter.

I assume the Department of Water Resources will be conducting cross-examination, so you may use the time during the break to set up.

We will continue at 10:45.

(Recess taken at 10:33 a.m.)

(Proceedings resumed at 10:45 a.m.)

CO-HEARING OFFICER DODUC: All right. It is 10:45. We are back in session.

Just to do some quick time checking:

Mr. Berliner, Miss Ansley, how much time do you anticipate to require for your cross?

MS. ANSLEY: 30 minutes to an hour.

CO-HEARING OFFICER DODUC: Okay. Who else is going to conduct cross-examination of this panel?

And if could come up to the microphone and give me a time estimate.

MS. AKROYD: Rebecca Akroyd, San Luis Delta-Mendota Water Authority.

I think 10 to 15 minutes.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: Michael Jackson on behalf of the California Sports Fishing Protection Alliance, California Water Impact Network and AquAlliance.

I would expect about 20 minutes.

CO-HEARING OFFICER DODUC: So, by my math, without a calculator, that should take us to about the noon-ish hour. So I am advising -- Is it -- Was it Miss Nikkel? No.

Who was it that has . . . Group 7 and 15.

Mr. Ferguson.

MR. FERGUSON: And East Bay MUD as well.

CO-HEARING OFFICER DODUC: You will be up after lunch break.

And how much time do you anticipate needing?

MR. FERGUSON: The direct, I think about a little over an hour.

CO-HEARING OFFICER DODUC: Okay.

MR. BERLINER: About an hour on cross.

CO-HEARING OFFICER DODUC: An hour on cross.

We might get to 9 today. I'm not sure about that, but Group 9 should be on standby just in case.

All right. With that, then, Mr. Berliner.

Ah. Miss Ansley.

MR. MILIBAND: Or, if I may, Chair Doduc, just to inquire on the other housekeeping item as to --

THE REPORTER: I'm sorry. Who's speaking?

MR. MILIBAND: Wes Miliband.

THE REPORTER: Thank you.

MR. MILIBAND: Thank you.

Just proposed topics for cross-examination.

CO-HEARING OFFICER DODUC: Ah. Thank you for the reminder.

UNIDENTIFIED SPEAKER: Team effort.

MS. ANSLEY: We'd like to ask each of them -- each of these witnesses to provide testimony on the information they rely on and potential impacts to the -- their respective water agencies by the California WaterFix, and that's the primary focus of the cross-examination. There may be just a couple housekeeping kind of clarification questions in there.

CO-HEARING OFFICER DODUC: All right.

MS. ANSLEY: And -- Yeah.

CO-HEARING OFFICER DODUC: Anything else?

Miss Ansley?

MS. ANSLEY: No. Thank you.

Good morning. I'd like to start with Mr. Roscoe.

CROSS-EXAMINATION BY

MS. ANSLEY: Mr. Roscoe, your testimony is -- in this proceeding is SSWD-1; is that correct?

WITNESS ROSCOE: Correct.

MS. ANSLEY: And did anyone assist you in the preparation of this testimony?

WITNESS ROSCOE: Yes. I have a very talented staff, and I had consultation with our counsel. In addition, I attend a lot of water industry events and meetings and have had discussions with a number of people who were testifying in this proceeding.

MS. ANSLEY: And, I'm sorry, my attention wandered.

Did Mr. York help you prepare your testimony?

WITNESS ROSCOE: Yes, he did.

MS. ANSLEY: Is there any particular parts of your testimony that someone other than yourself drafted?

WITNESS ROSCOE: Mr. York gave me the information on the water history, on the water numbers we've taken.

And I -- There could be other ones, but I know that he was involved in that.

MS. ANSLEY: Okay. And SSWD-2 is a statement of your qualifications; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: And you are not testifying here today as an expert witness?

MR. BEZERRA: Objection: Relevance.

I believe the only thing that's pertinent about whether somebody is designated as an expert is whether we provided a Statement of Qualifications. These experts are relying on their professional expertise.

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Yeah, that's fine. I'm going to get to that. I'm sort of laying the groundwork of who he is, how he's here today, and how he was disclosed a --

CO-HEARING OFFICER DODUC: All right.

MS. ANSLEY: -- party presenting him.

CO-HEARING OFFICER DODUC: Just -- Just answer the question.

WITNESS ROSCOE: I don't know about the legal part of this. I'm not an expert in law.

But I think I've been in the water industry for a very long time, managing Water Districts for 25 years. I have a Bachelor's and a Master's degree in Civil Engineering with a specific focus on water resources.

And so, on some things here, I believe I do

have expertise, and some of these are just my knowledge of the Water District, our water supply needs, and our sources of water, and what's reliable and what's not reliable.

MS. ANSLEY: Thank you.

So, in your testimony, Paragraphs 22 to 32 of SSWD-1, you provide testimony concerning impacts of California WaterFix on your District; is that correct?

WITNESS ROSCOE: Yes.

CO-HEARING OFFICER DODUC: Miss Ansley, do we need to pull that up? Are you going to get into specifics?

MS. ANSLEY: Yes. We're going to look at specific paragraphs and then we're going to look at a couple referenced exhibits.

CO-HEARING OFFICER DODUC: Okay. Let's just wait for Mr. Baker to get it up.

Miss Ansley, what --

(Document displayed on screen.)

MS. ANSLEY: Oh, I'm sorry. Paragraph 22.

(Document displayed on screen.)

MS. ANSLEY: Do you have that there in front of you, Mr. Roscoe?

WITNESS ROSCOE: Yes, I do.

MS. ANSLEY: In looking at Paragraph 22, you

make the conclusion that the hydrologic modeling -- and I'll just paraphrase, but please correct me if you disagree -- performed for the DEIR and RDEIR indicate that, with the operation of the California WaterFix Project, under the one modeled climate change scenario and with demand growth, Folsom Reservoir will be drained to approximately 100,000 acre-feet at the end of September during 10 percent of all years in the future.

Do you see that?

WITNESS ROSCOE: I do.

MS. ANSLEY: And do you rely on Figure 8 of Exhibit Folsom 25 for that conclusion?

WITNESS ROSCOE: Largely.

MS. ANSLEY: Can we bring up Exhibit Folsom 25, please.

(Document displayed on screen.)

MS. ANSLEY: I think we're going to the last page, the last graph at the bottom of the page.

Can you scroll down to Figure 8, please.

(Document displayed on screen.)

MS. ANSLEY: Mr. Roscoe, is this the figure that you are relying on in this paragraph?

WITNESS ROSCOE: That -- That's the figure that I referenced in this paragraph. I think that I reviewed a lot of information that, in total, informed my opinion.

MS. ANSLEY: Do you have any other figures or information --

WITNESS ROSCOE: Yeah --

MS. ANSLEY: -- that --

WITNESS ROSCOE: -- I do.

MS. ANSLEY: -- that form the basis of this in this paragraph?

WITNESS ROSCOE: I have reviewed modeling by MBK Engineers and work by Jeff Weaver.

In addition, my understanding is, Petitioners, while this is modeling results, have indicated that the operation of the system won't necessarily follow the modeling, and we don't know, because nobody has indicated how the system will be operated, what the total impact will be.

I can tell you also that while this chart bottoms out at around 90,000 acre-feet, my understanding, from discussions with folks who know more about this modeling than I do, is that that's the limit of the modeling. That isn't necessarily the limit of reality.

MS. ANSLEY: Can I move to strike the portions that are nonresponsive to my original question?

MR. MILIBAND: I object to the motion to strike.

Miss Ansley asked Mr. Roscoe if he had any

other information to support his conclusion.

CO-HEARING OFFICER DODUC: We'll leave it in.

MS. ANSLEY: Okay.

At Figure 8 here, Mr. Roscoe, would you agree that what this figure demonstrates is that the No-Action Alternative, which is here in dark blue on the screen, is the same conclusion that you draw for Folsom Reservoir drained to approximately 100,000 acre-feet at the end of September during 10 percent of all years in the future?

WITNESS ROSCOE: Yeah.

MR. MILIBAND: Objection: Vague and ambiguous.

We have multiple modeling curves here. The No-Action Alternative is similar to some but not others.

MS. ANSLEY: Well --

CO-HEARING OFFICER DODUC: Hold on. Let's let the witness attempt to answer.

And if you need -- you need further clarification, Mr. Roscoe, just ask.

WITNESS ROSCOE: Maybe the question could just be repeated.

MS. ANSLEY: Sure. Maybe a little better phrased.

So let's just look at the No-Action Alternative which is here in dark blue.

Do you see that?

WITNESS ROSCOE: I do.

MS. ANSLEY: And in your Paragraph 22, you had said that the modeled scenario under the -- You had said (reading):

> ". . . Under the one modeled climate change scenario with demand growth, Folsom Reservoir would be drained to approximately 100,000 acre-feet at the end of September during 10 percent of all years in the future."

And my only question here is, does the No-Action Alternative also show that result?

WITNESS ROSCOE: In this model depiction, the No-Action Alternative is for roughly 10 percent of the modeled times, is very similar to the No-Action with Project is very similar to the No-Action Alternative.

I'd like to amplify, if I could --

CO-HEARING OFFICER DODUC: Hold on. Before you amplify.

That was not the question that she asked.

WITNESS ROSCOE: Okay.

CO-HEARING OFFICER DODUC: She asked to -- for you to look at the No-Action Alternative. And her questioning was whether that line, that blue line, also shows the 100,000 acre-feet storage in 10 percent of the time at the end of September, if I understood your

question correctly, Miss Ansley.

MS. ANSLEY: Yes.

WITNESS ROSCOE: I would agree with that.

CO-HEARING OFFICER DODUC: Okay.

MS. ANSLEY: Okay. And, then, going back to your testimony, can we look at Paragraph 23, please.

(Document displayed on screen.)

MS. ANSLEY: Do you see that there?

WITNESS ROSCOE: I do.

MS. ANSLEY: And in this paragraph, you reference DWR-514, Figure 14; is that correct?

WITNESS ROSCOE: Yes, I do.

MS. ANSLEY: And you state (reading):

"According to Figure 14, with the Proposed Project, in 5 percent of the years, Folsom Reservoir storage will be drawn down to 90,000 acre-feet or less at the end of September."

Do you see that?

WITNESS ROSCOE: I do.

MS. ANSLEY: Can we look at 514 -- DWR-514, Figure 14?

(Document displayed on screen.)

MS. ANSLEY: And looking at Figure 14, and referencing back to the statement that we just read from your testimony, I have a similar question as the before

figure.

Is the same conclusion true for the No-Action Alternative, which is here shown as a dark black line?

A. Yeah. I think my testimony is more than just the sentence that is being asked. The sentence being asked is, does this figure depict that Folsom will be drawn down to roughly 90,000 acre-feet in 5 percent of the time?

My testimony on injury to the District is, it's not clear whether that is going to be reality because that's all this model can do.

CO-HEARING OFFICER DODUC: Yes. And I did note that in your written testimony, but that's not the question Miss Ansley asked.

So go ahead and just answer her question, please.

WITNESS ROSCOE COSIO: That's my understanding of what this graph is supposed to depict.

MS. ANSLEY: Can I get clarification for that on the record, that that is the same conclusion you can draw for the No-Action Alternative on this graph -- or this figure? Excuse me.

WITNESS ROSCOE: Yes.

MS. ANSLEY: I'd like to look at Paragraph 30 of your testimony, please.

(Document displayed on screen.)

MS. ANSLEY: Do you have that in front of you, Mr. Roscoe?

WITNESS ROSCOE: I do.

MS. ANSLEY: In Paragraph 30, you testified that the DEIR/EIS and the RDEIR/SDEIS indicate that in projected future conditions with the Project, Lower American River stream flows would be -- Lower American River stream flows would be materially lower in many months in many years.

Do you see that statement?

WITNESS ROSCOE: I do.

MS. ANSLEY: And are you relying on what you cite there, SSDW-14, as the basis for that statement?

WITNESS ROSCOE: In part.

MS. ANSLEY: Do you provide any other references for --

WITNESS ROSCOE: Not in my testimony, no.

MS. ANSLEY: Can we look at SSWD-14.

(Document displayed on screen.)

MS. ANSLEY: And I believe that this is a four-page exhibit; is that correct, Mr. Roscoe? We can thumb through it really fast if you need to.

WITNESS ROSCOE: Yes. I didn't bring that one with me, and I -- my recollection is, it has a lot more

than just this.

MS. ANSLEY: Sure. So let's maybe look at that really fast.

So, the first page here is Table C-19-5. And maybe we can look -- And this is a comparison of existing conditions with Alternative 4 H1; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: Can we look at the next page.

(Document displayed on screen.)

MS. ANSLEY: And the next page is -- that you refer to is Table 19-6; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: And it compares existing conditions with Alternative 4 H2 -- Alternative 4 H2; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: And the third page that you -- By the way, did you prepare this exhibit?

WITNESS ROSCOE: I -- I did not.

MS. ANSLEY: Who did prepare this exhibit?

WITNESS ROSCOE: I'm -- I'm having a tough time with my memory on who prepared this. I -- I can provide that, if you would like. I don't have it at -- on quick recall.

MS. ANSLEY: But this is the exhibit that you

relied on in forming your conclusion.

WITNESS ROSCOE: In -- In part.

MS. ANSLEY: Pardon me. I don't remember if I clarified this.

So this third page is Table C-19-7.

WITNESS ROSCOE: Yes.

MS. ANSLEY: And this compares existing conditions to Alternative 4 H3; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: And then, finally, the last page that was excerpted here.

CO-HEARING OFFICER DODUC: Next page, please, Mr. Baker.

(Document displayed on screen.)

MR. MILIBAND: And, Ms. Doduc, if I'm right, I have a copy of this in writing I can give for the witness. It might help reference.

CO-HEARING OFFICER DODUC: Please.

WITNESS ROSCOE: Thank you.

CO-HEARING OFFICER DODUC: So what is your question, Miss Ansley?

MS. ANSLEY: Oh. I just wanted to make sure that we understood that there are four pages here --

CO-HEARING OFFICER DODUC: Yes, we can --

MS. ANSLEY: -- and that --

CO-HEARING OFFICER DODUC: -- see that.

MS. ANSLEY: Yeah.

So just to confirm: This is Table C-19-8; correct, Mr. Roscoe?

WITNESS ROSCOE: Yes.

MS. ANSLEY: And this compares existing conditions with Alternative 4 H4; is that correct?

WITNESS ROSCOE: Yes.

MS. ANSLEY: All right. And we can stay on this page since my questions are, then, applicable to just all four pages.

So, looking at Table C-19-8.

Would you agree that, and as applicable to the previous three tables we just looked at and talked about, this is a comparison between existing condition and the alternatives mentioned here, and it is not competent with the No-Action Alternative; is that correct?

WITNESS ROSCOE: This is a comparison of existing condition with Alternative 4 H4; right?

MS. ANSLEY: Yes.

WITNESS ROSCOE: Thank you.

MS. ANSLEY: And this is not a -- There is not a comparison with the No-Action Alternative on any of these four tables; is that correct?

WITNESS ROSCOE: I -- No, that's correct.

MS. ANSLEY: And the alternatives listed here on tables C-19-5, C-19-6, C-19-7, and this one, C-19-8, all include alternatives modeled under the late long-term scenario; is that correct?

WITNESS ROSCOE: (Examining documents.) Yes.

MS. ANSLEY: Do you have an understanding of what the late long-term scenario is?

WITNESS ROSCOE: Yeah, I think I have a working understanding. I'd have a hard time defining all that went into it.

MS. ANSLEY: So, it is your understanding that this is modeling long-term climate change in the year 2060?

WITNESS ROSCOE: Late long-term, H4. Yes, I think it does.

MS. ANSLEY: And that this includes 45 centimeters of sea-level rise?

WITNESS ROSCOE: No, I wouldn't -- I wouldn't testify that 45 is right, but I believe sea-level rise is included in the late long-term.

MS. ANSLEY: And that these alternatives also include 65,000 acres of habitat restoration?

WITNESS ROSCOE: I -- I won't -- I -- I'm not confident on the number.

MS. ANSLEY: Just a moment.

I believe you testified earlier that you relied on the modeling testimony of MBK here in this proceeding?

WITNESS ROSCOE: Yes.

MS. ANSLEY: As well as Mr. Weaver?

WITNESS ROSCOE: Yes. Well, my understanding is, Mr. Weaver reviewed modeling results. I'm not sure he did his own -- I don't believe he did his own independent model.

MS. ANSLEY: But you reviewed and relied on Mr. Weaver's conclusions.

WITNESS ROSCOE: Yes.

MS. ANSLEY: Which part of MBK's analysis did you review?

WITNESS ROSCOE: Summary information.

MS. ANSLEY: Can you be more specific than that?

WITNESS ROSCOE: I did not bring MBK's exhibits with me, and that would take me a while to pour through and recall which I read and which I didn't read.

MS. ANSLEY: So I guess we can try to shortcut that just to clarify.

So, did you review each of their exhibits or just a summary of their findings?

WITNESS ROSCOE: I -- I reviewed individual exhibits and a summary, but without having them in front

of me and saying, "Yup, I remember that one," I can't tell you which specific exhibits.

MS. ANSLEY: And are you familiar with the CalSim modeling?

WITNESS ROSCOE: I'm -- I'm not a professional Modeler.

MS. ANSLEY: But do you have a working familiarity with CalSim?

WITNESS ROSCOE: I am familiar with what CalSim attempts to model, but I'm not representing that I am an expert in any of the modeling in CalSim.

MS. ANSLEY: And have you ever discussed CalSim modeling with the Department of Water Resources or the United States Bureau of Reclamation's Modelers?

WITNESS ROSCOE: I've had conversations with Mr. Miliband on occasion. We'd meet with him at various conferences and events, and I chat with him on a number of topics. I have not talked with Mr. Miliband in depth on modeling assumptions that he uses and doesn't use.

MS. ANSLEY: Are you aware that Mr. Miliband is not a Modeler, he's an Operator?

WITNESS ROSCOE: Mr. Miliband in his present role is in charge of operating the Bureau's CVP system.

MS. ANSLEY: Have you used CalSim to assess any Projects that you've been involved in?

WITNESS ROSCOE: I have not.

MS. ANSLEY: And do you understand the differences between MBK's modeling approach to the Cal WaterFix, as testified here by MBK, as compared to how the Department of Water Resources and the United States Bureau of Reclamation modeled the Cal WaterFix?

MR. MILIBAND: Objection: Vague and ambiguous.

We're talking about an extremely large amount of technical information.

And I'll point out, the Department of Water Resources has not produced the modeling results from their own modeling for this hearing that would allow witnesses like Mr. Roscoe to actually review those results.

Instead, we have extremely complex technical files that require technical expertise to --

CO-HEARING OFFICER DODUC: Mr. Roscoe was there. You don't need to justify on that.

Miss Ansley, where are you going with this? He is not an expert on the CalSim or on modeling.

MS. ANSLEY: Well, I believe that these experts testified that this is the type of information that they rely on early when I -- I -- I'm sorry. I think it was Mr. Miliband asked Mr. -- Mr. Roscoe this, but . . .

And they all are relying on MBK's -- at least

Mr. Roscoe is --

CO-HEARING OFFICER DODUC: You guys took on MKB. Is there an expert --

MS. ANSLEY: Right.

CO-HEARING OFFICER DODUC: -- who provided modeling requirement information?

MS. ANSLEY: That's right. So they -- So they -- they formed their conclusions based on that testimony, and I simply just wanted to know if they had an understanding of the differences in the approaches taken by MB -- as a Manager between MBK --

CO-HEARING OFFICER DODUC: So a general understanding.

MS. ANSLEY: Sure, as -- as much information as to his level of understanding.

CO-HEARING OFFICER DODUC: Mr. Roscoe.

WITNESS ROSCOE: My understanding is, the -- the conclusions that MBK reaches in -- include their own independent runs of the model, plus what has been described to me as post-processing reality checks, and that -- does that model result actually represent past and expected future operations.

MS. ANSLEY: And -- And that's your understanding of the difference you have with Neilstad (phonetic)?

WITNESS ROSCOE: Yes.

Yes to the first, no to the second.

MS. ANSLEY: Okay. Thank you, Mr. Roscoe.

I think I'm ready to move on to Mr. Peifer.

Good morning, Mr. Peifer.

WITNESS PEIFER: Good morning.

MS. ANSLEY: Your testimony here today is CITYSAC Number 1; is that correct?

WITNESS PEIFER: That is correct, in addition to City of Sac 19 as amended.

MS. ANSLEY: Did anyone assist you in the preparation of this testimony?

WITNESS PEIFER: Yes. This was a collaborative effort between myself and my colleague Mr. Ewart.

In addition, we worked with our attorneys to develop that. There was a number of other people who reviewed that testimony and participated, including our Water Quality Team, which testified yesterday.

MS. ANSLEY: Are there specific sections of your testimony that Mr. Ewart drafted?

WITNESS PEIFER: Mr. Ewart had a greater hand in preparing the testimony that affected intake structures.

Or that affects the intake structures.

MS. ANSLEY: And as a matter of housekeeping,

were you disclosed as an expert witness here today?

WITNESS PEIFER: I am not representing myself as an expert witness today.

MS. ANSLEY: You're currently the Principal Engineer for City of Sacramento?

WITNESS PEIFER: I am.

MS. ANSLEY: And the City of Sacramento diverts water from the Sacramento River at the Sacramento River Treatment Plant; correct?

WITNESS PEIFER: Yes.

MS. ANSLEY: And this Point of Diversion is downstream from the proposed new intakes under the Petition at issue here; correct?

WITNESS PEIFER: I would say upstream.

MS. ANSLEY: Oh, it's upstream? Sorry. That -- I'm sorry.

I apologize. That's my mistake.

And do you have an estimate of the distance?

MR. MILIBAND: Objection: Vague.

CO-HEARING OFFICER DODUC: The distance, Miss Ansley?

MS. ANSLEY: The distance between the -- the point of diversion at the Sacramento River Treatment Plant and the new proposed diversions.

WITNESS PEIFER: I do not immediately have an

estimate.

MS. ANSLEY: As another matter of housekeeping, this morning, I believe that you attested to a number of exhibits off the City of Sacramento exhibit index; correct?

WITNESS PEIFER: Yes.

MS. ANSLEY: Having reviewed your testimony, I see references to two exhibits beyond your testimony, which is CITYSAC-1. I see a reference to CITYSAC-2 on Page 2, and then I see a reference to CITYSAC-18 in Footnote 1 on Page 4.

Can you point to me in your testimony where you specifically cite or reference an exhibit off the City of Sacramento Exhibit List?

MR. MILIBAND: Objection to the extent it's vague. It sounds like Miss Ansley just identified exhibits, so it's unclear what the question really is, having already identified two additional exhibits on the City of Sac Exhibit List.

MS. ANSLEY: Sure.

CO-HEARING OFFICER DODUC: Where are you going with this?

MS. ANSLEY: Where I'm going with this is that I believe he cites to two City of Sac exhibits in his testimony. But this morning, in a long stream of

exhibits, he confirmed the -- that other exhibits were true and correct copies, and I don't believe that his testimony cites to CITYSAC-referenced exhibits. I see a reference to CITYSAC-2 and a reference to CITYSAC-18.

And I just thought maybe he could point out in his testimony where he is citing other exhibits off the Exhibit List.

MR. MILIBAND: Then I would like to insert an objection as to relevance. And if, for no other reason than purposes of efficiency, there's no rule requiring that each and every exhibit be referenced in the testimony. That is the purpose, at least in part, for oral testimony to lay evidentiary and foundational statements such as Mr. Peifer provided this morning.

CO-HEARING OFFICER DODUC: Yes. Miss Ansley, why is this significant?

MS. ANSLEY: I'm happy to move on. It's just more of a procedural issue that --

CO-HEARING OFFICER DODUC: Move on.

MS. ANSLEY: Looking at Paragraph 4 of your testimony.

(Document displayed on screen.)

MS. ANSLEY: This testimony is intended to provide a background on Sacramento's water rights and entitlements; is that correct?

WITNESS PEIFER: That is correct.
MS. ANSLEY: It also identifies water sources and facility capabilities -- or capacities? Excuse me.
WITNESS PEIFER: It's citing that my testimony includes this in this paragraph.
MS. ANSLEY: All right. And your testimony also here provides an opinion for the potential impacts to causal injury by the California WaterFix?
WITNESS PEIFER: It states that -- It describes that I have an opinion on impact from the California WaterFix.
MS. ANSLEY: If we can move to Paragraph 24.
(Document displayed on screen.)
MS. ANSLEY: In 24, this starts your section on potential injuries to Sacramento from California WaterFix; is that correct?
WITNESS PEIFER: Yes.
MS. ANSLEY: And you testify here in Paragraph 25, which we can also see, that your opinion is based on your training and experience; is that correct?
WITNESS PEIFER: Yes.
MS. ANSLEY: Moving to Paragraph 26.
(Document displayed on screen.)
MR. MILIBAND: I would just like to insert what is a late objection, and that is, it's misstating the

testimony. It's almost an incomplete question.

The written testimony speaks for itself. If there's a clarifying or additional question, certainly welcome hearing that from Miss Ansley, but it does somewhat misstate the testimony in that last question.

CO-HEARING OFFICER DODUC: Fine. Let's just move on, please.

MS. ANSLEY: Okay. Looking at Paragraph 26.

(Document displayed on screen.)

MS. ANSLEY: In addition to your training and experience here in Paragraph 26, do you also rely -- and I'm looking at about the fourth line up -- on the testimony of highly-credible experts?

WITNESS PEIFER: I do.

MS. ANSLEY: And I think you testified orally earlier that those would be MBK and Mr. Weaver?

WITNESS PEIFER: Yes.

MS. ANSLEY: Is -- Is there a reason why you didn't name them specifically in this testimony?

WITNESS PEIFER: There is no particular reason.

CO-HEARING OFFICER DODUC: This is very painful, Miss Ansley.

MS. ANSLEY: And which parts of MBK's analysis did you review?

WITNESS PEIFER: Over the last several months,

I've read a report from MBK quantifying impacts. I've seen a number of presentations that Walter has made which quantify this.

MS. ANSLEY: These are presentations that are different from the testimony submitted in this proceeding?

WITNESS PEIFER: I did not see Walter's presentation during this proceeding.

MS. ANSLEY: Have you reviewed the exhibits submitted in support of MBK's work in this proceeding?

WITNESS PEIFER: I have.

MS. ANSLEY: And are you familiar with CalSim modeling?

WITNESS PEIFER: I am -- I'm not a CalSim Modeler. I use the analysis from CalSim Modelers.

MS. ANSLEY: And have you ever discussed CalSim modeling with either the Department of Water Resources or the United States Bureau of Reclamation Modelers?

WITNESS PEIFER: Not in the context of California WaterFix.

MS. ANSLEY: In what respects?

WITNESS PEIFER: In the past, there have been questions and comments that have come up on previous Biological Opinions.

MS. ANSLEY: And have you used CalSim to assess

any Projects that you've been involved in?

WITNESS PEIFER: We've relied -- Or I have personally relied on CalSim Modelers for Projects in the past. Again, I'm not a CalSim Modeler.

MS. ANSLEY: And the same question that we asked Mr. Roscoe:

Do you understand the differences between MBK's modeling approach to the California WaterFix as compared to the Petitioners' model of the California WaterFix?

MR. MILIBAND: Objection to the extent it's vague and really kind of compound; it assumes facts not in evidence.

CO-HEARING OFFICER DODUC: Mr. Miliband, let's just let Mr. Peifer answer to the extent that he can so we can get through this.

WITNESS PEIFER: I would defer that question to MBK.

MS. ANSLEY: You would defer your own understanding of the differences between the Petitioners' modeling and MBK's modeling?

MR. MILIBAND: Objection to the -- I'm trying not to object, Madam Chair, but it seems to be misstating a bit of the testimony.

If there's a clarifying question that Miss Ansley has, I welcome hearing that. I'll try to

reserve objections.

MS. ANSLEY: I'm just looking for his understanding.

CO-HEARING OFFICER DODUC: Mr. Peifer is not an expert on either CalSim or on modeling. He will defer those sort of questions to the expert witnesses upon which they are relying.

Move on, Miss Ansley.

MS. ANSLEY: All right. I'd like to move next to Mr. Peterson.

Mr. Peterson, can you confirm that you drafted the testimony marked as SWCA-19 (sic)?

WITNESS PETERSON: I developed and refined that testimony with assistance from Water Agency staff and counsel.

CO-HEARING OFFICER DODUC: Thank you for anticipating her next question and moving things along.

MS. ANSLEY: Did -- Did Mr. Grinstead contribute to your testimony?

WITNESS PETERSON: Yes.

MS. ANSLEY: And what sections -- Or in what way did Mr. Grinstead contribute?

WITNESS PETERSON: To the provision of documents and data to -- to help fill in the blanks in terms of numbers and references to Projects and

projections and things like that.

MS. ANSLEY: And how about Mr. Williams, Mr. Forrest Williams. Did he also contribute?

WITNESS PETERSON: Similarly, yes.

MS. ANSLEY: Similarly in what way? Could you be specific?

WITNESS PETERSON: The provision of information related to fill in the blanks in terms of, you know, describing either operations or -- or the nature of our -- our system, projections on demand, et cetera. Again, similar nature.

MS. ANSLEY: If we look at Page 2, I guess it starts on Line 21, of your testimony, SCWA-19.

(Document displayed on screen.)

MS. ANSLEY: Do you have that there in front of you?

WITNESS PETERSON: Yes.

MS. ANSLEY: And just to confirm: You do provide -- Let me flip to the back.

You do provide an opinion as to whether there is potential injury from the California WaterFix to Sacramento County Water Agency's water rights?

WITNESS PETERSON: I identified potential impacts from the WaterFix to our ability to utilize our water supplies.

MS. ANSLEY: And do your conclusions regarding potential injury rely on, or are they based on, the technical analyses prepared by MBK Engineers?

WITNESS PETERSON: Yes.

MS. ANSLEY: As well as East Bay Municipal Utility District's Exhibit 152?

WITNESS PETERSON: Yes.

MS. ANSLEY: And, finally, as well as the groundwater analysis performed by Dr. Steffen Mehl, which is SCWA-4?

WITNESS PETERSON: Yes.

MS. ANSLEY: Did SCWA -- Aside from those technical analyses, did SCWA perform any independent technical analysis of injury to the -- injury to the water rights from the California WaterFix?

WITNESS PETERSON: Did not.

MS. ANSLEY: Okay. Then Mr. Williams, please.

WITNESS WILLIAMS: Yes.

MS. ANSLEY: And you drafted the testimony marked as Exhibit SCWA-3?

WITNESS WILLIAMS: In conjunction with SCWA staff and assistance from my attorney.

MS. ANSLEY: And what assistance did you receive from your attorney?

WITNESS WILLIAMS: Basically a review as to

relevance of testimony provided.

MS. ANSLEY: Did anyone here on the panel today help you prepare your testimony?

WITNESS WILLIAMS: Let's see.

Nope.

MS. ANSLEY: On Pages 2 to 3 of your testimony, which is SCWA-3 --

WITNESS WILLIAMS: Yes.

MS. ANSLEY: -- you state that you -- your testimony relates to the testimonies of Eileen White?

WITNESS WILLIAMS: Yes.

MR. FERGUSON: Can I raise a quick objection?

Perhaps I was not clear enough in my questioning on -- on direct of Mr. Williams. He's going to speak to reverse flow events and the reverse flow issue as it impacts Sacramento County Water Agency in the next panel. All I was really doing is trying to affirm that this was his testimony.

We did indicate in the testimony that he did contribute to the development of Mr. Peterson's testimony, and that's why he's appearing on this panel. There will be plenty of opportunity to cross-examine him on the remainder of the testimony in the next panel.

CO-HEARING OFFICER DODUC: Okay. Thank you, Mr. Ferguson.

MS. ANSLEY: Let me just have a followup question, then.

No. I'll -- I'll hold it for that panel.

MR. FERGUSON: Sorry if there was any confusion about that. Just trying to be efficient in the way we identified.

MS. ANSLEY: That's fine.

Can I have a minute? I think we have a series of just a couple questions we want to ask the entire Board. Let me make sure.

CO-HEARING OFFICER DODUC: Okay.

(Pause in proceedings.)

MS. ANSLEY: Mr. Roscoe, I thought that I heard you testify earlier today -- and please correct me if I'm wrong -- that -- that, pursuant to MBK's analysis, CVP supplies North-of-Delta will change under the California WaterFix?

MR. MILIBAND: Objection --

MS. ANSLEY: Was that your --

MR. MILIBAND: -- misstates testimony. I don't believe that Mr. Roscoe testified to that.

CO-HEARING OFFICER DODUC: What specific question are you leading to, Miss Ansley?

MS. ANSLEY: We're just trying to confirm. We really wanted to know who had made that statement

earlier, that --

CO-HEARING OFFICER DODUC: Okay. Miss Ansley will repeat her question, and if that is not what you intended, you may say so.

WITNESS ROSCOE: I -- I think I heard the question and I don't recall saying that it will -- My concern in my testimony, if I can recall what I said, was, in my opinion, Cal WaterFix has not presented an Operations Plan on how it's going to be operated and what the effects on Folsom Reservoir lake levels will be, which will affect our access to water supplies or stream flows in Lower American River.

The modeling results show one thing but they've testified that they won't necessarily operate to the modeling results, so we don't know.

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

MS. ANSLEY: Thank you.

Could we ask the panel if any of them made that opinion -- opined on that?

CO-HEARING OFFICER DODUC: You may ask.

MS. ANSLEY: So, I'm addressing this to the whole panel.

The conclusion that MBK's analysis indicated that CVP supplies North-of-Delta will change under the

California WaterFix.

WITNESS PETERSON: Yes.

CO-HEARING OFFICER DODUC: Did anyone recall --

WITNESS PETERSON: Yes.

CO-HEARING OFFICER DODUC: -- making that?

Yes, Mr. Peterson does.

MS. ANSLEY: Oh. Thank you, Mr. Peterson.

And what specific work have you indicated you reviewed that your statement that your CVP supply would decrease by 5 percent?

WITNESS PETERSON: Again, I indicated --

MR. MILIBAND: Objection: That misstates the testimony.

He didn't say his CVP supply would decrease by 5 percent.

CO-HEARING OFFICER DODUC: CVP supplies in general, Mr. Peterson.

WITNESS PETERSON: Correct.

MS. ANSLEY: Can we see exhibit Sac Valley Water Users SVWU-108?

(Document displayed on screen.)

CO-HEARING OFFICER DODUC: Are you on the same line of questioning still for Mr. Peterson?

MS. ANSLEY: Yes. We're going to clear quickly with Mr. Peterson and I believe we're probably done.

So, Page 9, I believe, Table 1.

(Document displayed on screen.)

MS. ANSLEY: One second.

Mr. Peterson, Sacramento County Water Agency has a CVP contract; correct?

WITNESS PETERSON: Correct.

MS. ANSLEY: And are you familiar with the U.S. Bureau of Reclamation's policy of balancing supplies north and south from the Delta if regulation allows for conveyance south of the Delta?

WITNESS PETERSON: I have an understanding that that's how the Bureau of Reclamation operates.

MS. ANSLEY: And isn't your CVP contract subject to USBR policies?

And I meant United States Bureau of Reclamation. I apologize.

WITNESS PETERSON: The . . .

MR. FERGUSON: I'm going to raise an objection: That's -- That's vague.

Can you be more specific about policies?

MS. ANSLEY: Mr. Peterson, is there not a term in the CVP contract that makes you subject to United States Bureau of Reclamation policies?

MR. MILIBAND: I'm going to object as vague and ambiguous because there's a lot of CVP Water Service

Contractors.

There's a -- There's a specific policy that's relevant here. There's an M&I shortage policy that Reclamation adopted last year. So when we say "policies," it's vague and ambiguous as to --

CO-HEARING OFFICER DODUC: Miss Ansley.

MS. ANSLEY: Sure. How about the balancing policy. We'll just stick with that.

WITNESS PETERSON: Could you --

CO-HEARING OFFICER DODUC: Mr. Peterson?

WITNESS PETERSON: Could you repeat your question?

MS. ANSLEY: Is your -- I believe my last question was, does your CVP contract have a term that expressly states that you are subject to the United States Bureau of Reclamation policies, which would here include here the balancing policy?

WITNESS PETERSON: I believe it does.

MS. ANSLEY: And isn't it true that the conclusion by MBK that you relied on in forming your conclusion about decreased CVP supply simply shows an application of the U.S. Bureau of Reclamation balancing policy?

WITNESS PETERSON: It depicts, to your example, reflecting the California WaterFix and the resultant

change in flows of deliveries North-of-Delta and south of Delta.

MS. ANSLEY: So, just for a clear record, that's a yes to my question?

WITNESS PETERSON: Yes.

MS. ANSLEY: I think we're done with this panel. Thank you.

CO-HEARING OFFICER DODUC: Thank you, I think.

Miss Morris?

MS. MORRIS: (Shaking head.)

CO-HEARING OFFICER DODUC: You're now passing on cross-examination.

MS. MORRIS: (Nodding head.)

CO-HEARING OFFICER DODUC: Miss Akroyd, accompanied by Mr. Williams.

MR. WILLIAMS: I'm going to help Miss Akroyd pass out documents.

CO-HEARING OFFICER DODUC: Ah, okay.

And then we have Mr. Jackson next; right?

MR. JACKSON: (Nodding head.)

CO-HEARING OFFICER DODUC: Okay.

Oh, before Miss Akroyd begins, let me just go ahead and confirm for the record that the other Petitioner, Miss Aufdemberge, does not have cross-examination.

MS. AUFDEMBERGE: I do not. Thank you very much.

CO-HEARING OFFICER DODUC: All right.

CROSS-EXAMINATION BY

MS. AKROYD: Thank you. Rebecca Akroyd for San Luis Delta-Mendota Water Authority.

I'd like to begin with a few questions for Mr. Peifer.

Did I pronounce that correctly?

WITNESS PEIFER: Yes, you did, Miss Akroyd.

MS. AKROYD: Thank you.

First, the City of Sacramento's -- The City of Sacramento is located upstream from the new Points of Diversion proposed in the California WaterFix Change Petition; correct?

WITNESS PEIFER: That is correct.

MS. AKROYD: Thank you.

And I believe you testified today and in your written testimony that the risk of injury to City of Sacramento's water supply from WaterFix Project is in part due to decreased reliability of water supply; is that correct?

WITNESS PEIFER: That is correct.

MS. AKROYD: Now, outside of the WaterFix context, do you recall that the City of Sacramento

recently certified the level of available water supplies it would have assuming three additional dry years as part of the three-year stress test requested by the State Water Board?

WITNESS PEIFER: We -- We did, and that assumes that a particular hydrological pattern would reoccur from 2017 to 2019, I believe.

And I'll also add, that is in the timeframe well before California WaterFix would be constructed.

MS. AKROYD: I understand that. Thank you.

The certification that you just discussed, in addition to being based on the specific hydrologic time period we -- you just referenced, that certification was based on then-current supply and demands considerations based on existing criteria and contracts and water rights; correct?

MR. MILIBAND: Objection: Relevance, given Mr. Peifer's testimony that the certification relates to the next three years and his understanding is, operational WaterFix would not occur for an estimate of 10 years.

MS. ANSLEY: I believe my question was on a slightly different point as opposed to the hydrology, but, rather, was the cert -- certification based on the -- the existing criteria or current supply and demand

considerations in the Sac -- City of Sacramento?

MR. MILIBAND: Same objection.

CO-HEARING OFFICER DODUC: Overruled.

Please answer.

WITNESS PEIFER: Could you repeat that question, please?

MS. AKROYD: Sure.

That certification was based on then-current supply and demand considerations based on existing criteria in contracts and water rights for the City of Sacramento; is that correct?

WITNESS PEIFER: That's correct.

MS. AKROYD: Thank you.

Now I'd like to ask a similar line of questions for Mr. Peterson. It will all sound very familiar.

WITNESS PETERSON: Yes.

MS. AKROYD: Sacramento County Water Agency is located upstream of the new Points of Diversion proposed in the California WaterFix Change Petition; correct?

WITNESS PETERSON: The Freeport intake is, yes.

MS. AKROYD: Thank you.

And, Mr. Peterson, in your testimony, I believe you also discussed the risk of injury to Sacramento County Water Agency's water supply, including from reduced storage in Folsom Reservoir; correct?

WITNESS PETERSON: Correct.

MS. ANSLEY: Do you recall that Sacramento County Water Agency recently certified the level of available water supplies it would have, assuming three additional dry years, as part of the three-year stress test requested by the State Water Board?

WITNESS PETERSON: I recall the self-certification process involved looking at existing -- the current demand and supplies and projecting out three years of similar hydrologic conditions.

MS. AKROYD: Thank you for anticipating my questions.

To make sure -- For completeness: The representation, in addition to being based on existing supply and demand, was also based on existing criteria in Sacramento County Water Agency's contracts and water rights; correct?

WITNESS PETERSON: Correct.

MS. AKROYD: Thank you.

Mr. Nugent.

WITNESS NUGENT: Yes.

MS. ANSLEY: Carmichael Water District is located upstream of the new Points of Diversion proposed in the California WaterFix Change Petition; correct?

WITNESS NUGENT: Yes.

MS. AKROYD: And do you also recall the Carmichael Water District also certified the availability of water supplies it would have assuming three additional dry years as part of the three-year stress test?

WITNESS NUGENT: Yes.

MS. AKROYD: And as part of that self-certification, Carmichael Water District during the period of time that it would have at least a three-year water supply under extended drought conditions; correct?

WITNESS NUGENT: Yes.

MS. AKROYD: And that representation was based on existing criteria and water rights; correct?

WITNESS NUGENT: Yes.

MS. AKROYD: Thank you.

Finally, Mr. Roscoe.

Sacramento Suburban Water District is located upstream of the new Points of Diversion proposed in the WaterFix Change Petition; correct?

WITNESS ROSCOE: Correct.

MS. AKROYD: And do you also recall that Sacramento Suburban Water District recently certified the refusal of available water supplies it would have as part of a three-year test certification?

WITNESS ROSCOE: We did that certification,

yes.

MS. AKROYD: And as part of that certification, Sacramento Suburban Water District represented it would have at least a three-year water supply under extended drought conditions; correct?

MR. BEZERRA: Objection: Vague and ambiguous. Extended drought -- And relevance.

I don't know where we're going with this being a WaterFix.

CO-HEARING OFFICER DODUC: It's --

MR. BEZERRA: Proceeding.

CO-HEARING OFFICER DODUC: -- the same questions we've -- she's been asking.

MS. AKROYD: And I can explain the relevance again but --

CO-HEARING OFFICER DODUC: No.

Mr. Roscoe.

WITNESS ROSCOE: Yeah. Sacramento Suburban, as I explained in my testimony, relies heavily on a conjunctive use system, and in dry times, we are perfectly capable of serving 100 percent of our customers with groundwater.

We will have concerns trying to comply with the new Sustainable Groundwater Management Act, potentially, if we don't have similar access to surface water supplies

as we do now.

I -- I concur with Mr. Peifer: The certification is done for a specific three-year period, and Cal WaterFix has no hope of being online until long after that three-year period.

So Cal WaterFix/No Cal WaterFix did not affect our certification of our water supplies in the three-year stress test that we performed.

MS. AKROYD: Thank you.

And perhaps I can be a bit more direct in what I'm trying to get at with this question.

I'm trying to understand that, in making the certification, the certification was based on existing criteria in -- in the water rights held by the District.

WITNESS ROSCOE: The District holds some water rights. We contract with others for water rights.

MS. AKROYD: Sorry.

Based on existing -- the current water supply circumstances for the District.

WITNESS ROSCOE: Absolutely.

MS. AKROYD: Thank you.

I have nothing further.

CO-HEARING OFFICER DODUC: Thank you.

Mr. Jackson.

Let me check to confirm: There are no other

cross-examination of this panel?

All right.

CROSS-EXAMINATION BY

MR. JACKSON: My name is Michael Jackson. I'm here representing the California Sports Fishing Protection Alliance, the California Water Impact Network, and AquAlliance, generally environmental groups.

I've got a -- a number of questions for each of you.

First of all, is there anyone representing an agency here that is not in the American River drainage?

So, everyone here is in the American River drainage.

Is there anyone here that is not reliant, either through their water rights or through contracts with others, that are dependent upon -- for their surface water on the American River and the Bureau's Folsom Project?

WITNESS PEIFER: Can I ask Mr. Jackson to repeat that question?

MR. JACKSON: Certainly?

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: Is there anyone here who is not reliant either for their -- through their water rights or through a contract with another party holding water

rights from Folsom Reservoir?

So I assume that --

WITNESS ROSCOE: Can I ask a question?

MR. JACKSON: -- you're all dependent upon the watershed of the American River and sort of the -- the big diversion in the middle of it, Folsom, for your surface water?

CO-HEARING OFFICER DODUC: Mr. Roscoe?

WITNESS ROSCOE: Yeah. In Sacramento Suburban's case, we rely on Placer County Water Agency water rights and the City of Sacramento water rights.

We do have a contract with the Bureau of Reclamation because our PCWA water touches the lake and there's a Warren Act contract involved.

But we are not reliant on CVP supplies. We are reliant on how the Bureau operates the lake for lake levels, and not exposing the M&I intake, and for their releases at Nimbus to maintain flows in Lower American River.

MR. JACKSON: Mr. Roscoe just eliminated my next question.

I would --

WITNESS PEIFER: Can I --

MR. JACKSON: I would like to con --

Yes, sir.

WITNESS PEIFER: The City of Sacramento's reliant on the American River Basin and the Sacramento River Watershed, too.

MR. JACKSON: All right. Now that's two questions that have just been answered that were going to be next.

So the City of Sacramento is the only one that has partial reliance on the Sacramento Watershed; is that correct?

MR. MILIBAND: Just for clarification, is Mr. Jackson asking as it relates to the agencies represented on this panel, or more broadly?

MR. JACKSON: For the agencies represented on the panel.

MR. MILIBAND: Thank you, sir.

WITNESS ROSCOE: I'd like to clarify.

To the extent we get water from the City of Sacramento and the City of Sacramento is reliant on both rivers, that, depending on the circumstances, there's an opportunity for that to extend to Sacramento Suburban.

MR. JACKSON: In-- In this regard -- And I'm going to use the example that was brought up by Zone 40, which I believe is the Sacramento County Water Agency?

WITNESS PETERSON: That's correct.

MR. JACKSON: And Mr. Peterson; correct?

WITNESS PETERSON: Correct.

MR. JACKSON: Mr. Peterson, you indicated that, in compliance with planning rules of the State of California, you have adopted a -- a plan that goes for development of the area -- I guess it would be the southwest portion of -- of Sacramento County for future development; is that correct?

WITNESS PETERSON: Our planning is based on the land use plans in that area for the jurisdictions.

MR. JACKSON: Does that plan rely on both -- on surface water in any way?

WITNESS PETERSON: Our long-term demand providing that is based on a conjunctive use, both surface and groundwater.

MR. JACKSON: And is that from both the American River and the Sacramento River?

WITNESS PETERSON: It would be the American River.

MR. JACKSON: The American River only?

WITNESS PETERSON: Yes.

MR. JACKSON: Are you familiar with the concept of area of origin?

WITNESS PETERSON: In general, yes.

MR. JACKSON: And how do you -- How do you understand the area of origin?

WITNESS PETERSON: In terms of area of origin rights, inability to take water --

MR. JACKSON: Yes.

WITNESS PETERSON: -- from that source?

To me, in general, that's -- that's -- that's -- that's what I think. Is there anything specific?

MR. JACKSON: Well, are you relying on, for your future water supply, on -- on an -- on any -- on a concept of area of origin for your brook?

A. Well, we have two contracts for CVP water and an appropriative right, and those are -- In the long term, those are our surface water supplies.

MR. JACKSON: If you -- if you did not have surface water by the end of your time period, which I think you said was 2050, for the -- I guess it was an additional 300,000 people. Is that approximately?

A. Approximately.

Q. Would you -- Would you then rely on your area of origin right to expand your water supply for future growth?

MR. FERGUSON: I'm going to object as to relevance.

CO-HEARING OFFICER DODUC: I'm actually interested in that.

Mr. Peterson, can you answer?

WITNESS PETERSON: I -- I can't speak to what we might do in -- in a future situation as you've described.

What we are doing and how we plan now is based on the surface water that I spoke to earlier.

MR. JACKSON: From Folsom Reservoir and --

WITNESS PETERSON: Correct.

MR. JACKSON: Right.

So you talked about a Conjunctive Use Project in the area of, I guess it was Zone 40?

WITNESS PETERSON: Zone 40.

MR. JACKSON: How exactly does that work?

WITNESS PETERSON: Well, the intent of conjunctive use is to balance surface water and groundwater supplies, depending on their availability, in wet years, for example, but relying more so on surface water. And in dry years, when surface water may not be available, depending more on groundwater. And there's a balance that you seek to best manage both so that neither are severely impacted.

MR. JACKSON: In your review of the California WaterFix, did it -- did you come to the conclusion that the California WaterFix was also going to rely on the wet years and above-normal years for additional diversion

down below you for out-of-Basin transfers?

WITNESS PETERSON: My understanding -- Repeat the question again --

MR. JACKSON: Yeah.

WITNESS PETERSON: -- because it's --

MR. JACKSON: Was it your understanding, in reviewing the material on the California WaterFix, that the California WaterFix was designed to increase exports in the -- in the same period you're relying on surface flows, which is the wetter years?

WITNESS PETERSON: I -- I can't specifically say that. I'm, you know, recalling that, but I understand in general that the WaterFix is seeking to deliver more water south of the Delta.

MR. JACKSON: In regard to Zone 40, is Zone 40 located within the legal Delta?

WITNESS PETERSON: I believe a -- a portion of Zone 40 touches the legal boundary defined for the Delta.

MR. JACKSON: Do you -- So let's step to the next series of questions.

Are you familiar with the California WaterFix environmental documents that talk about adaptive management?

WITNESS PETERSON: In general. It would be -- It was a pretty lengthy document.

MR. JACKSON: Do you have an idea of how the adaptive management of the California WaterFix will affect your water rights in the future, say, at the time of 2050?

WITNESS PETERSON: I don't have a specific understanding of that.

MR. JACKSON: Is that one of the things that you -- that you are considering as you take a look at how the Project is going to be operated in the future?

MR. FERGUSON: Objection: Vague. He referenced "things." I'm not sure what he's referring to.

CO-HEARING OFFICER DODUC: Adaptive management I believe is what he's referring to.

MR. JACKSON: Yes.

CO-HEARING OFFICER DODUC: Have you given any consideration, Mr. Peterson, to the adaptive management of the WaterFix by the Petitioners?

WITNESS PETERSON: To the degree that adaptive management establishes how the Project is operated, and to the degree that impacts our access to water, that is our concern.

MR. JACKSON: Would it make it clearer for you if the Adaptive Management Program was spelled out that would determine the operation for the next -- well, until

2050, let's say?

WITNESS PETERSON: I need clarity on what -- how "operation" is -- of the WaterFix is something that we've all expressed about, that it is not clearly explained.

MR. JACKSON: Did you find that explanation in your review of the Petition on file here?

WITNESS PETERSON: The modeling that was done indicated that there -- there was not clarity on how the Project would be operated. The modeling review that was done.

MR. JACKSON: Okay. Now, calling your attention -- And I don't mean to be beating up on you individually, but you talked about Zone 40 and future growth.

WITNESS PETERSON: (Nodding head.)

MR. JACKSON: Can you determine from the California WaterFix documents how much water is going to be available for you to recharge groundwater in dry years?

MR. FERGUSON: Objection: Assumes facts not in evidence. I don't think we -- Mr. Peterson spoke about a recharge program.

CO-HEARING OFFICER DODUC: Then Mr. Peterson may answer that he does not know.

WITNESS PETERSON: I do not know.

MR. JACKSON: If more water is taken out of the American River drainage to move south -- and this is a hypothetical -- are you worried about the effect it would have on your ability for -- to accommodate future growth in your District?

WITNESS PETERSON: Our concern with restricted access to our surface water would be relevant to meeting our -- our demand, whether existing or future --

MR. JACKSON: Right.

WITNESS PETERSON: -- depending on conditions.

MR. JACKSON: Thank you, sir.

CO-HEARING OFFICER DODUC: I'm sorry. Is that whispering absolutely necessary?

Thank you.

Please continue, Mr. Jackson. I was being distracted there.

MR. JACKSON: I think I'll move to Mr. Roscoe at this point.

There is -- You described in your direct testimony a contaminant plume --

WITNESS ROSCOE: (Nodding head.)

MR. JACKSON: -- that is moving down gradient toward your water supply?

WITNESS ROSCOE: Down the ground -- In the

groundwater. It's moved under the river. It's moving down gradient in the groundwater gradient, not the surface water gradient.

MR. JACKSON: Is it important to have fresh water to mix with that plume of contaminants in order to arrest the problem?

WITNESS ROSCOE: Our concern isn't blending. A lot of our wells deliver water directly to the distribution system, so there isn't a blending opportunity.

Our concern is being able to stabilize the groundwater table so we're not accelerating the rate of contaminant transport and allowing those responsible to clean it up -- a greater opportunity to clean it up before it impacts us.

MR. JACKSON: And you used the word "stabilize the situation."

What mechanisms do you have to stabilize the system -- or the contaminants that you're talking about?

WITNESS ROSCOE: My testimony showed a long-term history of groundwater drawdown. And our Conjunctive Use Programs, combined with the activities of other groundwater pumpers in the Basin, have done a fabulous job of arresting that groundwater table.

We're actually recovering groundwater levels

and we haven't seen the long-term decline that was going on for years since we started our conjunctive use activities.

MR. BEZERRA: If I could make a suggestion: If we're talking about Mr. Roscoe's testimony, we might pull up his summary slides and --

CO-HEARING OFFICER DODUC: Let's wait and see how much further Mr. Jackson has.

MR. JACKSON: The summary slide would be fine, and I think it will go faster that way.

CO-HEARING OFFICER DODUC: Okay.

MR. BEZERRA: So that's Exhibit SSWD-3, and I believe the contaminant plume is Page 6, Slide 6.

MR. JACKSON: Thank you, sir.

Is -- How long has this contaminant area been a problem for Sac Suburban and -- Yeah, for Sac Suburban?

WITNESS ROSCOE: We first were concerned about this when it was discovered on the north side of the American River in the Fair Oaks area. It's that further east tongue that comes under the river into the community of Fair Oaks.

And when the plume was discovered on that side of the river, it became evident to us that the groundwater modeling used by those involved in the contaminant cleanup were not very accurate. Their

modeling had shown that the river would be a boundary.

And that was -- You asked me when --

MR. JACKSON: Yes, sir.

WITNESS ROSCOE: -- and how long?

I -- I'm going to hazard a rough estimate of 20 years.

MR. JACKSON: During that 20-year period, have you used extra surface water supplies to help you with the problem?

WITNESS ROSCOE: Yeah. My testimony actually gave numbers, and I actually had to correct my testimony in Sac Suburban 1 to -- to clarify that some of that surface water we got was actually Bureau of Reclamation Section 215 water.

So, yes, we've used a lot of surface water.

MR. JACKSON: And Bureau of Reclamation 215 water, how does that differ from your regular --

WITNESS ROSCOE: It's just only available -- We don't have a contract from the Bureau to ensure that we have access to 215 water. It's water that's made intermittently available as the Bureau is spilling water and is excess to any CVP need.

And they're basically drawing down the reservoir for flood control purposes.

MR. JACKSON: So it is the flood control water

that --

WITNESS ROSCOE: Flood control water, yeah.

MR. JACKSON: -- you had a use for in order to arrest the contamination?

WITNESS ROSCOE: No. We only have access to Section 215 water very intermittently, when the Bureau's doing that. The Bureau is trying to operate the system so they don't spill water. But that's not always possible for them.

The water we rely on long-term for our conjunctive use activity is a contract with Placer County Water Agency for Middle Fork water supplies and a contract with the City of Sacramento for their Area D water right supplies.

MR. JACKSON: So if there were less water in Folsom Reservoir, that could have some effect on your contamination problem -- arresting your contamination problem?

WITNESS ROSCOE: It -- The water surface elevation in Folsom has an ability to affect us if the water levels are drawn down to the point where they affect the capacities of San Juan Water District to access that water, our Middle Fork Project water.

And if it draws down to the point where San Juan can't get enough of their own water, we are the

first people San Juan shuts off if they're unable to -- or they have concerns about meeting their water supply obligations within their wholesale District boundaries.

I will add, I guess, if I can go on . . .

MR. JACKSON: You can as far as I'm concerned, sir.

WITNESS ROSCOE: The --

CO-HEARING OFFICER DODUC: Let's see what he has to say first.

WITNESS ROSCOE: Yeah. The operation that the Bureau has also affects releases at Nimbus Dam, and that has the potential to affect our access to Area D water supplies for our conjunctive use activities in the South Side of our service area.

MR. JACKSON: Thank you, sir.

Back to Mr. Peterson.

Mr. Peterson, you indicated that you're also in the Sacramento drainage, that some of your water supply comes from that stream?

WITNESS PETERSON: I don't think I indicated that.

MR. JACKSON: Oh, you didn't?

Does the -- Does the water from Freeport come down the Sacramento River?

WITNESS PETERSON: The water from Freeport

is --

MR. JACKSON: The water for Freeport.

WITNESS PETERSON: -- from Freeport is American River water.

MR. JACKSON: All right.

WITNESS PETERSON: We take it off the Sacramento River.

MR. JACKSON: To your -- To your knowledge, is there any other source for surface water available to your agency and, as interlinked as you are, probably everybody's agency other than the American River?

WITNESS PETERSON: We can get some water from the City of Sacramento for a limited portion of our service area.

MR. JACKSON: All right. Are there any other streams within that area that you can get surface water from that are not connected to the American River?

WITNESS PETERSON: There are a number of streams in the area but nothing where we can take surface water.

MR. JACKSON: So you're limited to the four supplies, now and in the future, to the American River drainage.

WITNESS PETERSON: Those are what we're relying on.

MR. JACKSON: I have no further questions.

CO-HEARING OFFICER DODUC: Thank you, Mr. Jackson, for that not boring cross-examination.

Any redirect, gentlemen?

MR. MILIBAND: Not from me. Thank you.

CO-HEARING OFFICER DODUC: Mr. Bezerra.

MR. BEZERRA: Yeah. I have very brief redirect for Mr. Roscoe.

CO-HEARING OFFICER DODUC: Okay. And Mr. Ferguson?

MR. FERGUSON: No. Thank you.

CO-HEARING OFFICER DODUC: All right. Mr. Bezerra.

MR. BEZERRA: Thank you.

Could we please pull up Exhibit SSDW-14, please.

(Document displayed on screen.)

MR. BEZERRA: Thank you very much.

REDIRECT EXAMINATION BY

MR. BEZERRA: Mr. Roscoe, do you understand this exhibit to be pages from the Draft Environmental Impact Report and Draft Environmental Impact Statement prepared by Department of Water Resources and the Bureau of Reclamation for what was then known as the Bay-Delta Conservation Plan?

WITNESS ROSCOE: Yeah. I -- I apologize. I didn't bring this exhibit with me. That was provided to you by counsel, and that's pretty clearly stated at the bottom of the page.

MR. BEZERRA: And so your understanding is that this information was prepared by Department of Water Resources and the Bureau of Reclamation.

WITNESS ROSCOE: Yes.

And, further, it says it's an excerpt from the State Water Resources Control Board Exhibit 4.

MR. BEZERRA: Okay. Could we please move to Page 4 of this exhibit.

(Document displayed on screen.)

MR. BEZERRA: And if we could scroll down to the bottom of Page 4.

(Document displayed on screen.)

MR. BEZERRA: Each page of this contains a table reflecting changes of Nimbus flows, this being an example; correct?

WITNESS ROSCOE: That's my understanding, yes.

MR. BEZERRA: To the best of your understanding, has the Department of Water Resources produced any other information regarding the potential effects of California WaterFix on American River flows at Nimbus?

WITNESS ROSCOE: I'm not aware of any.

MR. BEZERRA: Thank you very much.

CO-HEARING OFFICER DODUC: Any recross of Mr. Roscoe?

Department?

MS. ANSLEY: No, we have no recross.

CO-HEARING OFFICER DODUC: Miss Akroyd.

MS. AKROYD: No.

CO-HEARING OFFICER DODUC: Mr. Jackson.

MR. JACKSON: (Shaking head.)

CO-HEARING OFFICER DODUC: All right. Thank you.

That concludes this panel's testimony.

We will take our lunch break; resume at 1:15 with the combined panel of Group 7 and 15 on reverse flows.

Mr. Bezerra?

MR. BEZERRA: Yeah. Just one brief procedural matter.

We discussed, I believe, day before yesterday the timing of admitting Group 7's exhibits.

I had forgotten that one of Group 7's witnesses will be testifying tomorrow.

CO-HEARING OFFICER DODUC: Yes, Mr. Orme.

MR. BEZERRA: What we'd like to do is propose

to submit the exhibits via a writing close of business next Wednesday.

CO-HEARING OFFICER DODUC: All right. We will allow you that time.

MR. BEZERRA: Thank you very much.

(Luncheon recess was taken at 12:08 a.m.)

Thursday, October 27, 2016 1:15 p.m.

PROCEEDINGS

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CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. Thank you everyone. It's 1:15. We are resuming.

And before we proceed with the next direct, we have to do another schedule check-in.

According to at least my notes, we are now looking at Group 7 and 15, the -- the joint panel there.

And then following that, if we get through this panel today, we will then look at Group Number 9.

If not, then we will finish up this panel tomorrow morning followed by the remaining witness for Group 7, Panel 4, Mr. Orme.

And then we will continue down our list of order: Number 9, North Delta Water Agencies; Number 10 with the exception of City of Brentwood, because they are presenting on November 3rd; likewise Sac Regional County, Group 13, is presenting on November 3rd.

So that means we may get to 15, the EBMUD-only panel, tomorrow, I expect to be here; and we may also get to Group 17, the San Joaquin River Exchange Contractors Water Authority. And not -- having not heard from them by noon, I expect them to be here as well, if they are

called.

That leads me to Group 19 or 20. Miss Meserve, I don't see you in the audience but hopefully, if you are listening or someone will be conveying this message to you, I expect you here in the morning in order to discuss your direct and presenting of your case in chief.

We did receive various e-mails from Miss Meserve, Mr. Brodsky and others with a list of witnesses and the dates that they're not available.

It is not helpful. If I knew how to direct you to be more helpful, I would say so, but this is a very complicated process.

And I need all the attorneys to take a more active role in simply not telling us when your witnesses will not be available but actually trying to develop solutions, trying to work with each other, and to arrange some sort of schedule, moving the order around, to accommodate your -- your witnesses' availability.

It is not -- The onus is not on us to try to accommodate your witnesses' availability. By simply sending us a list of dates and who's not available does not relieve you of your responsibility to ensure that your witnesses are available to present your case in chief.

I cannot make it any more stronger than that.

I also, unfortunately, cannot give you any clearer instructions than that, because we're sort of trying to manage this as we go along. I guess it's called real-time management of the hearing process.

So, I think we have things pretty much worked out for this week, with the exception of Miss Meserve and Group Number 19 and 20.

So, Miss Meserve, somebody let her know. She needs to be here tomorrow to discuss scheduling.

Also, who is Group 21? Group 21 is Central Delta, Mr. Herrick, who has been very diligent in attending, and I know that he also has a list of unavailability.

So, Mr. Herrick, I expect you here tomorrow as well.

And since we're looking ahead -- Well, next week, actually, is a short week. We only have two days. So I think with Miss Meserve and Mr. Herrick, and Thursday's already taken up by Brentwood and Sac Regional.

I think if we just have Mr. Herrick and Miss Meserve here, we can work on scheduling, at least for next week, and presumably the first part of the following week.

Actually, no. The following week we are only

meeting one day.

MS. RIDDLE: That's right. And just a point of clarification. I don't know that you intended to indicate that all of Thursday would be taken up with --

CO-HEARING OFFICER DODUC: No.

MS. RIDDLE: -- City of Brentwood, and what's the other party?

CO-HEARING OFFICER DODUC: That's correct. But I would guess at least half a day.

Mr. Berliner.

MR. BERLINER: Just trying to be helpful.

CO-HEARING OFFICER DODUC: Please.

MR. BERLINER: We are totally available if parties want to contact the Department, and I'm sure that the Bureau will make themselves available for conference calls to do scheduling.

Basically, you know, outside of the hearing time, we're available, so we can do it in the evening, whenever would suit people. If they would get ahead ahold of us, we'd be happy to arrange scheduling conference outside the Board's time.

Or if Board staff wants to join in --

CO-HEARING OFFICER DODUC: No.

MR. BERLINER: -- to assist, we'd be happy to have them.

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

I think -- I'm encouraging -- And I appreciate that offer from the Department.

But I'm looking more towards the attorneys for the parties that will be presenting cases in chief. As you are monitoring, which you'd better be monitoring, the progress of this hearing and anticipate that your -- your -- that you may be called for your case in chief when you are not yet prepared, or if your witnesses are not available, the onus is on you to contact the other parties to see if there's a possibility for them to switch dates with you, to arrange some kind of solution that is mutually beneficial to you all.

We are not going to take up the responsibility of doing that. We are -- And before Miss Meserve throws due process at me again, due process is that we are providing this hearing, we are making ourselves available, we're making Petitioners available in order to provide the forum for you to present your case in chief.

However, it does not mean that we try to accommodate everyone's individual schedule in order to be here. We will do our best, but we are not going to . . .

Well, I think I've said enough on this -- this aspect.

MR. BERLINER: Just -- Just one point, because we actually do have a due process issue.

We need to know when the other parties want to come, and we need to know in advance, because we have our own cross-examination to be ready for.

So if we're not given at least three days' heads-up, which is why we're available seven days a week for this, if we don't have three days' heads-up, we're assuming we're going in the order that's on the list.

CO-HEARING OFFICER DODUC: And so you should.

MR. BERLINER: Yes. That's our assumption at this point. So if --

CO-HEARING OFFICER DODUC: And if there --

MR. BERLINER: -- the parties want to change, which we're amenable to accommodating, we need to know.

CO-HEARING OFFICER DODUC: Yup.

All right. Challenging set of circumstances.

Mr. Jackson, do you have any sage words?

MR. JACKSON: Does that mean that if I can work out something with Mr. Berliner to avoid a certain date, it will be all right with you?

CO-HEARING OFFICER DODUC: My preference is, rather than telling us what cannot be done, you propose what can be done.

Give me a solution. Give me a proposal rather

than say, "We're not available" or, worst case -- I will not point out who did this -- but a two-page list of individual witnesses' names and individual times that they're not available. That does not help.

I would prefer, Mr. Jackson, if you can work with the Petitioners, you can work with other parties, and come back to me with a proposal, "All of our witnesses will be available on this date" or "Half my witnesses will be on this date and the other half on this date," however you work it out. But bring me a solution, not just tell me when your witnesses are not available.

MR. JACKSON: Okay. I -- Thank you. That helps a lot.

CO-HEARING OFFICER DODUC: Okay. We'll struggle through this together.

With that, Mr. Ferguson, Mr. Salmon, you are up.

Do you have an opening statement or shall I administer the oath now?

MR. SALMON: Good afternoon. We do have -- I do have a brief opening statement.

Before you administer the oath, I have a question.

We have a pending request for additional time for certain witnesses on this panel. At the time we

submitted our case in chief on August 31st, we requested 90 minutes of direct examination for this panel. We could do with a little bit less.

But Dr. Bray, in particular, I would like to request 35 minutes for his direct examination, if that's okay.

CO-HEARING OFFICER DODUC: As you know, it's the quality, not the quantity, that counts, so we will see how well Mr. Bray presents his testimony.

Chair Marcus is curious about your tie.

WITNESS BRAY: My daughter.

CO-HEARING OFFICER MARCUS: Oh, great.

CO-HEARING OFFICER DODUC: And that ends the socializing for this afternoon.

(Laughter)

CO-HEARING OFFICER DODUC: With that -- With the exception of Mr. Williams, who has already taken the oath, please rise and raise your right hand.

ELAINE WHITE, FORREST WILLIAMS and BENJAMIN BRAY, called as witnesses for the East Bay MUD and Sacramento County Water Agency, having been first duly sworn, were examined and testified as follows:

CO-HEARING OFFICER DODUC: Thank you. You may be seated.

And you may begin, Mr. Salmon.

MR. SALMON: Thank you.

OPENING STATEMENT

MR. SALMON: My name is Jonathan Salmon. I am attorney for East Bay MUD. To my right is Aaron Ferguson, attorney for Sacramento County Water Agency.

We're here this afternoon to present a joint panel on the issue of WaterFix Project impacts to the -- these two parties' joint Freeport Regional Water Project Diversion facility.

The witnesses will show how East Bay MUD and Sacramento County Water Agency's water supply and their water operations will be injured if the WaterFix Project is approved in the form currently proposed.

East Bay MUD intends to call the first witness on this panel, Ms. Eileen White.

Ms. White is East Bay MUD's Operation and Maintenance Department Manager and she is the Chief Operator of East Bay MUD's water system. She will summarize East Bay MUD's water supply and water transmission water facilities.

She will describe how East Bay MUD operates the Freeport Project and how water diverted at Freeport fits in to East Bay MUD's overall water supply.

Ms. White will explain why significant reverse

flow events require shutdowns at the Freeport Project intake in order to prevent treated wastewater from entering into the drinking supply. She will describe the operational impacts to East Bay MUD should the WaterFix Project cause additional significant reverse flow events.

Ms. White will also testify to the operational and water supply consequences should the WaterFix Project disrupt the Mokelumne Aqueducts. Further testimony will be provided on that issue in a subsequent panel.

Ms. White will conclude by finding that the impacts of the WaterFix Project include jeopardizing the quality and quantity of East Bay MUD's water supplies and putting health and safety of East Bay MUD's customers and the environment at risk.

Then Mr. Ferguson will call Forrest Williams, Mr. Forrest Williams, for Sacramento County Water Agency. And similarly to Ms. White, he will testify to the operational impacts for -- for Sacramento County Water Agency in the event the WaterFix Project is approved as proposed.

Finally, East Bay MUD will present the testimony of Dr. Benjamin Bray. Dr. Bray will present the results of his review and analysis of the CalSim II and DSM-2 modeling performed by Petitioners to support their case for this hearing.

Dr. Bray will explain why his modeling analysis shows that the WaterFix Project will increase the likelihood of additional significant reverse flow events at times at the Freeport Project diversion and that these events are severe enough to -- to require the intake to shut down.

He will explain that the WaterFix Project increases operational flexibility for Petitioners' existing Water Projects and that the new flexibility will enable Petitioners to shift the timing of the north-to-south movement of water throughout the year more than is currently possible.

Dr. Bray will explain how Petitioners' own modeling demonstrates that the shifted timing of water exports will periodically result in incrementally lower flows in the Sacramento River past Freeport.

Dr. Bray will explain that the periods of lower flows will increase the influence of reverse flows at Freeport, which in turn will result in more shutdowns of the Freeport Project intake at those times.

Dr. Bray concludes that the WaterFix Project as currently proposed is insufficiently protective of the Freeport Project.

With that, East Bay MUD would like to call its first witness, Miss Eileen White.

DIRECT EXAMINATION BY

MR. SALMON: Ms. White, please state your name for the record.

WITNESS WHITE: Eileen White.

MR. SALMON: And did you take the oath today?

WITNESS WHITE: Yes, I did.

MR. SALMON: I'd like to ask you to authenticate a series of exhibits that East Bay MUD has lodged for this hearing.

First, Exhibit -- Is Exhibit East Bay MUD-126 an accurate statement of your qualifications?

WITNESS WHITE: Yes, it is.

MR. SALMON: Is Exhibit East Bay MUD-100 a true and correct summary of your testimony for this hearing?

WITNESS WHITE: Yes, it is.

MR. SALMON: Is East Bay MUD-151 a true and correct copy of your written testimony submitted for this hearing?

WITNESS WHITE: Yes.

MR. SALMON: Is East Bay MUD-179 a true and correct copy of the currently operative contract for Central Valley Project water between East Bay MUD and the United States Bureau of Reclamation?

WITNESS WHITE: Yes.

MR. SALMON: Finally, is East Bay MUD-180 a

true and correct copy of the currently operative Coordinated Operations Agreement between East Bay MUD and the Sacramento County Regional Sanitation District?

WITNESS WHITE: Yes.

MR. SALMON: Thank you.

Please display the PowerPoint version of exhibit East Bay MUD 100.

(Document displayed on screen.)

MR. SALMON: Thank you.

Ms. White, please summarize your testimony.

WITNESS WHITE: Sure.

Well, as the Chief Operator for East Bay MUD's extensive water transmission and distribution system, I'm responsible for balancing various competing operating goals and objectives, including delivering high-quality water to East Bay MUD's 1.4 million customers, meeting obligations to downstream water users, managing releases and temperatures for fisheries, managing operations for downstream flood control requirements as required by the Corps of Engineers, maintaining sufficient curio for storage for droughts, outages and emergencies, and planning and adaptively managing to provide hydropower benefits consistent with all other Project objectives and obligations.

East Bay MUD's facilities on the part of

Mokelumne River include two reservoirs, Pardee and Camanche Reservoirs.

East Bay MUD's Mokelumne Aqueducts deliver the water from the Sierra foothills to the East Bay.

East Bay MUD operates the Mokelumne River facilities in a coordinated and integrated manner as a single unified Mokelumne River Project.

East Bay MUD has been planning and investing millions of dollars for decades to be able to manage during droughts.

During times of drought, East Bay MUD relies on conservation, recycling and supplemental supply from the Sacramento to meet all its needs.

East Bay MUD operates Pardee and Camanche Reservoirs in tandem to meet all its multiple objectives, including making sure the water we provide to all 1.4 million customers meets all State and Federal regulation.

We also make sure we operate Pardee and Camanche together for stream flow regulation, flood control, fishery requirements, and to meet all of the obligations to downstream users on the river.

East Bay MUD's Mokelumne River Watershed is comprised of 577 square miles of protected watershed. The snowmelt and runoff from this watershed provides over

90 percent of the water to East Bay MUD's 1.4 million customers.

Our water rights and Permits with the State Water Resources Control Boards supplies allows us to take up to 325 million gallons of water daily from the Mokelumne Watershed.

The water travels from Pardee Reservoir through one of the three Mokelumne Aqueducts down to the East Bay. These aqueducts are our critical lifelines for bringing over 90 percent of our water to our customers in the East Bay.

Despite East Bay MUD's significant investments in water conservation and recycling programs, East Bay MUD's Mokelumne supply is not sufficient to provide reliable water supply during dry periods without resulting in substantial hardship on its customers, and we saw that in this most recent drought.

To address this shortfall, East Bay MUD executed a Water Service Contract with the U.S. Bureau of Reclamation in 1970 for up to 150,000 acre-feet of water per year of CVP water from the American River delivered via the Folsom South Canal.

However, a lawsuit filed in 1972 challenging East Bay MUD's right to receive American River water through the Bureau's Folsom South Canal delayed

construction of the necessary facilities for nearly two decades.

The litigation was resolved in 1990 when the Court affirmed East Bay MUD's right to receive American River water from the Folsom South Canal while limiting diversions to strictly dry years to protect fishery resources.

East Bay MUD, the Bureau of Reclamation and Sacramento County Water Agency ultimately agreed to divert water from the Sacramento River near Freeport.

On February 14th, Valentine's Day, 2002, East Bay MUD and Sac County Water Agency formed the Freeport Regional Water Authority.

In 2006, East Bay MUD executed its current long-term renewal contract with the Bureau of Reclamation for its CVP water. It allows East Bay MUD to take its CVP supply only in dry years.

We have an annual maximum delivery of 153,000 acre-feet in any given single dry year, and we can take no more than 165,000 acre-feet in three consecutive dry years.

The Freeport Project, with its intake located on the Sacramento River, is used by Sac County Water Agency and East Bay MUD to divert surface water from the Sacramento River through the Freeport Project intake and

associated facilities.

The Freeport Project facilities were completed in November of 2011, just before the State of California entered into its dryest four-year period in the history of the state.

This was a first new source of water for East Bay MUD since the completion of Camanche and Briones Reservoir in 1964.

The total Project cost to plan, design and construct the Freeport Regional Water Project facilities was $922 million. East Bay MUD rate payers funded $483 million of the cost.

The Freeport Project is a critical element in East Bay MUD's water supply. During normal years, about 90 percent of our water originates on the Mokelumne Watershed, but the average local supply in dry years is generally zero.

As we saw in 2014 and 2015, the Freeport facilities are critical to East Bay MUD in managing its operations during droughts. East Bay MUD expects to use Freeport facilities three out of every 10 years.

The Freeport Project facilities diverts Sacramento River water and convey it to East Bay MUD and Sac County Water Agency service areas through joint facilities owned by FRWA and East Bay MUD.

And then East Bay MUD independently owns and operates facilities downstream of the Freeport intake that routes the water to the Mokelumne Aqueducts.

The jointly-owned and -operated intake and pumping station located at the Freeport intake can divert up to 185 million gallons per day.

From there, it travels through a 13-mile 84-inch diameter joint pipeline that extends from the intake to the bifurcation area.

At the bifurcation area, the water can be routed north to Sac County Water Agency's Vineyard Water Treatment Plant or it can be continued diverted to East Bay MUD's facilities downstream.

East Bay MUD can route up to 100 million gallons per day from the joint pipeline through the Gerber Pipeline, which is a 4-mile pipeline. From there, it flows into the Folsom South Canal, which is owned and operated by the Bureau of Reclamation.

At the end of the canal, there's the Clay Station Raw Water Pumping Plant that East Bay MUD constructed in November of 19 -- of 2011, which pumps the water out of the canal.

Then it travels another 19 miles through another pipeline before it's pumped up and gets to the correct elevation before it flows into the Brandt Folsom facility

where it joins the Mokelumne Aqueducts.

In this next slide, I'd like to take you on a journey of the water as it flows from the Sacramento River to the East Bay.

The blue star on the map is the Freeport intake. From there, the water travels, and where this little star is on the graph (indicating) is where it's -- the bifurcation is.

But here it's now made its journey, and next it's going to go into the Folsom South Canal, travel another 14 miles. Then it's pumped out of the canal, travels another 19 miles, pumped up so it's at the correct elevation and pressure, so that it can flow by gravity down into the East Bay.

It will flow -- The star in the north is our San Pablo Reservoir, and the one in the lower left-hand corner is the upper San Leandro Reservoir. It has to be pumped to the northern San Leandro Reservoir.

As you can see, this is a very complex operation. It requires multiple pumps pumping in series from the pump at the Freeport intake, the Clay Station Pumping Plant that pumps it out of the Folsom South Canal, the Camanche Pumping Plant that pumps it up to the Mokelumne Aqueducts. And then, if it's flowing down into upper San Leandro Reservoir, it's got to be pumped

through the Moraga pumps.

We had an opportunity to use these facilities in 2014 and 2015. And I'd like to describe a little bit about how we used these and how they were critical to our operations during these years.

In 2014, East Bay MUD diverted 22,000 acre-feet from the Sacramento River to the East Bay. It was critical to our operations to manage through the dry 2014 year. Although our customers were doing an outstanding job conserving water, it would not have been enough without this supplemental supply.

As the drought worsened in 2015, and our projected end-of-September storage dropped to even critical levels, we took 58,000 acre-feet of water from the Sacramento River to the East Bay. It provided one-third of our water to our customers in the East Bay.

We not only pumped 90 MGD from the Sacramento River to the East Bay, from April 15th through December 21st, we pumped it and we took it into both San Pablo and Upper San Leandro Reservoir. We also brought it into Briones Reservoir. We brought it directly into inline treatment plants. It was critical for us to do this, to be able to meet all our obligations for fishery on the Mokelumne river, to be able to keep water in storage in Pardee and Camanche so we can manage

the cold-water pool for fisheries.

This allowed us to deliver the Sacramento River water to our customers in the East Bay and still meet all our obligations on the river.

I want to note that, in 2015, we completed our deliveries that we began on April 15th on December 21st. We only had 10 days left to complete the delivery of water.

So had things happened during our operations that impacted and caused us to shut down, we may not have been able to deliver all the water to the East Bay.

Now that I've described East Bay MUD's complex water system, next, I will describe the potential operational impacts should operation of the WaterFix Project's proposed new Points of Diversion cause low or reverse flows on the Sacramento River near the Freeport Project intake, or should the construction or operation of the twin tunnels damage any of East Bay MUD's facilities.

So, first, I want to talk about some of the operational issues.

If reverse flows occur, there are impacts to East Bay MUD's water operations. Operational changes may involve full or partial shutdown, each of which requires an extensive coordinated effort to complete and then to

resume services while maintaining compliance with East Bay MUD's various agreements with third parties and its permit obligations.

In the event of a full shutdown due to the integrated nature of the system and the need to coordinate with other entities, water cannot resume flow through the entire system to Upper San Leandro Reservoir for at least 48 hours due to PG&E requirements to restart the Moraga Water Pumping Plant.

Also, when we have to do shutdowns, it causes us to shut down our chemical feeds and then they have to be restarted, and you risk problems when you do that.

We also have to coordinate with other agencies. East Bay MUD operates the Freeport intake with Sac County Water Agency, so if we're going to shut down, we need to coordinate our start-up with Sac County.

We also must coordinate with the Bureau of Reclamation. As you saw in the slide where the water flows to the East Bay, it travels 14 miles through the Folsom South Canal, which is owned and operated by the Bureau of Reclamation.

The Folsom South Canal must be operated with a daily maximum deviation of one foot per day, so we must coordinate any shutdown with the Bureau of Reclamation.

And, as I mentioned, it's time to resume full

service. It's not like a light switch that you turn off and you turn back on. It's much more complicated than that.

So, in short, we're very concerned about the impact of our ability to deliver water to the East Bay should the California WaterFix Project impact our operations.

The Freeport Project intake location at mile 47.1 on the Sacramento River was chosen for its deep water, available land, and desirable location downstream from the confluence with American River and upstream of Regional San's discharge facility.

In the event of tidally-influenced low or reverse river flow, the Freeport Project intake can be impacted by downstream wastewater treatment plant discharges at Sacramento River mile 46.

To prevent diversion and these discharges and avoid water quality impacts, FRWA entered into a Coordinated Operations Agreement with Sac County Regional Sanitation District.

The Freeport Project will automatically shut off when treated effluent from Regional San's discharge facility travels .9 miles upstream.

To protect against potential discharges, operating requirements are incorporated into the Freeport

Regional Water Association control strategies. They are also incorporated into East Bay MUD's water supply permit with the State Water Resources Control Board Division of Drinking Water to protect public health.

In compliance with East Bay MUD and Sac County's domestic water supply permit and the Coordinated Operation Agreements with Regional San, the Freeport Project facilities will not divert Sacramento River water when treated effluent from the Sacramento Regional Wastewater Treatment Plant may be present in the river at a dilution rate exceeding .1 percent.

The Freeport Project control system calculates the particulate position in the river based on the velocity and will automatically shut down the pumps.

The Freeport Project intake can only resume pumping after the particle has returned .7 miles upstream of the flow sensor located between the Freeport Project intake and the Wastewater Treatment Plant.

As you can see, reverse flows on the Sacramento River create particular challenges to the operations of the Freeport Project. A complete shutdown of all of East Bay MUD's pumps from the Freeport Project intake results in a negative cascading impacts on the Freeport Project's connection with the Folsom South Canal, the Mokelumne Aqueducts, public plants that pump to Upper San Leandro

Reservoir, Briones Reservoir and the Moraga pumping plant.

Because the Freeport Project and Mokelumne Aqueducts are part of an integrated system, a shutdown of the entire system requires restarting the various pumps and chemical feeds along the line in a series.

The necessary volume of water must travel through the system to each of the pumping stations before those pumps can be activated.

An increase in reverse flows could impact East Bay MUD's ability to deliver water from the Sacramento River to the East Bay.

In 2015, we completed the delivery of 58,000 acre-feet of water to the East Bay on December 21st. If we had had a significant increase in the number of reverse flows, we would not have been able to complete the delivery of the water to the East Bay by the December 31st deadline.

The Freeport Project facilities we have come up with to avoid complete shutdowns, we have developed an operating procedure when we have short-duration shutdowns.

Now, this only works when we have brief reverse flow events. We can still shut down the intake as required by a Permit from the State Division of Drinking

Water, and we can continue to operate by reducing the flows on the pumps downstream, but this only works for short-duration shutdowns.

The Freeport Project facilities are not yet used to their full capacity. Currently, East Bay MUD can make up for the loss of water from reverse flow events. For example, in 2014, when we took 22,000 acre-feet from the Sacramento River to the East Bay, we took that delivery from April through July.

When we had reverse flow events, we'd shut down and we'd have to restart. And it was okay because we completed our delivery in July, so we had more time to take the water.

But in 2015, when we were operating from April through December 21st, we saw that we had less of a window to make up for that lost time.

East Bay MUD and Sac County anticipate using the Freeport Project facilities more over time.

Reduction in downtime will limit our ability to recover water loss due to reverse flow events on the Sacramento River.

Should the WaterFix Project cause an increase in the frequency or duration of reverse flow events, East Bay MUD's ability to deliver high-quality water to its customers and meet all its operational objectives would

be substantially compromised.

Physical damage to East Bay MUD's Mokelumne Aqueducts caused by the construction and/or operation of the WaterFix could be catastrophic to our operations.

Since the proposed twin tunnels intersect with the Mokelumne Aqueducts in the Delta region downstream from the point where the Freeport Project joins the Mokelumne Aqueducts, any potential damage to the Mokelumne Aqueducts caused by the WaterFix Project would cut off East Bay MUD's water supply from both the Mokelumne and Sacramento Rivers.

East Bay MUD normally retains six months of local supply in our terminal local reservoirs. But once those run out, and if the aqueducts are damaged, we have no way to deliver water from the Mokelumne Watershed or the Sacramento River to our 1.4 million customers in the East Bay.

East Bay MUD's operations are complex under normal operations. Operations of East Bay MUD's integrated network of reservoirs, aqueducts, water treatment plants, distribution facilities, which carries water from the Mokelumne and the Sacramento River to the East Bay, is complex under normal operation conditions and gets even more complicated in times of drought.

In summary, should the construction or

operation of the proposed WaterFix Project impact East Bay MUD's facilities or operation of East Bay MUD's water system, East Bay MUD would be forced to make immediate operational changes to protect and preserve the water supply.

And these incidents could potentially impact East Bay MUD's ability to deliver high-quality water to its 1.4 million customers. It could impact the economy of the East Bay. It could have impacts on the environment.

Thank you.

MR. SALMON: Thank you, Ms. White.

DIRECT EXAMINATION BY

MR. FERGUSON: Good afternoon, Mr. Williams.

Can you please state your name for the record.

WITNESS WILLIAMS: Forrest Williams.

MR. FERGUSON: Is Exhibit SCWA-3 your written testimony?

WITNESS WHITE: Yes, it is.

MR. FERGUSON: Did you prepare and finalize that testimony?

WITNESS WHITE: Yes, I did.

MR. FERGUSON: Is the purpose of your testimony today to provide evidence of the impacts to the agency from reverse flow events causing a shutdown of the

Freeport Regional Water Project?

WITNESS WILLIAMS: Yes.

MR. FERGUSON: And did you assemble and rely on Exhibits SCWA-12, -14, -15, -16, -17, -20, -27, -28, -33, -35, -36, -37 and -39 in preparing your testimony?

WITNESS WILLIAMS: Yes, I did.

MR. FERGUSON: Are you familiar with the conclusions reached by Dr. Ben Bray in Exhibit EBMUD-152?

WITNESS WILLIAMS: Yes, as relates to the increased reverse flow events.

MR. FERGUSON: And is EBMUD-152 the type of information you review and rely on as the Program Manager for the Freeport Regional Water Authority to assess potential risks and impacts to the Agency's water supplies and operations?

WITNESS WILLIAMS: Yes, it is.

MR. FERGUSON: All right. Can you please summarize your testimony.

WITNESS WILLIAMS: Yes.

Could we go to SCWA-49 on the screen.

(Document displayed on screen.)

WITNESS WILLIAMS: Good morning, Madam Chair and members of the State Water Resources Control Board.

Again, my name is Forrest Williams and I currently serve as a Senior Civil Engineer for the

Sacramento County Department of Water Resources. I'm a registered Civil Engineer. I've worked in the Department over 20 years.

My experience is focused on water supply planning, surface water acquisition, permitting, water supply infrastructure, maintenance issues for Sacramento County Water Agency and, as counsel mentioned, I'm also the General Manager or Program Manager of the Freeport Regional Water Authority.

I also serve as an Alternate Board Member for the Sacramento Central Groundwater Authority, a joint powers agreement formed for the purpose of managing groundwater in the South American Subbasin.

I'd also like to, in order to not repeat some of the common testimony for the development of Freeport, the joint facilities, I will concur with Eileen White's testimony on development of those and I want to concentrate on those elements as it relates to Sacramento County's use of the Freeport facility.

There may be some overlap but, in general, for most part, I will not -- I will try to avoid it as much as possible.

So, to set up the general location of -- again, of the intake in relationship to the proposed intake sites, I do not know the exact mileage but this is just

an approximate location. And as Eileen White mentioned before, we are upstream of the Sacramento Regional Sanitation District outfall.

Could we put up SCWA-40, the next slide, please.

(Document displayed on screen.)

WITNESS WILLIAMS: And to give you an idea of where our facilities are located, we have the Vineyard Surface Water Treatment Plant which is located approximately 14 miles from the Freeport Regional Water Authority intake.

And as the previous panel Michael Peterson discussed, the surface water supplies are a -- are part of our Conjunctive Use Program where we use surface water and groundwater to supply water to our customers.

So, the facilities we have is from that bifurcation point before it goes to the Folsom South Canal. We have a 66-inch pipeline that extends to our Treatment Plan, which is a conventional Treatment Plant, that includes all the conventional treatment: Flash mixing/coagulation, sedimentation, filtration, water recovery, et cetera.

And at that treatment plant --

Next slide, please.

(Document displayed on screen.)

WITNESS WILLIAMS: -- here, the surface water

supply's available for diversion at Freeport. We have remediated groundwater, we have appropriative surface water, and we have our CVP contracts.

And what I've duplicated here is a kind of wet average year and also showing you kind of a dryest year. And the one thing I want to point out is that the remediated groundwater, which is the Settlement Agreement with Aerojet, that remediated water is discharged into the American River and immediately diverted off the Sacramento River. It is -- It's not subject to any type of curtailment as our CVP appropriative contract would be for Term 91. So it is a continual source of water that we rely on in dry periods. And that is a critical element.

Right now, that is about 8900 acre-feet, which is about 8 million gallons per day. There's a 10 percent carriage losses and we're only subject to shutdown in the event that the Aerojet is not discharging to the river.

So, again, I just want to highlight that it's not subject to any type of curtailment or -- or . . . lack of availability.

So, again, the intake is located at mile 47. Sac Regional is located at about 46. And we have the Coordinated Operations Agreement between East Bay MUD and Sac Regional and SCWA to operate in a manner so that we

do not draw treated effluent into our intake.

And that's why reverse flow impacts are critical to the operation of our facilities and our abilities to access water. So, when that happens, we lose the ability to divert water and, in outer years, that can be very critical.

If reverse flow events were to increase to the point that reverse flow events were going to -- to impact our ability to take water, as Eileen White also mentioned, shutting down these facilities that are supposed to operate in a -- a steady state is not optimal.

We incur additional staff costs and labor costs after being -- if we have to shut down during a reverse flow event: Going through, checking alarms, turning valves off, making sure that everything is shutting down. We also have the same additional labor costs when we start that facility back up.

So, one of the impacts associated with that is additional cost of labor in addition to operational difficulties.

The second aspect, especially related to Aerojet water, is, because we have historically taken it at a -- at an average daily rate, increased durations of reverse flow events could lead to the ability of not -- us not

being able to divert that water, and we may lose it, meaning that if it's put in the river, a reverse flow, if that happens at a significant time and event, and because we take it at an average daily rate, we will not be able to make it up that day, so we will have lost water.

And in a critical dry year, for a source that doesn't have any type of production or -- or his -- you know, storing water or -- then we'll lose that water and that will affect our ability to deliver water to our customers.

We also have other operational -- other operational concerns about the potential for increased impacts to our CVP water supply. Depending on the amount and duration of CVP water supply and what we're cut back with in dry years, depending on the severity and duration of those cutbacks, we also will not be able to make up that lost water, so much what East Bay MUD has. And if we can't make up that lost water through surface water supplies, then we may have to go to using more groundwater supplies.

Our Conjunctive Use Program is based on the long-term 70-30 or 30-70 between groundwater, surface waters, Michael Peterson also testified.

But in the long term, if those -- we continually had to halt taking those supplies due to reverse flows

and weren't able to do that, we couldn't make up those supplies and, therefore, we would lose that water.

So, the impacts of additional reverse flow events affects our ability to possibly get our remediated groundwater, could affect the use of our CV -- CVP supply and affect our balance between groundwater and surface water depending on the severity and duration of those reverse flow events in the future.

So, again, in summary, it's restricting our access to mitigation water, restricting the use of our surface water supplies, and causing us an additional operational difficulties and continually shut down if the reversed increase -- if increased reverse flow events were to occur as part of the WaterFix Project.

Thank you.

MR. FERGUSON: Thank you, Mr. Williams.

MR. SALMON: Our final witness on this panel to testify regarding his modeling analysis is Dr. Benjamin Bray.

Dr. Bray, please state your name for the record.

WITNESS BRAY: Dr. Benjamin Bray.

MR. SALMON: Did you take the oath today?

WITNESS BRAY: Yes, I did.

MR. SALMON: I'd like to authenticate a series

of documents at this time.

Is Exhibit East -- EBMUD-127 an accurate statement of your qualifications?

WITNESS BRAY: Yes, it is.

MR. FERGUSON: Is Exhibit EBMUD-101 a true and correct copy of the summary of your testimony for this hearing?

WITNESS BRAY: Yes, it is.

MR. FERGUSON: Is Exhibit EBMUD-152 a true and correct copy of your written testimony for this hearing?

WITNESS BRAY: Yes.

MR. FERGUSON: Is Exhibit EBMUD-176 a correct copy of East Bay MUD's October 28, 2015, comment letter on the partially recircular -- Recirculated Draft EIR and Supplemental Draft EIS for Petitioners' Project?

WITNESS BRAY: Yes.

MR. SALMON: Thank you.

Mr. Baker, please display the PowerPoint version of Exhibit East Bay MUD-101.

And Mr. Bray, please summarize your testimony.

WITNESS BRAY: Good afternoon, co-Chair Doduc, Members of the Board, and State Board staff.

My name is Benjamin Bray. I'm a Senior Civil Engineer with the East Bay Municipal Utility District, or East Bay MUD. I lead the water supply system's modeling

section at East Bay MUD.

First, I'd like to say it's an honor to present testimony today on this important matter.

The focus of my written testimony, EBMUD-Exhibit 152, and my summary today, EBMUD-101, is regarding WaterFix effects on reverse flow events impacting the operation of East Bay MUD and Sacramento County Water Agency's Freeport Project intake.

My message to you today is that the enhanced operational flexibility afforded by the California WaterFix could at times lead to changes in the north-to-south diversion patterns.

Those changes in export patterns from North-of-Delta to South-of-Delta also result in incrementally or comparatively lower flows on the Sacramento River.

Those lower flows during drought periods result in a -- increased reverse flow events that occur -- that impact the operation of the Freeport intake.

This is my message as I intend to show today through my analysis of the Petitioners' modeling.

(Document displayed on screen.)

WITNESS BRAY: I'd like to begin briefly with a description of the reverse flow phenomenon that occurs at the Freeport intake as measured at the Freeport Gage on

the Sacramento River.

I also want to briefly introduce the operational criteria that govern the shutdown of the facility during reverse flow events.

And then I will shift, and the bulk of my presentation will be focused on my analysis of the Petitioners' modeling of the California WaterFix and how it could impact the facility.

(Document displayed on screen.)

WITNESS BRAY: So, again, beginning with a little background on reverse flows that we see at or near the -- at -- near the Freeport intake and to also elucidate exactly what is a, quote, "significant," end quote, reverse flow event.

I believe Forrest did show -- Excuse me.

(Document displayed on screen.)

WITNESS BRAY: Mr. Williams has shown a great map, so I'll skip over this in the interest of efficiency.

(Document displayed on screen.)

WITNESS BRAY: DWR's John Leahigh provided testimony describing the tidal cycle and the tidal influence with respect to the Sacramento-San Joaquin Delta and, for efficiency sake, I won't repeat that in my testimony here.

(Document displayed on screen.)

WITNESS BRAY: What I'd like to do with this slide is introduce an important Gaging Station for the Delta.

So, downstream of our Freeport intake at the Freeport Bridge across the Sacramento River is the Freeport Gaging Station's -- Gaging Station with available datasets due to the Department of Water Resources California Data Exchange Center or CDEC. And those datasets include discharge, stage and velocity.

Shown on this slide is a figure of hourly discharge measurements at the Freeport Gage. And, again, this is not model data. This is hourly gage measurements.

And what this figure illustrates is the tidal influence at the Freeport Gaging Station during a low-flow period on the Sacramento River back in April 2015. Note the station discharge or flow varies from a minimum around a negative 5,000 cfs to a maximum close to or around 13,000 cfs, a -- a total variation of 18,000 cfs where we see the two tidal cycles occurring each day.

So each peak of the graph rep -- represents a change in flow where, when that change crosses that zero line, that's when we're seeing reverse flow events and

that water is flowing in an upstream direction towards the City of Sacramento.

(Document displayed on screen.)

WITNESS BRAY: And, briefly, what I overlaid here on the same chart is the equivalent daily average, seven-day moving average, and monthly average for the same period in April of 2015.

What we can clearly see is the significant variation in discharge is lost by averaging even over the day. I know that's a theme that keeps coming up in this hearing. This is a reason that subdaily time-step measurements and modeling such as with DSM-2 is absolutely critical to assess directly reverse flow events on the Freeport intake and the effects.

Monthly average results from CalSim II or even daily average results simply are inadequate to perform the assessment, and this should become clear as I go through my analysis.

(Document displayed on screen.)

WITNESS BRAY: This slide is showing a schematic animation of the operating criteria as it applies to the operation of the Freeport intake. And we're going to begin with a wastewater particle at the Sac Regional Wastewater Treatment Plant outfall. The flow is reversing and that wastewater particle's

traveling in an upstream direction.

When it Reaches a point 0.9 miles upstream from the outfall, the Freeport intake is required to shut down.

The flow is continuing to reverse and that wastewater particle's now flowing past the intake before again reversing direction, and now flow is going in a positive direction downstream.

When that wastewater particle reaches a point at 0.7 miles upstream of the outfall, the intake is allowed to turn back on and continue operating.

(Document displayed on screen.)

WITNESS BRAY: Of particular interest is the relationship to Low Sacramento River flows and the strength of reverse flow events at Freeport.

This is a plot I developed to show this relationship as I will now explain.

Using the Freeport Gage dataset over the period of 1987 through 2015, I performed an analysis of the flow and velocity datasets to develop this chart.

Furthermore, I want to make it clear that this is a retrospective analysis of the gage data and acknowledge that Freeport was not in place and operating during this full period.

On this chart, I plotted Sacramento River

monthly average flow on the vertical scale. And on the -- excuse me -- horizontal scale. Sorry about that.

And on the vertical scale actually is the corresponding number of significant reverse flow events that occur with that monthly average flow.

So when Sacramento River flow gets down below about 10,000 to 8,000 cfs, that's when the tidal strength becomes strong enough to really cause an uptick in the number or the frequency of reverse flow events occurring in a given month.

I also want to briefly mention and acknowledge that the strength of the tide -- you know, the end-of-tidal cycle -- as well as downstream operations, such as with the Delta Cross Channel Gate, can affect hydrodynamics on the Sacramento River and also play into this relationship.

Nonetheless, this chart is important context to understand at about what low flows, monthly average flows, on the Sacramento River in which reverse flow events become strong enough that they begin to impact the Freeport facility.

And, again, that's somewhere below about 10,000 to 8,000 cfs.

(Document displayed on screen.)

WITNESS BRAY: And now I will shift to my

analysis of the modeling results performed to analyze the effect of the California WaterFix Project on the operation of the Freeport intake.

(Document displayed on screen.)

WITNESS BRAY: I begin with this narrative, again, just to set the stage before going into the technical details to, again, explain the mechanism for injury to the operation of the Freeport intake.

According to the Petitioners, the purpose of the California WaterFix is the enhanced operational flexibility afforded by the alternate Points of Diversion in the North Delta. Again, this allows changes in the north-to-south diversion patterns or exports with this facility, and those changes at times correspond to reductions at some times in Sacramento River flows.

The incrementally lower flows that result -- will result in increases in the number of significant reverse flow events that trigger the Freeport intake shutdowns.

This is precisely what I found through my analysis of the Petitioners' modeling as I will intend to demonstrate over the next couple slides.

In the interest of time, I'm going to skip the next two slides, and I will come back to them if I have time in my presentation so that I can focus on the

modeling that was submitted by the Petitioners for this hearing.

CO-HEARING OFFICER DODUC: Mr. Bray.

WITNESS BRAY: Yes, ma'am.

CO-HEARING OFFICER DODUC: Instead of doing that, why don't we just go ahead and go through the slides in the order that you have them. We'll make sure you have the time to do so.

WITNESS BRAY BRAY: Fantastic. Thank you very much, Co-Chair Doduc.

So, the California WaterFix has been ongoing for many, many years. And I briefly want to summarize the analysis that we included in East Bay MUD's comment letter on the Draft BDCP EIR/EIS as I believe this is still relevant to the issue of injury and potential remedies before the Board.

In the past . . . project, when it was known as the BDCP under a Habitat Conservation Plan, I found that the twin tunnels, along with the environmental restoration and conservation measures, and specifically the conservation measure associated with tidal marsh restoration, significantly reduced significant reverse flow events.

However, we found that when this element of the Project was taken out or deactivated, we found a

slight -- or an increase in reverse flow events.

So this slide presents two tables we've excerpted directly from our comment letter on the Draft BDCP EIR/EIS and also included in our comment letter on the Recirculated Draft EIR/Supplemental EIS for the WaterFix. This is Exhibit EBMUD-176 and, you know, it's a busy slide.

What I'd like to draw your attention to is, under the No-Action in the early long-term, there are 70 reverse flow events that occurred. In the Petitioners' modeling -- and this is the first set of five sets of modeling released by the Petitioners for this Project -- we saw a significant reduction, down to 14 events.

And in the scenario name there, you'll note it says ROA25 -- that is indicating restoration opportunity area -- equal to 25,000 acres of tidal marsh restoration.

In the long -- late long-term scenario, we see 178 significant reverse flow events that occur under the No-Action Alternative, and that is decreased to 21 where in this case we see the 65 indicating 65,000 acres of tidal marsh restoration.

Keeping in mind that Petitioners' modeling included climate change and sea-level rise effects, East Bay MUD joined with several other parties to have consultants Dan Steiner and MBK's take out, or turn off

if you will, the climate change and sea-level rise effects to give us a clear understanding of the Project and how it could potentially affect our facility.

But, more importantly for our discussion here, and why it's relevant, is that they isolated the engineering component -- that is, the twin tunnels with the bypass flow criteria -- that has been carried forward as the California WaterFix.

And what we found in their modeling -- And -- And, by the way, we had, in the 83-year simulation, 1921 to 2003, and just for comparative purposes, we also include a subset of the 16-year period that Petitioners modeled with DSM-2.

(Document displayed on screen.)

WITNESS BRAY: So what we found, again, was consistent with the Petitioners' modeling when the tidal marsh restoration was included. We saw significant decrease from 203 to 55 reverse flow events over the 83-year period.

However, when we deactivated that tidal marsh restoration component, we saw an increase from 203 to 237 significant reverse flow events.

So, again, just real briefly, North Delta Diversion with tidal marsh, fewer shutdown events at Freeport. When we deactivated or took away that

component of the modeling, we found there were more shutdown events.

And, so, when the Project Description was modified, removing all other conservation measures but retaining Conservation Measure 1, which was the twin tunnel and the associated bypass flow criteria, we were rightfully concerned about the issue of potential injury due to the Project.

(Document displayed on screen.)

WITNESS BRAY: So now I'm going to shift to the fifth set of modeling that the Petitioners have made available, and that is the modeling for this hearing.

Petitioners provided modeling results for two models, CalSim II and DSM-2. Here I described how I used the results from these models to analyze the potential for impacting the Freeport Project.

First, DSM-2 includes velocity output on a 15-minute time-step. That's subdaily, as I mentioned earlier. What that allows is a direct assessment of the number of shutdown events that occur under the various scenarios. However, Petitioners only simulated a shorter 16-year period of hydrology, which is a key limitation of this analysis.

However, CalSim II provides monthly average flows and diversions for various parts of the system for

a longer 82-year period of hydrology. So I used the CalSim II model output also to look at flows in the Sacramento River immediately downstream of the Freeport intake. And this allowed me to indirectly assess the potential risk of increased significant reverse flow events for that longer period.

And this was achieved by analyzing how the Project changes low-flow conditions during drought periods in comparison to the No-Action Alternative.

To carry this out, I applied three screening criteria that I'll briefly go over. I term them the monthly flow criteria. And for the record here, these criteria are documented at the top of Page 8 of Exhibit EBMUD-152.

The criteria is a set of three logical tests that must be met and are intended to flag cases when the Proposed Project reduces Sacramento River flows, potentially increasing reverse flow events.

(Document displayed on screen.)

WITNESS BRAY: So the first test is, does the Project scenario -- and again we had four we're looking at: H3, H4, Boundary 1, Boundary 2. So for each Project scenario, is it lower in monthly average flow compared to the No-Action Alternative?

Secondarily: Is that resultant Project flow

less than a low-flow threshold of 8,000 cfs?

And, finally, the incremental change of the Project, decrease in flow relative to the No-Action, is greater than a nominal tolerance to make sure we don't flag cases that we don't think would lead to an increase in reverse flow events.

So applying that monthly flow criteria to the CalSim results, I found that Project operations with WaterFix will further reduce flows during droughts when flows are already low.

(Document displayed on screen.)

WITNESS BRAY: Here in this table, I show the number of months at various time periods over the 82-year period of hydrology simulated with CalSim II in which these three criteria I just described were met. Again, incrementally lower flow, the Project flow is below a low-flow threshold of 8,000 cfs and the relative change exceeds a nominal tolerance.

This table, basically cutting to the chase there, on the -- on the final line, what you see is, over the full 82-year period in the H3 scenario, there are 34 months at risk of increased reverse flows. We see 22 months in the H4 and Boundary 1 scenarios and 20 months in the Boundary 2 scenarios.

Briefly, one thing I'd like to also point out,

briefly again, is the H3 and H4 Project scenarios did not necessarily fall between the Boundary 1 and Boundary 2 scenarios. I think that's important to note.

And, finally, we can also see that the -- as I've shown here, how the numbers break down over the three major droughts over the 82-year period of hydrology and, clearly, most of these occur during the droughts.

(Document displayed on screen.)

WITNESS BRAY: Next I'm going to focus on the DSM-2 modeling provided by Petitioners.

DSM-2 shows overall that most shutdown events occur with the No-Action Alternative with reductions in each Project scenario.

This table shows the total number of shutdown events for each drought period over that 16-year period simulated by Petitioners, where I also want to highlight the fact that the final year of the six-year drought, 1987 and 1992, was not included in that 16-year period.

However, these results were obtained from the raw DSM-2 model output; that is, before the output was corrected for known bias.

(Document displayed on screen.)

WITNESS BRAY: In this upper region of DSM-2 near the upstream specified flow boundary condition, there are known issues with replicating the historical

tidal amplitude when model flow and stage results have been compared to historical Gage Station data. And that's what is shown here in blue, the Freeport Gage I introduced earlier, for a period of February 1991.

I assessed the performance of the DSM-2 velocity output as compared to the Freeport Gage and found that there was a notable bias where the model was not representing the full tidal variation velocity relative to the Freeport Gage, especially during low-flow periods like I've shown here.

And this red dashed line (indicating) represents that raw DSM-2 velocity output.

To improve the accuracy of the velocity output in terms -- which is the key metric needed for assessing the operational criteria I presented earlier, I minimized the sum of square error in minimum -- that is, low, low recorded velocity to modeled low, low recorded velocity over 15 months of the historical record where the Sacramento River flow was less than 9,000 cfs.

The -- The optimal offset I obtained was a negative 0.230, negative 2. -- excuse me -- negative 0.230 feet per second, which I then applied to the DSM-2 model results prepared for this hearing.

So this green line shows the result of applying that offset to the red dashed line, the raw DSM-2 output.

Now, you will notice that on the high/low tides, the offset tends to overpredict the velocity, and that's okay because it's the low, low tides we are concerned about. Typically, those are the ones that are triggering the significant reverse flow events.

And as you can see, the green line matches up much better with the blue line on those low, low events, such as from February 12th through February 16th.

Of course, there's minor under and overpredictions. However, this offset -- applying this offset is critical to improve the accuracy for its intended purpose, which is assessing significant reverse flow events.

(Document displayed on screen.)

WITNESS BRAY: So, applying this offset to the 16-year output from the DSM-2 model to each scenario, I obtained the table shown here. So (reading):

"Without bias correction, DSM-2 significantly underestimates the frequency of significant reverse flow events in all scenarios (including the No-Action Alternative)."

Again, we're -- This table is showing the tabulated total shutdown events after applying the offset to the No-Action, the H3, the H4, the Boundary 1 and Boundary 2 scenarios.

One thing we notice now, after applying the offset, is that three of the four Project scenarios -- H3, H4 and Boundary 2 -- are greater than the No-Action Alternative during the '76 to '77 drought.

And while we do see small increases -- Or, I should say -- Excuse me.

While we do see decreases in the 1987 to 1992 drought, again, I want to highlight that the final Water Year, Water Year '92, was not included in that simulation period.

Now, the overall conclusion doesn't change from two slides ago. And that is that, overall, in the total on that final line, we see the No-Action Alternative has the greatest number of significant reverse flow events relative to the Project scenarios.

However, let's take a closer look at the DSM-2 scenario, or the DSM modeling.

(Document displayed on screen.)

WITNESS BRAY: So what we found under the WaterFix scenarios is that the frequency of shutdown events actually does incur -- increase in some months.

This figure shows the breakdown of the total number of shutdown events in each of the five model scenarios for each month of the Calendar Year over the 16-year period simulated.

I've also included color-coded arrows with a legend just for ease of reference where green is good. That means the Project has significantly reduced significant reverse flow events in some months like we see in August, or in January, we see large decreases in H3 and H4, where Boundary 1 and Boundary 2 shows a slight decrease.

However, from September through December, and as we go into the orange and red, that's indicating months that are at risk of potentially increasing significant reverse flow events in one or more of the Project scenarios. So that's late fall through early winter before the onset of the high flows, we see potential for increase.

Moving along.

(Document displayed on screen.)

WITNESS BRAY: This is an excerpt of a table, Table 4 presented in my written testimony, which is provided in its entirety within Exhibit EBMUD-152 on Page 46 through 47 of the .pdf file.

And essentially what I want to do here, and really in the next few slides, is set up an example which -- in which I'm putting the two modeling results together, the DSM-2 modeling and the CalSim II.

What this table is showing is, on the left-hand

side, you have the year and the month of interest. The next five columns are presenting the number of significant reverse flow events from the DSM-2 model in those months, with the No-Action Alternative on the far left, and the next -- excuse me -- right -- the next five columns on the right are the corresponding monthly average flows from the CalSim II model outputs.

And, again, I want to focus on one of these examples, and that's September of 1977, where, in the No-Action, we saw an increase of 20 shutdown events, from 17 to 37 events, where the monthly average flow in CalSim was decreased by about 860 cfs from 6,916 to 6,058 cfs.

(Document displayed on screen.)

WITNESS BRAY: Under the -- So this plot shows combined SWP and CVP North and South Delta exports from October 1976 through December 1977.

The dashed blue line in this case is the No-Action Alternative, and the solid red line represents the H3 scenario.

What we see is an increase in exports in April through August of 1977 with reductions in September and October of 1977, and then increases again in November and December of 1977. In summary, we see a shift in the timing of exports.

Mr. Baker, if you could, could you please

switch over to Figure 11 of my written testimony.

(Document displayed on screen.)

WITNESS BRAY: Thank you.

This figure didn't get included in my PowerPoint, and I think it helps with the story.

So just real briefly, I want to switch over to Figure 11 here.

So this is the same period, and this is Sacramento River monthly average flow from CalSim. Again, No-Action in blue, dashed H3 in solid red.

So, in those months where we saw the reduction in exports, we see also reductions in Sacramento River low flows.

And now, Mr. Baker, if I may ask you to please shift back to the slide show.

(Document displayed on screen.)

WITNESS BRAY: I believe that's the wrong show. That was -- That's EBMUD-100.

It should be the PowerPoint.

MR. SALMON: We should be on Slide 1 now of EBMUD-101.

WITNESS BRAY: They're all advanced there.

(Document displayed on screen.)

WITNESS BRAY: Thank you. And so the resultant decrease in flow -- So, this is representing the DSM-2

model output for September of 1977 where we found there were 17 shutdown events in the No-Action Alternative with monthly average flows at 6,917 -- 6,916 cfs, which increases by 20 events to 37 shutdown events, as indicated by the green arrows, when the flow is decreased by 860 cfs to 6,058 cfs.

So, in this case, the modeling results show a significant increase in this case, in this particular month, more than a doubling of shutdown events in this critical drought month.

So, in conclusion, the WaterFix increases operational flexibility for the CVP and SWP Projects.

The additional flexibility results in changes or shifts in export patterns under the Project scenarios where I've shown you an example of this for the simulated Water Year 1977.

The shift in export timing results in higher Sacramento River low flows -- Excuse me.

The shift in export timing results in higher Sacramento River low flows in some periods but also, and more importantly, results in Lower Sacramento River low flows in comparison to the No-Action Alternative.

Periodically, Lower Sacramento River flows increase the likelihood of significant reverse flow events that are severe enough to require the Freeport

Project intake to shut down.

While the WaterFix Project shows the potential to reduce significant reverse flow events in some late winter months and spring months, the results also show increases in shutdown events in the late summer through the early winter that could potentially limit East Bay MUD and Sacramento County Water Agency from diverting critical drought supplies in these months.

And, finally, I've studied the proposed bypass flow criteria and I've analyzed the CalSim II results and verified that, in fact, the bypass flow criteria are indeed met and implemented in the CalSim II Project scenarios.

However, as I have shown, the proposed bypass flow criteria are not significant -- not sufficiently protective so as to prevent increases in significant reverse flow events that would potentially impact the Freeport intake operation.

I thank you for your attention as this includes my summary of my written testimony, EBMUD-152.

Thank you.

MR. SALMON: Thank you, Dr. Bray. With that, I think we're open for cross-examination.

You want to proceed now?

CO-HEARING OFFICER DODUC: Let me do -- Let me

get a time estimate.

The Department. How much time do you anticipate for cross-examination?

MR. BERLINER: Let me just check.

CO-HEARING OFFICER DODUC: While he's checking, who else plans on conducting cross-examination of this panel?

MS. AKROYD: (Indicating).

CO-HEARING OFFICER DODUC: Miss Akroyd.

Is that all?

MS. MORRIS: (Indicating).

CO-HEARING OFFICER DODUC: And Miss Morris.

Time?

MS. MORRIS: I don't think it'll be more than 30 minutes. It just depends on what Mr. Berliner covers.

CO-HEARING OFFICER DODUC: Understood. That's an estimate.

Miss Akroyd?

MS. AKROYD: And I anticipate no more than five minutes, if at all.

CO-HEARING OFFICER DODUC: All right.

Mr. Jackson.

MR. JACKSON: Yes. I -- I have a question because of the phasing of the hearing.

This question of tidal influence, particles

going back and forth, reminds me of phytoplankton, reminds me of smelt.

The infor -- By dividing it into the two parts, it's -- Do you want us to try to replicate this material in Part 2 or could we ask questions in Part 1?

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

I'm -- I'm not guaranteed that these experts will be back in Part 2.

MR. JACKSON: Right.

CO-HEARING OFFICER DODUC: Are your questions specific to the modeling, for example, that Dr. Bray performed, or the impacts that Miss White and Mr. Williams spoke about?

As long as your questions are specific to what they testified rather than potential fishery impacts of what they -- they -- they did.

I mean, it depends on what your question would be, Mr. -- Mr. Jackson.

MR. JACKSON: I -- I understand. And I'm saying here I'm not 100 percent clear at this point myself, but that there is a problem with bifurcating.

CO-HEARING OFFICER DODUC: I understand.

MR. JACKSON: And, so, are we allowed to refer to information that's been accepted for Part 1 in having our scientists talk about this testimony in Part 2?

CO-HEARING OFFICER DODUC: Let me check with my counsel. I would imagine, so because it's in the record.

MS. HEINRICH: That's right. It will be a single Administrative Record even though we've divided it in two parts.

MR. JACKSON: All right. So we will be able to come back and deal with this from the point of view of the tidal -- the tides moving back and forth and what they're carrying when they do.

CO-HEARING OFFICER DODUC: Let me be clear that you may refer to the testimony. You may not have these witnesses back --

MR. JACKSON: I --

CO-HEARING OFFICER DODUC: -- in Part 2.

MR. JACKSON: I understand that.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: But their testimony is in the record.

CO-HEARING OFFICER DODUC: Yes.

MR. JACKSON: I just didn't want to lose it for purposes of Part 2.

CO-HEARING OFFICER DODUC: Correct.

MR. JACKSON: Thank you very much.

CO-HEARING OFFICER DODUC: Thank you for asking that. So --

MR. JACKSON: And there will be no questions.

CO-HEARING OFFICER DODUC: There will be no questions.

So, the reason I did that was to do a time check for Group 9, I think, is up next. So you -- We will get to you today unless Mr. Berliner plans on hours and hours of cross-examination.

MR. BERLINER: Not hours and hours. I'm hoping for no more than an hour-plus.

CO-HEARING OFFICER DODUC: All right. Why don't we go ahead and take -- If it's okay with the court reporter, we'll take two shorter breaks this afternoon --

THE REPORTER: (Nodding head.)

CO-HEARING OFFICER DODUC: -- and -- and so that DWR can set up for cross-examination.

And we will resume at 2:45.

(Recess taken at 2:37 p.m.)

(Proceedings resumed at 2:45 p.m.:)

CO-HEARING OFFICER DODUC: (Banging gavel.)

All right. It is 2:45. We are back in session.

Before we begin with cross-examination, let me do another housekeeping item.

Mr. Berliner, since I have you near a microphone, I might as well take advantage of this.

We received a message from Group 17, the San Joaquin River Exchange Contractors Water Authority, that they were told that DWR witnesses will not be available this Friday; that should we call on Group 17 to present their case in chief?

Is that your understanding and, if so, why is that the case?

MR. BERLINER: I'll -- I'll try to be as helpful as I can here. I -- I don't think I have complete information.

My understanding is that the San Joaquin River Water Contractors have requested a most knowledgeable employee about levees and flood control operations in the Delta.

As you probably know, that's not part of the State Water Contract functions of the Department. It's an entirely different division of the Department.

This particular employee, who is the person most knowledgeable, as I understand it -- and I don't know the person's name, I apologize -- is apparently working on a very high-priority levee flood control issue at the moment and is out of pocket.

And apparently Mr. Minasian, the attorney for the Exchange Contractors, has been in communication with the Office of General Counsel for DWR regarding the

availability of this witness, and it's my understanding that they've been in communication for a number of days about this.

And so I believe that they are working on when this person will be relieved of their current high-priority responsibility, and I don't know the details of -- of exactly what this person's working on, but I was told it was extremely high priority-related to flood control on levees in the Delta. I don't know if there's a particular problem or what the nature of it is.

My understanding is that that person may be available as soon as next week, but I can't actually confirm that this afternoon.

I would hope to have further information either later today or tomorrow as to when that person is available.

CO-HEARING OFFICER DODUC: Tomorrow would be good. At the beginning of tomorrow's hearing, we will again spend a bit of time on housekeeping, and I'm going to try something different.

I'm going to propose that, as we go down the order of direct in this table, and we get to a certain party -- and we will plan to do this two to three days ahead of time so that other parties will have a chance to prepare for cross-examination -- that, if you are up, it

is the responsibility of the group that is next in order to present their case in chief to either be ready and prepared to do so, or to coordinate with another party and have that party be prepared to assume that position in line as we get to that order.

So, for example, looking ahead to next week, I expect that we will get to Group 19, 20 and 24, which is in order, 9, 10 and 11. It's just an example.

So, for Miss Meserve, who will be here tomorrow to discuss this with us, she will either commit that she is prepared to present her case in chief per this order, or she has made an arrangement with another party -- and that party will have to concur and be named so that Petitioners and others will have time to prepare for their cross-examination -- that this party will take the place and present their case in chief in lieu of Ms. Meserve, who is up next.

Does that make sense?

MS. MORRIS: Stefanie Morris, State Water Contractors.

I think that that makes pretty good sense. I think we do need some notice, because, for example, if -- say, if Group 10 was switching with Group 20, we think we have a lot more time to prepare for that.

And, so, if it's five days and we don't have

two days of -- you know, that could work but --

CO-HEARING OFFICER DODUC: I understand.

MS. MORRIS: Okay. Great. Thank you.

CO-HEARING OFFICER DODUC: I understand.

Again, we're trying to be flexible and -- and accommodating as much as possible recognizing that, yes, you have to have some time to prepare -- within reason, Miss Morris, within reason -- so we will try that approach.

So, for tomorrow, I'm expecting Group 17, 19, 20, 24 and 21 to be prepared to either commit to presenting their case in chief next week, if called upon, or to make arrangements with another group to do so in their place. And they will have to confirm that tomorrow so that other parties will have a chance to prepare for cross-examination.

Okay?

We will try that approach tomorrow and see how that works out.

Everyone is in a stunned silence.

With that we will turn to Mr. Berliner and Miss Ansley for your cross-examination of this panel.

And before I get reminded, if you could please outline the list of topic areas that you will be examining on.

MR. BERLINER: Yes.

With regard to Mr. Williams, I have a very short cross-examination, simply concerning the chart that is on Page 6 of 12 of his testimony regarding water rights. That'll be the only question for him.

Regarding Ms. White, I'm hoping to get done in . . . 30 minutes, possibly less.

And . . . I have some questions on reverse flows based on, essentially, her -- her experience over the past few years with -- with reverse flows.

I have questions regarding the East Bay MUD contract with the CVP.

And . . . I have some questions about diversions.

And then, finally, very briefly, questions concerning the potential construction impacts that she expressed some concern about at the end of her testimony.

The bulk of the cross-examination will be for Mr. Bray, and I'm hoping to get done with that in under an hour. Some of it takes a little time because we'll be flipping between different exhibits, but essentially it's -- it's all on the same topic, which concerns his review of the modeling and how he arrived at the conclusions that he did.

CO-HEARING OFFICER DODUC: All right. Please

proceed, Mr. Berliner.

MR. BERLINER: Thank you.

CROSS-EXAMINATION BY

MR. BERLINER: Good afternoon, Panel Members. My name is Tom Berliner and I'm an attorney for the Department of Water Resources. I'm assisted this afternoon by Ms. Jolie-Anne Ansley.

First question is for Mr. Williams.

Mr. Williams, in your testimony -- And it might be convenient to put up, just for reference, the SCWA-3 at Page 6.

(Document displayed on screen.)

MR. BERLINER: In this chart, you refer to the Appropriative Right Permit Number 21209 and indicate that it's subject to Term 91 curtailment.

Do you have an understanding of what Term 91 curtailment is?

WITNESS WILLIAMS: I believe if you look at the testimony, it's more subject-detailed in SCWA-19 as far as that.

And Term 91 is either water is available or it's not available for appropriative diversion of water.

MR. BERLINER: Okay. And do you have an independent understanding, or are you relying on Mr. Peterson?

WITNESS WILLIAMS: I'm relying on my discussions with Mr. Peterson and -- and reading Term 91 out of the definition, essentially.

MR. BERLINER: And do you understand, just briefly, that Term -- when Term 91's applicable, that would prohibit the Hold -- the Holdover Permit subject to Term 91 from diverting State or Federal Project water?

WITNESS WILLIAMS: I believe it's -- I believe it's appropriative water for Term 91. Correct?

MR. BERLINER: It applies to appropriative permits, yes.

WITNESS WILLIAMS: Yes.

MR. BERLINER: And you have that understanding that I just explained.

WITNESS WILLIAMS: Yes.

MR. BERLINER: Yes.

And with regard to your CVP contracts, do you have an understanding of the shortage policies?

WITNESS WILLIAMS: Yes.

MR. BERLINER: And is your understanding consistent with the fact that your contracts are subject to being shorted for a variety of reasons, including the M&I shortage policy, as well as overall availability of water, for instance, due to drought or regulation?

WITNESS WILLIAMS: Let me see.

Well, I understand that it's -- And in -- in reading the shortage policy, is (reading):

"In its operation, the Contracting Officer will use all reasonable means to guard against a condition of shortage " --

MR. BERLINER: Just a second, Mr. Williams. The court reporter has to take it down.

WITNESS WILLIAMS: Oh, I'm sorry.

MR. BERLINER: If you could be --

WITNESS WILLIAMS: I apologize.

MR. BERLINER: -- closer to the microphone --

WITNESS WILLIAMS: Sorry.

MR. BERLINER: -- and speak up.

WITNESS WILLIAMS: Let me move this over so I'm reading and speaking into the microphone. I apologize.

I understand that (reading):

". . . The Contracting Officer will use all reasonable means to guard against a condition of shortage in the quantity of Project Water to be made available to the Contractor pursuant to this contract and as far as determined by the Contracting Officer is practicable."

Is that -- Is that a little bit slower? I just want to make --

THE REPORTER: (Nodding head.) Um-hmm.

WITNESS WILLIAMS: -- that's better. Sorry.

The Contracting Officer will, in the event of shortage, appear -- promptly notify the contractor of such determination.

I also understand that (reading):

"If there is a reduction of the project water supply available to the contract during the year because of any errors in physical operation of the project, drought or other physical causes" --

CO-HEARING OFFICER DODUC: Please slow down, Mr. Williams.

WITNESS WILLIAMS: Sorry. I apologize.

If -- If I'm doing it from memory, I can do it slower. When I'm reading, I read fast, and I do apologize.

There -- There -- Basically, in summation of Paragraph 12(b), there's -- there's no liability due to those errors or in -- in ability to apply water. But, then, any year shortage may occur for any other reasons, they'll still apply a portion of the available Project Water supply to the contractor.

MR. BERLINER: And do you also understand that you are subject to the M&I shortage policy?

WITNESS WILLIAMS: Yes. That's -- Yes. Shortage policy and apportionment, Section 12.

MR. BERLINER: Thank you very much.

My next series of questions are for Ms. White.

Good afternoon.

WITNESS WHITE: Good afternoon.

MR. BERLINER: Your testimony's been marked as Exhibit East Bay MUD 151.

Did anybody assist you in drafting your testimony?

WITNESS WHITE: I drafted it and Legal reviewed it.

MR. BERLINER: But the substance of your testimony was prepared by yourself; is that correct?

WITNESS WHITE: Correct.

MR. BERLINER: And did you also prepare what's been marked as EBMUD-100?

WITNESS WHITE: Yes, I did.

MR. BERLINER: And you prepared the substance of that as well?

WITNESS WHITE: Yes, I did.

MR. BERLINER: And is it a fair characterization to say that one of the points of your testimony is to summarize East Bay MUD operations of the Freeport facilities and potential alleged impacts to those operations due to reverse flow events?

WITNESS WHITE: Yes. I'd say that I'm

describing the potential impacts, that's correct.

MR. BERLINER: And is it also fair to say that you're not offering any opinions on the frequency of reverse flow events?

WITNESS WHITE: That's correct.

MR. BERLINER: And is it also fair to say that your testimony includes potential alleged impacts to the Mokelumne Aqueduct and future possible East Bay MUD Delta tunnel from construction impacts?

WITNESS WHITE: That's correct.

MR. BERLINER: Just to confirm I followed your testimony correctly.

As I understand it, the Freeport Project must shut off diversions when treated effluent from the Sacramento County Sanitation District discharges travels 1. -- or 0.9 miles upstream and has a dilution ratio that exceeds 0.1 percent; correct?

WITNESS WHITE: That's correct.

MR. BERLINER: Thank you.

As I understand it, East Bay MUD has developed some operating procedures to avoid complete shutdowns; is that correct?

WITNESS WHITE: That's correct.

MR. BERLINER: What's the difference between a complete shutdown and a partial shutdown.

WITNESS WHITE: Sure. Let me describe that.

So, complete shutdown -- and that's what we did when it initially occurred -- is, you shut down the Freeport intake. It's -- It's automatic when the water flows upstream from the Sanitation District and it meets the criteria. So that's an automatic shutdown.

If it was a full shutdown, we'd shut down only the Freeport intakes but we'd stop flow into the Folsom South Canal which shut down the pumping plant, the Clay Station Pumping Plant that pumps out of the canal. We would shut down the Camanche Pumping Plant that pumps the water out of the pipeline that takes if from the Canal to the Mokelumne Aqueducts. And then we would shut the downstream pumps, called the Moraga Pumps, that would be pumping to USL Reservoir.

Also at that time, we would shut down all the chemical feed systems along the pipeline, which includes chlorination, dechlor and CO2 for pH adjustments. So any system that's related would completely shut down.

And then in response to your question about a partial shutdown: If the duration of the shutdown is short enough, the Freeport intake must shut down. And that's required to protect the public health and that's in our permit with the State Division of Drinking Water.

So we can shut down the Freeport intake. And

let's hypothetically say the reverse flow's only going to last an hour. So for that hour, what we can do is, we can reduce the amount of water we're pumping out of the Folsom South Canal, and so we'd be continuing to send water further downstream so we could keep the Clay Station, the Camanche, and the Raw Water Pumping Plants operating, but we wouldn't have to shut down all the downstream pumps, all the chemical feed systems, which would make it much easier so you don't -- you don't lose out on potentially three days of time to restart.

And what limits that is a number of factors, is that we coordinate our operations with a number of partners and one of them is, of course, the Bureau of Reclamation.

And our daily maximum deviation in the Folsom South Canal is one foot. So you might ask a question, "Miss White, why don't you shut it down -- You know, why do you do part -- don't do partial shutdowns all the time?"

We're really restricted by our operating requirements with the Bureau of Reclamation.

MR. BERLINER: Thanks very much.

WITNESS WHITE: Certainly.

MR. BERLINER: I'm just going to ask the court reporter: Is her pace of response okay?

THE REPORTER: Yeah.

MR. BERLINER: Great. Thank you.

Regarding the partial shutdown in response to a reverse flow, how many hours of reverse flow can you incur before you have to do more than a partial shutdown?

WITNESS WHITE: The most we can do is three hours, and then we have to go to a full shut down.

So if the reverse flow's any longer than three hours, we have to go to a full shutdown. Otherwise, we won't meet our operating requirements.

MR. BERLINER: And do you know how many times a year under current conditions you have to go to a full shutdown because of a reverse flow greater than three hours?

WITNESS WHITE: I can only comment and testify on my experience as a Manager of Operations, and I recall, when we operated from April 2nd to July 17th, 2014, there were four reverse flows in May of that year.

I recall when we operated in 2015 from April 15th through December 21st, 2015, there was a total of three reverse flows, and if I recall, one was in April and two was in November.

MR. BERLINER: And -- And when you refer to the reverse flows, are you referring to reverse flows that lasted greater than three hours?

WITNESS WHITE: These were reverse flows that caused shutdown of the Freeport intake.

MR. BERLINER: A full shutdown or partial shutdown?

WITNESS WHITE: It required either a full or a partial.

MR. BERLINER: And how do you determine, then, if -- Strike that.

Were the reverse flows greater than three hours in those instances?

WITNESS WHITE: I recall some of them were and some weren't.

MR. BERLINER: So, for those that were greater than three hours, did you have to do a full shutdown or were you able to do a partial shutdown?

WITNESS WHITE: For those greater than three hours, we have to do a full shutdown.

MR. BERLINER: So, of those that you've identified, you don't know how many were full and how many were partial; is that correct?

WITNESS WHITE: I can't recall exactly how many were partial and how many were full.

MR. BERLINER: And regarding the Folsom South Canal, do I understand correctly that there's a one-foot gradient that you have to comply with?

WITNESS WHITE: Right. There's a one-foot operating range within the Canal. That's why we can't pull too much out or put too much in, that's correct.

MR. BERLINER: And have you discussed changing that rule with the Bureau of Reclamation?

WITNESS WHITE: We have not discussed that.

In fact, they were flexible. To be honest, we did not meet the exact criteria and they were flexible working with us so that we could do these partial shutdowns.

The actual agreement calls for the flow in must equal the flow out. So, actually, we -- I guess you could say we did embark on discussions with them.

If I took the literal interpretation of our agreement with the Bureau of Reclamation, the flow into the Canal must equal the flow out. But we're partners with them and they partnered with us and allowed us to stick to this one-foot operating range. And they agreed it's unreasonable to have the flow in equal the flow out knowing the cascading impacts to our downstream pumping plants and chemical feed systems.

MR. BERLINER: So have -- have you discussed any potential increase above one-foot change?

WITNESS WHITE: They see -- Our discussions was that was about as far as they were going to go.

They're -- They're very concerned about the Canal, and as it was, we weren't matching exactly flow in/flow out, and that's what they were willing to leave us with.

MR. BERLINER: Are those discussions still ongoing or, in your view, have they concluded?

WITNESS WHITE: I -- I continue they're a partner and we always continue to work with them. We worked would them in 2015 to drop flows at the Freeport intake as they were trying to manage fisheries on the Sacramento River.

So I look upon them as a partner and we will continue our partnership.

MR. BERLINER: Okay. Thank you.

When you have to do a shutdown currently, do you make up for the lost water from other sources?

WITNESS WHITE: No, I do not.

MR. BERLINER: So are you then relying on a makeup at the Freeport diversion to recover what you lost during a shutdown?

WITNESS WHITE: I need to make it up at the Freeport diversion.

MR. BERLINER: Okay. And was the example that you gave for 2015 where you were up into December and had to finish by the end of the year?

WITNESS WHITE: Yes.

MR. BERLINER: Okay. And what was your -- Do you know your average rate of diversion over those months?

WITNESS WHITE: Yes. We were averaging -- We were trying to do 90 MGD out of the Freeport intake. I think -- So our goal was 90, but because we had shutdowns, if I recall, we were only averaging over the entire time probably closer to 72 because of different things that occurred that caused shutdowns.

But our goal is to average 90 because that allows us to take advantage of the gravity flow in the Mokelumne Aqueducts. So we wanted -- If we're going to tie up our aqueducts, we want to move it down.

Our goal was 90 but we did not achieve that because of various shutdowns.

MR. BERLINER: Do you know how many acre-feet you were able to pump at Freeport in 2015?

WITNESS WHITE: Yes. In 2015, we pumped 58,000 acre-feet of water from the Sacramento River to the East Bay.

MR. BERLINER: And do you know how many acre-feet you pumped in 2014?

WITNESS WHITE: Yes. We pumped 22,000 acre-feet from the Sacramento River in 2014.

MR. BERLINER: And was your goal in 2014, again, to have a rate of about 90 MGD?

WITNESS WHITE: Yes, it was.

MR. BERLINER: Regarding the potential impact of reverse flows from the WaterFix, won't any impact depend entirely upon the frequency and duration of those events?

WITNESS WHITE: That's correct.

MR. BERLINER: So, at this point in time, isn't it true that you don't actually know what the frequency and duration of those events will be?

WITNESS WHITE: That's correct. I have not seen an Operations Plan for the California WaterFix at this time.

MR. BERLINER: And isn't -- In your view, could the reverse flow events be mitigated through operational measures and agreements with DWR?

WITNESS WHITE: We don't -- We're not contracted with DWR. It's the Bureau of Reclamation that operates the Canal, the Folsom South Canal, that owns and operates it.

MR. BERLINER: Yes, understood. Let me clarify my question.

If DWR is the Operator of the California WaterFix, could reverse flow events then be mitigated?

Keeping in mind that they're operating the WaterFix facilities, could the reverse flow events be mitigated through operational measures instituted by DWR and agreements between DWR and East Bay MUD?

WITNESS WHITE: I don't think so, because of the fact that once we get to full capacity. In a year like 2014, when we only diverted in April through July, yes, you can mitigate. But in a year when we are ultimately operating this for a much longer period of time, then I don't think it could be mitigated.

MR. BERLINER: And why --

WITNESS WHITE: Until I see an Ops plan, I can't comment.

MR. BERLINER: Okay. And why don't you think it could be mitigated?

WITNESS WHITE: Well, if we're going to be operating 365 days a year, I don't know how you would impact that.

Once again, if you give me an Operations Plan, I'd be happy to engage in a dialogue.

MR. BERLINER: Okay. Thank you.

Have you had to shut down operations for reverse flows in 2016?

WITNESS WHITE: We have not been operating in 2016. We were very fortunate on the Mokelumne Watershed

that we had a good year last year and our customers saved over 40,000 acre-feet of water with their conservation. So, as a result, we're starting the Water Year in good shape in 2017.

MR. BERLINER: You indicated there were shutdowns in 2014 and '15.

Do you happen to know the dates of those shutdowns?

WITNESS WHITE: I just remember, in 2014, all four were May. And I recall in 2015, one was in April and the other two were in November.

I don't have the exact dates. It's something I could look up and get to you.

MR. BERLINER: Do you know if it's available publicly, something that we could look up?

WITNESS WHITE: It would probably be easier for me to provide it.

MR. BERLINER: Okay. I'd like to request, if counsel doesn't mind, that we get those dates. And because we're in an ex-parte situation, you would have to -- if you could e-mail it to me, you'd have to e-mail it to the entire service list if you wouldn't mind.

MR. SALMON: Well, I'll make a note of that and consider that request.

CO-HEARING OFFICER DODUC: Mr. Salmon, let's

make it you will do so.

MR. SALMON: Okay. I'm just saying that because we don't know what's available.

MR. BERLINER: Thank you. I appreciate that.

And then service on the standard service list would be fine. You don't need to e-mail me specifically.

On the days that you did have those shutdowns, do you happen to know what the flow was in the Sacramento River for each of those days?

WITNESS WHITE: I do not.

MR. BERLINER: Do you know if flow in the river was about 8,000 cfs?

WITNESS WHITE: I do not.

MR. BERLINER: Do you know if it was above 10,000?

WITNESS WHITE: I do not. I just know the Freeport intake shut down and met the trigger in our Water Supply Permit for the State Division of Drinking Water.

MR. BERLINER: All right. Regarding the -- Are you familiar with the contract that East Bay MUD has with the Bureau of Reclamation?

WITNESS WHITE: Yes, I am.

MR. BERLINER: And this is essentially a dry-year contract; correct?

WITNESS WHITE: That's correct.

MR. BERLINER: And under the contract, the annual maximum deliver is 133,000 acre-feet; correct?

WITNESS WHITE: That's correct.

MR. BERLINER: And it would be up to a cap of 165,000 acre-feet in any three consecutive year period; correct?

WITNESS WHITE: That's correct.

MR. BERLINER: And isn't it correct that you have an actual limitation on a daily rate where the diversion cannot exceed 100 million gallons a day?

WITNESS WHITE: Right. At Free -- The Freeport intake is designed for 185 MGD and 100 MGD for East Bay MUD and 85 Sac County Water Agency.

MR. BERLINER: So at pumping for 100 MGD, in round numbers, that's about 110, 111,000 acre-feet a year; right?

WITNESS WHITE: Right.

MR. BERLINER: So you don't ever intend to actually pump 133 acre-feet in a given year; correct?

WITNESS WHITE: I don't know what the future holds as far as hydrology. We never thought we'd see the dryest four-year period in the state.

If you'd asked me five years ago, were we going to deliver 58,000 acre-feet to the East Bay and it was

going to provide one-third of the water to 1.4 million customers, I would have said no.

So, to answer your question, I don't know what the future holds.

MR. BERLINER: Aren't you limited in your right to use Freeport to 100 million gallons a day?

WITNESS WHITE: 100 million gallons per day.

MR. BERLINER: So, in order to pump more than 111,000 acre-feet, you'd have to exceed the 100 million gallons a day; right?

WITNESS WHITE: Right. And maybe our partners at Sac County wouldn't need their full hundred -- 85 MGD. So, you know, you're speculating way on into the future.

MR. BERLINER: So you would anticipate, then, you might request Sacramento County to encroach on their 85 MGD; is that right?

WITNESS WHITE: Well, if we needed it and they didn't. I mean, they've got their 85 -- their hundred. We're a partner, remember. We entered on Valentine's Day 2002 into this partnership.

MR. BERLINER: Un -- Understood.

My question was, will you be able to use some of their capacity if you need it if they don't?

WITNESS WHITE: At this point, no, that's not in the agreements right now.

MR. BERLINER: Okay. Thank you.

And the -- the contract you had with the Bureau is subject to the M&I shortage policy; right?

WITNESS WHITE: That's correct.

MR. BERLINER: So, under the shortage policy, you might receive as much as 75 percent of your contract total; correct?

WITNESS WHITE: Yeah. I mean, we were -- You know, we saw the cuts like everybody else the last couple years.

MR. BERLINER: Okay. So, do you know what 75 percent of 133,000 is?

WITNESS WHITE: We were entitled last year to 33,250 acre-feet.

MR. BERLINER: That's 2015?

WITNESS WHITE: Yes, in 2015.

MR. BERLINER: Do you know what you were entitled to in 2014?

WITNESS WHITE: A 50 percent cutback from the 133,000 acre-feet.

MR. BERLINER: So about 65,000 --

WITNESS WHITE: Acre-feet, correct.

MR. BERLINER: Is the availability of water under the dry-year contract provisions based on storage in East Bay MUD's facilities?

WITNESS WHITE: Yes. It's based on the projected end-of-September storage.

So, the Bureau year, we have to give them updates starting March 1st, and it's based on what we're projecting for end-of-September storage for the end of the Water Year.

MR. BERLINER: And do you know offhand what those numbers are?

WITNESS WHITE: Yes, of course.

As -- We're only allowed to take our CVP contract water if we're projecting our end-of-September storage to be less than 500,000 acre-feet.

MR. BERLINER: Thank you.

I want to ask you if -- This is some questions about your diversions.

I want to ask you if these numbers are generally correct based on your memory. And if you don't remember, that -- that's fine.

This is for 2014. Does it sound about right that, in April of 2014, East Bay MUD diverted a little more than 2600 acre-feet?

WITNESS WHITE: I know from April through July, we did a total of 22,000 acre-feet. And I know we started on April 2nd and we were doing some testing at the fish screen.

So if we did 22,000 over April, May, June and half of July, times -- I would have thought -- You said 2,000 acre-feet? That's --

MR. BERLINER: About 2600.

WITNESS WHITE: It seems a little low if we did -- if we did . . .

I'm thinking April, May, June, three -- almost July. 22,000 over four would have been, you know, 6,000. I would have thought it would have been higher.

But I guess we were doing some lower flows for the fish flows at the beginning, so maybe.

I don't recall the exact number. It's something I could look up.

MR. BERLINER: Okay. Thank you.

And in 2015, do you recall how much in total you diverted?

WITNESS WHITE: Yes. It was 58,000 acre-feet from April 15th through December 21st, 2015.

MR. BERLINER: Okay. Going back to that question I asked you previously on a -- on your 100 million-gallon a day diversions.

So that's about 306 acre-feet a day. Is that about right?

WITNESS WHITE: That sounds right.

MR. BERLINER: Okay. And what -- Do you know

what the daily demand is in terms of acre-feet for the East Bay MUD service area?

WITNESS WHITE: It depends on what year you're talking about. We've -- We've had incredible cutbacks over the last couple years.

Our average daily demand in 2013 was 195,000 acre-feet. In 2015, was 165,000 acre-feet.

MR. BERLINER: That's not a daily demand.

WITNESS WHITE: Oh, you want to know daily. Well, that was total.

So our -- a million gallons per day. Let's see, we were, I think, at about 130 last year million gallons per day.

MR. BERLINER: So in the neighborhood of 500 acre-feet a day?

WITNESS WHITE: Yeah.

MR. BERLINER: In terms of being able to make up for any days where you had a full shutdown based on your experience, how have you made up those days? Have you added additional days further in the year?

WITNESS WHITE: Yes, that's correct.

MR. BERLINER: And are you able to do that within a month, or do you have to wait until the end of a season in order to do that?

WITNESS WHITE: The way we've currently done it

is, we -- we do it as quickly as possible. So as soon as -- as soon as -- You know, we shut down and let's say it's a full shutdown.

Once we -- Once we hit the trigger that Freeport can turn on, we have to calculate the amount of time it's going to take before the water gets, you know, to the varying pumping plants. We notify PG&E.

But we want do it as quickly as possible. So, as soon as possible. We don't wait. As soon as -- As soon as we -- As soon as we meet the criteria to turn back on again, we turn back on.

MR. BERLINER: So if you -- Just hypothetically, if you were in April and you were operating Freeport and you had a full shutdown but you weren't intending to operate Freeport in May, you might turn it on for a day, two, three, four, whatever you needed, to make it up; is that right?

WITNESS WHITE: That's correct.

MR. BERLINER: You identified some potential concerns regarding construction impacts to the Mokelumne Aqueduct; is that correct?

WITNESS WHITE: That's correct.

MR. BERLINER: Do you raise your those in your CEQA comments for the Cal WaterFix?

WITNESS WHITE: I personally didn't.

MR. SALMON: Ms. White did not testify she was directly involved in preparation of those comments.

MR. BERLINER: Let me ask: Do you know if East Bay MUD raised concerns in their CEQA comments?

WITNESS WHITE: I do not know.

MR. BERLINER: Have you participated in any discussions with DWR or the Bureau regarding potential impacts to the aqueduct?

WITNESS WHITE: I have not personally.

MR. BERLINER: Are you aware as to whether anybody from East Bay MUD has?

WITNESS WHITE: I am not aware.

MR. BERLINER: Have you had discussions with the East Bay MUD engineering staff regarding the concerns that you identified today in your testimony?

WITNESS WHITE: I don't recall. I generally have discussions with them about my concerns with the aqueducts when there's, you know, anything -- any concerns.

I mean, we have -- The aqueducts were constructed in the '20s, '40s and '60s, and so whenever there's anything that's -- construction that's going to occur, we talk to the engineering staff.

MR. BERLINER: And in terms of addressing any concerns that East Bay MUD might have regarding

construction impacts, I take it, then, you have Engineers at East Bay MUD who'd be the appropriate people to have a sit-down with DWR and the Bureau to discuss those types of impacts; correct?

WITNESS WHITE: Yes. I'm a Licensed Civil Engineer but I'm focused on the operations of the water system. So I can talk about if something happens to the aqueduct, but I'm not going to be the person that, you know -- I've seen things happen, construction near the aqueducts, so I'm more focused on the operations even though I'm a Licensed Civil Engineer.

MR. BERLINER: And you may not know the answer to this, but during the earlier stage of the WaterFix hearings, during one day, East Bay MUD asked quite a few questions about potential engineering impacts that might occur related to the construction of the WaterFix Tunnels, impacts on the Mokelumne Aqueduct.

Are you aware as to whether those questions came from the East Bay MUD engineering staff?

WITNESS WHITE: I believe it came from the engineering staff.

MR. BERLINER: Okay. And -- But you have no knowledge as to whether the engineering staff has asked those questions and had answers to them from staff at DWR or the Bureau outside of this hearing; correct?

WITNESS WHITE: That's correct.

MR. BERLINER: Okay. And do you have any reason to believe that the Engineers at DWR and the Bureau aren't just as keen on avoiding impacts to the Mokelumne impact as East Bay MUD is?

WITNESS WHITE: I would think they would be.

MR. BERLINER: Thank you.

I have no more questions for this witness.

Thank you for your very prompt and concise answers.

Obviously that cross-examination occurred quicker than I expected, So . . .

CO-HEARING OFFICER DODUC: Thank you from me as well. Very nicely done.

WITNESS WHITE: Thank you.

CO-HEARING OFFICER DODUC: I enjoyed that tremendously.

WITNESS WHITE: Thank you.

MR. BERLINER: Dr. Bray, good afternoon.

WITNESS BRAY: Good afternoon, sir.

MR. BERLINER: And did you prepare what's marked as East Bay MUD Exhibit 152?

WITNESS BRAY: Yes, sir.

MR. BERLINER: And did you prepare the substance of that testimony yourself or did you have

assistance?

WITNESS BRAY: I prepared it myself.

MR. BERLINER: And is the sole basis for your claim -- potential claim of injury based on your opinion that (reading):

". . . The WaterFix is likely to increase the frequency and duration of reverse flow events in the Sacramento River that exceed threshold criteria . . ."

WITNESS BRAY: Yes.

MR. SALMON: Objection: Misstates his testimony.

He asserted a variety of reasons why he believes there are impacts.

CO-HEARING OFFICER DODUC: Then Mr. -- Then Dr. Bray can correct that in his answer.

Please proceed.

WITNESS BRAY: Can you restate the question, please.

MR. BERLINER: Sure. And for convenience, I'm looking at Exhibit 152, Page 2, Lines 17 to 20.

(Document displayed on screen.)

MR. BERLINER: And I'll repeat the question for you.

WITNESS BRAY: Thank you.

MR. BERLINER: Is the sole basis for your claim of injury based on your opinion that (reading):

". . . The WaterFix is likely to increase the frequency and duration of reverse flow events in the Sacramento River that exceed threshold criteria . . ."

WITNESS BRAY: Can you provide -- Oh, let me see.

Can you provide the line reference again? I'm sorry. I missed that.

MR. BERLINER: 17 to 20.

WITNESS BRAY: (Examining document.) Yes.

MR. BERLINER: Thank you.

And is it -- If you know, is the distance between the Sacramento Regional Sanitation District outfall and the Freeport intake about 1.3 miles?

WITNESS BRAY: The distance where? I'm sorry. I missed that.

MR. BERLINER: Between the Wastewater Treatment Plant outfall and the Freeport intake.

WITNESS BRAY: Roughly 1.3 miles, yes, I believe.

MR. BERLINER: That sounds about right?

WITNESS BRAY: Yes, that sounds about right.

MR. BERLINER: In your opinion, is looking

sole -- solely at changes in Sacramento River flow an appropriate way to assess the potential for creation of reverse flows in the Sacramento River upstream of Freeport?

For reference, I might --

WITNESS BRAY: Upstream of Freeport, sir?

MR. BERLINER: Yes, upstream of Freeport.

WITNESS BRAY: Well, no, sir. My analysis was based on an analysis of the Sacramento River flows below the Freeport intake.

MR. BERLINER: I have -- My question's a little different for you than -- than your analysis. It's a more generic question. Let me repeat it.

In your opinion, is looking solely at changes in Sacramento River flow an appropriate way to assess the potential for creation of reverse flows in the Sacramento River upstream of Freeport?

WITNESS BRAY: No.

MR. BERLINER: In your opinion, is looking solely at changes in Delta outflow an appropriate way to assess the potential for creation of reverse flows in the Sacramento River upstream of Freeport?

WITNESS BRAY: I don't think I understand your question. Can you repeat it?

MR. BERLINER: Sure.

Is looking solely at changes in Delta outflow an appropriate way to assess the potential for creation of reverse flow in the Sacramento River upstream of Freeport?

WITNESS BRAY: I believe that looking at changes in outflow or changes in flow can inform that risk.

MR. BERLINER: And my question to you is, if you looked solely at either of these two factors, would that be an appropriate way to assess the potential for creation of reverse flow?

WITNESS BRAY: No, not solely.

MR. BERLINER: Thank you.

And would you expect the probability of reverse flow to decrease as you move upstream from Freeport to the Sacramento River at the I Street Bridge?

WITNESS BRAY: I believe that would depend on many factors. But the strength of the tide -- the tidal effect, the amplitude, if you will, should decrease in an upstream direction, yes.

MR. BERLINER: So, in other words, the further you move upstream from the Delta, the less impact of reverse flow until, at some point, you don't have reverse flow events anymore; is that right?

WITNESS BRAY: Yes, sir.

MR. BERLINER: So, in your testimony, as I understand it, the first analysis, you identify -- you identified a number of times that significant reverse flow events would have occurred historically from 1987 through January of 2016; correct?

WITNESS BRAY: Correct.

MR. BERLINER: And do I understand correctly that, over those 29 years, you show that there would have been 39 of these significant reverse flow events, assuming no mitigation through operations, during that period?

WITNESS BRAY: I'm not sure of the exact number.

MR. BERLINER: Let's take a look at Exhibit 152, Figure 4, and see if that's of help. It's on Page 6.

(Document displayed on screen.)

MR. SALMON: I think there was actually an appendix with separate page numbers -- a separate set of page numbers.

MR. BERLINER: Yes.

MR. SALMON: It's on Page 31. You have to look at the top left corner numbers.

(Document displayed on screen.)

MR. BERLINER: I apologize. The reference --

All the figures were printed at the end.

WITNESS BRAY: Were you referring to Figure 4, sir?

MR. BERLINER: Yes.

WITNESS BRAY: And repeat the question to make sure I have the number.

MR. BERLINER: That there would have been 39 of these significant reverse flow events.

MR. SALMON: Objection: The chart speaks for itself.

Are you asking him to add the columns?

WITNESS BRAY: I can do that.

MR. BERLINER: Yeah. Just asking for him to -- if you agree that there's 39 events. I get 39.

CO-HEARING OFFICER DODUC: Is there a significance to having that number affirmed?

MR. BERLINER: The number of events over a period of time are quite significant.

CO-HEARING OFFICER DODUC: Okay.

WITNESS BRAY: Yes, sir, I get 39.

MR. BERLINER: Great.

So, on average, this works out to about 1.3 significant reverse flow events a year -- right? -- over the 29-year period?

WITNESS BRAY: Yes, if you want to include wet

years with high flows that don't have reverse flow events.

MR. BERLINER: Understood.

WITNESS BRAY: Correct.

MR. BERLINER: Yeah.

In part of your analysis, you adjust -- Did I understand correctly that you adjust the velocity through a bias connect -- bias correction?

WITNESS BRAY: Yes, sir.

MR. BERLINER: And is that Table 3, which would be a few pages beyond this?

CO-HEARING OFFICER DODUC: Do you have a page number, Mr. Berliner?

MR. BERLINER: 20 of 24.

WITNESS BRAY: And that's --

MR. BERLINER: I don't have --

WITNESS BRAY: -- .pdf 45.

MR. BERLINER: -- a page number.

WITNESS BRAY: I believe it's .pdf 45 which you refer to.

(Document displayed on screen.)

MR. BERLINER: Yes, that's the one.

WITNESS BRAY: Yes. This is the result after applying the bias correction, yes, sir.

MR. BERLINER: Okay. Now, I have to ask you to

help me with this table a little bit.

WITNESS BRAY: Sure.

MR. BERLINER: As I look at the No-Action Alternative, during these drought periods, do I understand correctly under the No-Action Alternative, for '76-77, there were -- under the bias corrected method, there were 165 events?

WITNESS BRAY: Yes, sir. And keep in mind the Petitioners' modeling has sea-level rise included, so this would not be reflective of a historical 1976 through 1977 period.

MR. BERLINER: Yes. We are talking, with sea-level rise, the No-Action Alternative that -- that is the Proposed Project; correct?

WITNESS BRAY: Correct. This is the result after applying the bias correction, yes.

MR. BERLINER: And just -- I note that you identified as alternatives H3, H4, Boundary 1, Boundary 2, but you did not identify H3+; correct?

WITNESS BRAY: Well, H3+ was not a part of the modeling submitted -- the modeling package submitted for the WaterFix hearing, so, no, H3+ is not included in this table.

MR. BERLINER: Okay. And you weren't aware that -- At the time you did this work, you weren't aware

of the testimony that was offered in this proceeding regarding H3+; is that right?

WITNESS BRAY: At the time I prepared this table? I'm not sure I understand your question.

MR. BERLINER: When -- When did you prepare this table; do you know?

WITNESS BRAY: I don't recall the exact date. It was before the testimony was due September 1st.

MR. BERLINER: Sometime in August, then, maybe?

WITNESS BRAY: Sometime between when I received the modeling results from Petitioners in June to August, yes --

MR. BERLINER: Okay.

WITNESS BRAY: -- sometime in that period.

MR. BERLINER: So 165 events in the '76-77 drought, 377 events in the '87 to '92 drought, but you added a note that the drought is only measured through September of '91 -- correct? -- not through into '92. So the 377 presumably would have been a bigger number had it extended further; is that right?

WITNESS BRAY: Exactly. What we see, even looking at the '76-77 drought is, there's a higher proportion of significant reverse flow events as that drought continues because flows become, you know, lower and lower as the critically dry year after critically --

you know, critically dry follows a critically dry year in the case of '76-77.

So I would expect there to be more significant reverse flow events in 1992 had that been included in the Petitioners' modeling.

MR. BERLINER: Are you basing that on your comparison to 1977?

WITNESS BRAY: No. I'm basing that on my analysis of how I see the frequency of significant reverse flow events increasing.

For example, there's a greater proportion in 1977 than 1976.

Similarly, when we look over the '87 through '91 period, there's a greater proportion in the latter months of that drought period that was included in the Petitioners' modeling. Hence, I would expect that trend to continue in 1992, another critically dry year.

MR. BERLINER: And if I understand correctly, you're showing that, under the No-Action alternative for the '87 to '92, that there were more events under the No-Action Alternative than there were under the Project alternatives; correct?

WITNESS BRAY: You're referring to the last line, the total.

MR. BERLINER: No. I'm referring to the '87 to

'92 line, 377 versus --

WITNESS BRAY: Correct, yes.

MR. BERLINER: The same would be true, then, if I looked at the totals on the bottom four of these 1975 to '91 period, that, under the No-Action Alternative, there were 596 events, and under H3, which is the next highest number, there were 572 events?

WITNESS BRAY: At -- Yes. And I believe the reason for this . . . is -- Actually, could you repeat the question? Because I had the thought and then I lost it, so . . .

MR. BERLINER: Sorry. I was just really kind of doing simple number comparison, that there are more No-Action Alternative events in the -- in the total of '76 to '91 and in the '87 to '92.

WITNESS BRAY: Right.

MR. BERLINER: And I want to acknowledge that, in the '76-77, that under H3, H4 and Boundary 2, there were more events than the No-Action Alternative.

WITNESS BRAY: Yeah. And, actually, I remembered what I want to say. Thank you.

The -- When you look at the spread of the monthly average breakdown of the significant reverse flow events, you saw large decreases in some of those scenarios, like in January, and in some of the spring

months. And in the case where I showed August, we saw decreases in all the scenarios.

The result of that -- Again, there's two things that are driving that:

One is, there's shifting in diversion patterns, so higher flows early in the year led to significant decreases in reverse flow events.

And then, again, as I showed in my example for Water Year '77, we saw decreases in flow and then increases in significant reverse flow events later.

The other thing that I've learned through reviewing the MBK analysis is that Petitioners' modeling did not move stored water and, therefore, results in significant spills in early winter months, and that would explain why there are significant decreases in, say, a month like January where I show a large decrease.

So, yeah, we saw a -- a large decrease in some months.

MR. BERLINER: And looking at . . .

Just a sec.

So, the -- the number of events that you have identified on Table 3 as compared to the actual historic data is quite substantially different. If -- If I have my numbers right, you went from 39 events based on historic to 596 events under your bias-corrected

approach; correct?

WITNESS BRAY: Yes, sir. And, again, I noticed that when I did the analysis, and then I again realized with the climate change effects in particular -- I mean, not climate change, excuse me -- sea-level rise effects, that that partially explains why there's such a significant increase.

The other point being, with the bypass flow requirements, there's a significant increase in the frequency of low flows downstream of the North Delta Diversion intakes in some months when flows are at that low bypass flow minimum of 5,000 cfs.

And, again, if you look at the -- Maybe we can ask to bring it up. Figure 5 on Page 32.

(Document displayed on screen.)

WITNESS BRAY: Over this historical period, we don't see very many flows down near that neighborhood of 5,000 cfs.

So, for example, in October in the Petitioners' modeling for the Biological Assessment, we see, in October in particular, the flows less than roughly 9,000 cfs occur 20 percent of the time, and that increases to 80 percent of the time under the BA modeling the Petitioners performed. And . . .

Anyway, I'll leave it there.

MR. BERLINER: And did you do any analysis of a -- of a without-Project effect as -- as to what reverse flows you might get later in the year?

WITNESS BRAY: Well, is the No-Action Alternative representing the No-Project? Yes. I mean, that was included in the analysis you just saw.

MR. BERLINER: My apology. I used "no Project" in a different context.

WITNESS BRAY: I'm sorry.

MR. BERLINER: Referring to No-Project as opposed to the No-Action Alternative, "No-Project" meaning without the release of stored flows from the CVP and SWP upstream facilities.

Did you do any analysis to compare what the reverse flow scenarios would be absent the existence of the Projects providing stream flow?

WITNESS BRAY: I don't believe Petitioners submitted that scenario as part of the modeling package that was provided.

Well, it was noticed in May and we -- we obtained it in June. There was only a No-Action alternative, H3, H4, Boundary 1 and Boundary 2. That's the analysis presented here.

MR. BERLINER: And did you do any analysis as far as when reverse flow effects might occur during a

Term 91 period?

WITNESS BRAY: I'm not sure I have the expertise to know when a Term 91 period would be, sir.

MR. BERLINER: Are you familiar with Term 91?

WITNESS BRAY: I am not.

MR. BERLINER: So -- Then, presumably, you didn't do any modeling to determine when Term 91 might be in effect and when reverse flows might occur; is that right?

WITNESS BRAY: That's correct.

MR. BERLINER: Did you take a look at the number of significant reverse flow events in the 2014-to-2016 time period?

WITNESS BRAY: Are you referring to historical gage data, Mr. Berliner?

MR. BERLINER: I'm referring to actual what you've characterized as significant reverse flow events during that period of time.

WITNESS BRAY: You did not answer my question. I asked you, are you referring to gage data or are you referring to Petitioners' modeling data?

MR. BERLINER: No. I'm referring to what you would define as a significant reverse flow event.

MR. SALMON: I don't understand the question, either. Can you repeat it, please?

MR. BERLINER: Okay. Are you familiar with the protest that was filed by East Bay MUD? Have you seen that document?

WITNESS BRAY: It has been some time since I have seen that document. I've read it.

MR. BERLINER: In the protest -- and this might refresh your memory -- it said (reading):

"Since East Bay MUD began diverting water from the Freeport Project in April 2014, about four shutdowns have occurred due to reverse flow events. Each shutdown lasts about three hours on average."

Does that sound familiar?

WITNESS BRAY: I would have to refer that to Miss White.

MR. BERLINER: Ms. White, does that sound familiar?

WITNESS WHITE: Actually, I can answer one of your earlier questions. Is that okay to do that right now?

MR. BERLINER: Let's deal with the question that I asked.

WITNESS BRAY: Okay. So I've checked and I got you the dates that you requested earlier for the shutdowns in 2014. They were May 9th, May 13th, May 14th, May 15th and May 16th.

And then in response to the dates of the shutdowns in 2015, I was correct in the months and I now have a date for you: April 19th, 2015, November 23rd, 2015, and November 24th, 2015.

CO-HEARING OFFICER DODUC: Miss White, please make sure your microphone is on.

WITNESS WHITE: Oh, I wasn't expecting the -- Should I -- Do I have to answer again? I have a loud voice.

MR. BERLINER: Let's just make sure the court reporter got that without --

THE REPORTER: I did.

MR. BERLINER: -- a problem.

The court reporter has it. Thank you very much.

WITNESS WHITE: Thank you.

MR. BERLINER: Appreciate that information.

WITNESS WHITE: Certainly.

MR. BERLINER: So in response to my question to Dr. Bray, does it sound right that about four shutdowns have occurred due to reverse flow events since April 2014, or am I low on that number?

WITNESS WHITE: You're low. There was five in 2014 and three in 2015 during our operating period. I'm only commenting on our operating period.

MR. BERLINER: And -- And were those shutdowns about three hours in duration on average; do you recall?

WITNESS WHITE: I think they were about three hours in duration.

MR. SALMON: I believe she testified earlier on that question -- the answer to that question. Some were more and some were less.

MR. BERLINER: Thank you.

And do I also -- Dr. Bray, returning to you.

In -- Do I understand correctly that another -- in another analysis, you apply what you've called a monthly flow criteria using three logic statements which essentially triggers a significant reverse flow event when there's average monthly flow less than or equal to 8,000 cfs?

WITNESS BRAY: And I'm glad Figure 5 is still up.

Yes, that's correct. And you can -- You can see why I selected 8,000 cfs.

I was, you know -- We only have one datapoint between 10 and 8 so, to be fair, I selected eight as kind of an indicator where that -- the potential -- And, again, as the slide says, there's an increased risk.

However, whether or not the -- the strength in the number of those events depends on the annual tidal

cycle, and it could also depend on other factors such as Delta operations; for example, the Delta Cross Channel lower down in Walnut Grove, I believe, on the Sacramento River.

So . . .

MR. BERLINER: And how do you explain the reverse flow event that occurred when flows were over 12,000 cfs?

WITNESS BRAY: Oh, thank you for that question. I did look into that.

What I found there, was, that was a year in which December -- the first week of December -- I do not recall the year in the period.

But the first week of December was a continuation of very low flows. That triggered one reverse flow event.

And then the onset of a storm event caused a large increase in discharge.

So that skewed the monthly average above 12,000 cfs -- or to a value above 12,000 cfs. That's how I'd explain that case.

MR. BERLINER: So, if I understand right, the flow at the time of the event was well below 12,000 but the monthly average was above 12,000 because of a storm event; is that right?

WITNESS BRAY: Yeah, exactly.

MR. BERLINER: Okay.

WITNESS BRAY: Yes.

MR. BERLINER: And what about for the reverse flow event that occurs, it looks like, about 9,000 cfs-plus?

WITNESS BRAY: I don't recall the details of that particular event.

I do -- I did look into the one that was above 12 because that one stood out to me, and I don't recall what I found for that one that was near 9,000.

MR. BERLINER: And I see that you don't essentially show any reverse flow events except for one that's at slightly below 6,000.

So I'm curious how often flow below -- I -- Is that, what, I guess about 5700 cfs for that dot up there on the -- on the top --

WITNESS BRAY: Right.

MR. BERLINER: -- right side?

WITNESS BRAY: So -- Exactly. Monthly average flow, as recorded at the Freeport Gage over this period, typically does not get this low. And so these -- these are, I believe, very low . . .

These occur -- If you were to look at a flow duration exceedance curve, these would be on the very low

end of that exceedance curve, so they occur only during low-flow periods.

And again, yeah, typically, if there were an event -- if there were monthly average flows lower than that, they would have essentially triggered reverse flow events and then showed up on this chart.

MR. BERLINER: So . . .

WITNESS BRAY: I should also note for the record that there are periods of missing data in that dataset. Obviously, this is a Cali -- the Department of Water Resources, California Data Exchange Center. The Freeport Gage is Code FPT. It's publicly available.

MR. BERLINER: So does Figure 5 tell us anything about the probability of a reverse flow event?

WITNESS BRAY: Again, as I mentioned, there are multiple factors that come into play on that, and you would -- If you were doing a probabilistic analysis, you would want to control for those factors.

What I use it for is to try to understand -- again to help me interpret CalSim II modeling results -- what the risk -- what the potential for increases in events are.

MR. BERLINER: So is the answer that, no, Figure 5 doesn't tell us anything about the probability of a significant reverse flow event?

WITNESS BRAY: It -- It tells us about a portion of the probability.

The point I'm making is, it may not inform the whole story. There may be other factors that are contributing.

For example, near the top of the chart, when there's six events, there's a near vertical line and you see an increase of a seventh event, yet the flow is higher. I'm sure you can see that point in the upper two points. And, again, that could be due to other factors going on in the system.

However, I believe the dominant factor is, in fact, the flow pushing against the tide, a monthly average flow on the Sacramento River.

MR. BERLINER: So, clearly, there are times, then, when the river flow is below 8,000 cfs and we're not getting reverse flow events; right?

WITNESS BRAY: It's possible.

MR. BERLINER: Well, in fact, isn't it actually quite often that, when the flow is below 8,000, we wouldn't be getting a reverse flow event?

WITNESS BRAY: I don't know if I would say it's quite often, because the -- Again, if you did a flow frequency duration curve, the 8,000 point -- flows that are below 8,000 cfs are relatively rare. We're talking

about typically critically dry years during droughts.

We don't have a lot of critically dry years that occur in this period.

MR. BERLINER: So is your --

CO-HEARING OFFICER DODUC: I'm sorry, Mr. Berliner, before you continue.

We've gone through an hour. How much additional time do you expect you need?

MR. BERLINER: I'm about halfway through, maybe slightly more than that.

CO-HEARING OFFICER DODUC: So you need maybe another 30 minutes?

MR. BERLINER: I would think so.

Do you want to take a break?

CO-HEARING OFFICER DODUC: Miss Morris, do you still anticipate 30 minutes?

MS. MORRIS: Roughly.

CO-HEARING OFFICER DODUC: Then I will go ahead and dismiss Group 9 because we will not get to you today.

We'll go ahead and take a short recess and resume at 10 o'clock -- 10 o'clock, I wish -- 4 o'clock.

MR. BERLINER: That's in five minutes, just to confirm?

CO-HEARING OFFICER DODUC: Yes. It's a short break. I want to stretch.

(Recess taken at 3:55 p.m.)

(Proceedings resumed at 4:00 p.m.)

CO-HEARING OFFICER DODUC: (Banging gavel.)

If everyone would please take their seats, we will resume.

Mr. Berliner, please continue.

MR. BERLINER: Thank you.

Dr. Bray, is your opinion about the monthly average of flow significance at about 8,000 cfs based on your observation of the data on Figure 5?

WITNESS BRAY: Yes.

MR. BERLINER: And just to confirm, you didn't conduct a probability analysis for this methodology; did you?

WITNESS BRAY: No, sir, I did not do a statistical correlation or a probability analysis, per se.

However, the purpose, again, of -- of using this was to inform that monthly flow criteria, again, to be able to use the CalSim results.

MR. BERLINER: Keep your voice up a little for the court reporter.

WITNESS BRAY: Yes, ma'am -- I mean, yes, sir.

MR. BERLINER: So you don't know the likelihood of having a significant reverse flow event if the

Sacramento River were to drop below 8,000 cfs; right?

WITNESS BRAY: I think it is more probable than if the Sacramento River monthly average flow was higher.

MR. BERLINER: But you don't know what the probability would be; correct?

WITNESS BRAY: Correct. I haven't done a full analysis to control for all the factors and to do an analysis of variance to determine the relative effect of each factor.

MR. BERLINER: And when you did your bias correction analysis, did you make any attempt to correct for sea-level rise impacts?

WITNESS BRAY: I did not.

MR. BERLINER: Could I have just a second? I have a bad page reference here.

If we could go to Page 43, please, to Table 1.

(Document displayed on screen.)

MR. BERLINER: In the title of the -- of the table, you indicate that this data represents the number of months in which evaluation criteria are met.

What did -- What does the evaluation criteria refer to?

WITNESS BRAY: The monthly flow criteria.

MR. BERLINER: And what is the monthly flow criteria?

WITNESS BRAY: Mr. Baker, can we have Page 8.

(Document displayed on screen.)

WITNESS BRAY: Here is the monthly flow criteria. The monthly average flow below the Freeport intake for the Project Alternative is less than the No-Action Alternative.

The monthly average flow for the Project Alternative is less than the threshold value of 8,000 cfs.

The relative change in monthly average flow between the Project Alternative and the No-Action Alternative is greater than a tolerance of 20 cfs.

And to piggyback on your previous question about sea-level rise: If, all things being equal, sea-level rise occurs, that threshold of 8,000 should likely be increased.

So having a threshold of 8,000 is somewhat, quote, "conservative," if I can use it in this context.

MR. BERLINER: Okay. So if we could go back to the table.

WITNESS BRAY: Okay.

(Document displayed on screen.)

MR. BERLINER: So does this analysis -- Is this analysis based on using CalSim?

WITNESS BRAY: This analysis is based on

CalSim II modeling results by the Petitioners.

MR. BERLINER: Okay. So looking at the H3 scenario, you identified 34 months within the 82-year period that the Sacramento River flow was less than 8,000 cfs and was also lower than the Sacramento River flow under the No-Action Alternative by at least 20 cfs; correct?

WITNESS BRAY: Correct.

MR. BERLINER: And did you look at the number of months where the opposite condition existed?

WITNESS BRAY: I believe --

MR. SALMON: Objection: Ambiguous.

I don't know what you mean by --

MR. BERLINER: The witness apparently understood.

CO-HEARING OFFICER DODUC: Dr. Bray, are you able to answer?

WITNESS BRAY: I -- Again, the criteria includes three logical statements.

So, by "opposite," I'm not sure what you mean. Do you mean all three statements would be logically false? So, therefore, that the Project Alternative is greater than the No-Action? That the resulting Project flow is greater than 8,000 and that the resultant change is greater than 20?

MR. BERLINER: Correct.

WITNESS BRAY: I did not perform such an analysis.

MR. BERLINER: And was your analysis of the other alternatives, the H4, Boundary 1 and Boundary 2, the same process on which you did your analysis for H3?

WITNESS BRAY: Yes, sir. It's based on the same criteria.

MR. BERLINER: So is there anything in your CALFED -- CalSim analysis that shows a potential for an overall increase in the frequency of significant reverse flow events under the WaterFix operational scenarios?

WITNESS BRAY: When you say "WaterFix operational scenarios," to which CalSim modeling studies are you referring? Are you referring to H3, H4, Boundary 1 and Boundary 2?

MR. BERLINER: Correct.

WITNESS BRAY: So please repeat the question --

MR. BERLINER: Okay.

WITNESS BRAY: -- because I didn't understand.

MR. BERLINER: As I understand it, there's something in your CalSim analysis that shows a potential for an overall increase in the frequency of significant flow events -- significant reverse flow events under the California WaterFix operational scenarios; correct?

WITNESS BRAY: I thought I made a clear point: That CalSim II is inadequate to directly assess reverse flow events. All we can do is try to understand how the Project could affect the risk of that occurring, so . . . that's what this table is representing.

Again, with monthly average flows, we do not have, number one, velocity on a subdaily time-step and, therefore, we cannot directly apply the operational criteria to assess more precisely the number of shutdown events.

All we can do is assess, that, in the -- in this set of months, it's likely there would be an increase. That said, potentially, some of these months flagged, for example, the 34 months under H3.

The point I'm trying to make here is, I'm not saying that there would be an increase in all 34 of these months. The point I'm making is, there's an increased risk.

Again, in the future, the actual sea-level rise will be uncertain, and the other conditions, the -- as you know, and -- as you well know, the Delta operations, the real-time operations, is much more granular than monthly time-step.

And so all -- This is what -- what -- This is the only type of analysis we can do with CalSim II on

this topic because of the limitations of that model.

MR. BERLINER: So this is sort of a gross look at it rather than a more absolute look at it; is that right?

WITNESS BRAY: It . . . I'm not sure I would use those words, but, yes, this is an indirect way of assessing it. It's -- It's the only way you can do it with CalSim II.

MR. BERLINER: Okay. And if we could back up to Figure 7. It should be about Page 34.

(Document displayed on screen.)

MR. BERLINER: It would be good if you could flip that.

WITNESS BRAY: I believe this is the same chart --

(Document displayed on screen.)

WITNESS BRAY: Oh, thank you, Mr. Baker.

It's the same chart I believe I used in the PowerPoint.

MR. BERLINER: So, is a reverse flow event on this graph when the lines go below zero?

WITNESS BRAY: Yes. That's when the velocity is negative at that gage indicating its direction of the flow is upstream.

MR. BERLINER: So, the . . .

There's a blue line, a red dotted line and a green line; correct?

WITNESS BRAY: Yes, sir.

MR. BERLINER: And the green line represents your bias correction velocity; right?

q: Correct. And essentially, you take the DSM-2 raw output and add that parameter that I obtained, as I described earlier, which essentially offsets that velocity.

Now, again, you can see there's a degradation for the prediction of the peak involvements. But, again, what we're interested in for reverse flow events, and the purpose is, to improve the accuracy of the estimate of assessing reverse flow events.

MR. BERLINER: Okay. And you took this eight-day period in February of '91; right?

WITNESS BRAY: As an example, yes.

MR. BERLINER: And was there a particular reason you took these eight days?

WITNESS BRAY: Frankly, no. It was an arbitrary choice. As I mentioned, there were several months where I applied this or assessed what the bias correction should be.

There's no particular reason why I chose this period over any of the other months.

MR. BERLINER: And if I read the chart correctly, there are nine reverse flow events during the period of February 9th to 17th; correct?

WITNESS BRAY: Under which dataset? The bias corrected?

MR. BERLINER: Nine events total, so including your green line as well as there are other reverse flow events as well.

WITNESS BRAY: Well, the --

MR. BERLINER: Where the green line overlapped.

WITNESS BRAY: The Freeport Gage dataset is on an hourly time-step, and because of that, there can be truncations.

And it appears to me that, on the 10th, that minimum is truncated so I'm not sure whether, in reality, there was -- that it actually crossed the zero line or not. The hourly measurements essentially are showing a flat line there.

So -- But in terms of the green, I count one, two, three, four, five, six, seven, eight, nine events.

Again, we also see a truncated dataset there on the 16th, where it's kind of flat right at the zero.

The other point, as I made earlier, is, the high lows tend to be overpredicted, and that's very clear.

However, it's those low lows that are strong enough to meet the operational criteria that shut down the facility, and those are the ones I'm trying to match by doing this offset.

MR. BERLINER: And of the events where your green line extends below the -- the blue line and the red line, those -- those four events are based on your bias-corrected data; right?

WITNESS BRAY: Yes.

MR. BERLINER: So those four events didn't actually happen; right? Those are events that you've identified based on your bias correction.

WITNESS BRAY: So, the bias-corrected is applied to the DSM-2 output, and then there's an application of the operational criteria to discern whether it's significant or not significant. And the tables to which I've presented are, you know, only those that are significant.

So, for example, how about the first event on the 14th? Clearly, the gage data does not go negative. And then we see the green line dip slightly below the zero line.

However, applying the operational criteria, that would not be a significant reverse flow event. It is a reverse flow after the bias correction that did

not -- that that high low tide did not actually reverse --

MR. BERLINER: Do you know --

WITNESS BRAY: -- according to the gage.

MR. BERLINER: -- for the reverse flow events that you showed here what the direction of the reverse flow would be?

WITNESS BRAY: From this chart, it's difficult to tell. I -- I cannot tell from this chart. We could get that from the DSM-2 output.

However, again, because of the documented issues with the -- replicating the tidal amplitude at this station in terms of discharge, essentially --

CO-HEARING OFFICER DODUC: I believe the answer is no.

WITNESS BRAY: No. Sorry.

CO-HEARING OFFICER DODUC: Move on, please, Mr. Berliner.

MR. BERLINER: Thank you.

So, if we could turn to Figure 8. It would be the next page.

(Document displayed on screen.)

MR. BERLINER: And, again, this table is generated with bias-corrected data; right?

WITNESS BRAY: This figure represents

bias-corrected data, yes.

MR. BERLINER: And is the same true for Figure 9?

Maybe we can get that one in front of us for reference.

(Document displayed on screen.)

WITNESS BRAY: Yes.

MR. BERLINER: Okay. And if we could go to Figure 14.

(Document displayed on screen.)

MR. BERLINER: Is this one as well?

WITNESS BRAY: Yes.

MR. BERLINER: And if we could scroll down to Table 2, please.

(Document displayed on screen.)

MR. BERLINER: And on this table, if I read it correctly, there are more significant reverse flow events under the No-Action Alternative than there are under the action alternatives; correct?

WITNESS BRAY: Well, no. In 1976 to 1977, I see 31 events under the No-Action, and this is prior to bias correction. I want to make sure the record's clear.

In the H4 scenario, I see an increase. 33 is greater than 31, sir.

MR. BERLINER: Yeah. Sorry. I was going to

get to that one.

WITNESS BRAY: Okay.

MR. BERLINER: Yes, I agree. We're in agreement.

So the -- the only instance in when they're -- in -- in which there was a higher number of significant flow events as compared to the No-Action Alternative was under the '76-77 drought for H4; correct?

WITNESS BRAY: Without bias correction, correct, yes.

MR. BERLINER: Yes.

And if we could go down to Table 3.

(Document displayed on screen.)

MR. BERLINER: Now, in Table 3, the numbers jump up significantly. And this is showing, again, significant reverse flow events based on the bias-corrected data; correct?

WITNESS BRAY: Yes.

MR. BERLINER: Okay. But, again, if we look at the bottom row with the totals, we see that the No-Action Alternative is higher than the totals for H3, H4, and we acknowledge the different result under '76-77; correct?

WITNESS BRAY: Correct, with the understanding, again, the full '87-to-'92 drought was not simulated so I think it paints an incomplete picture.

But, yes, I agree the final line No-Action Alternative is the highest number.

MR. BERLINER: If we could drop down to the Table 4, please.

(Document displayed on screen.)

MR. BERLINER: And just to confirm: This table was prepared using the bias-corrected data; correct?

WITNESS BRAY: Yes.

MR. BERLINER: And did you look at the number of months when the WaterFix resulted in fewer significant reverse flow events?

WITNESS BRAY: I believe at one point I may have had that as part of the analysis. However, this table is a -- the set of all months in which there was an increase.

So, yeah, there are months in which there would be decreases.

And you can see, in some of the scenarios, the green font is indicating that that is a decrease in reverse flow events. And you can see also how the corresponding monthly average flow correlates with that.

I don't think I need to point out specific examples there.

MR. BERLINER: Okay. And if you could drop down, Mr. Baker, to Table 5.

(Document displayed on screen.)

MR. BERLINER: Was this table prepared by MBK?

WITNESS BRAY: No, sir. This table was prepared by me.

MR. BERLINER: And is it -- And what is the date of -- I'm sorry.

You showed a table that was prepared by MBK. Do you recall which one it is?

WITNESS BRAY: That is -- Actually, the following table, which is Table 6. However, I know it's confusing, and I apologize. It's Table 4 from our comment letter. It's on the next page.

That modeling -- This table was prepared by me but is reflecting modeling performed by MBK in terms of the CalSim II modeling. And this was circa 2014.

MR. BERLINER: Okay. Now, did MBK use bias-corrected data?

WITNESS BRAY: MBK performed CalSim II simulations. Bias correction does not apply to CalSim II, sir.

MR. BERLINER: And yet this is a table you used in your comments; correct?

WITNESS BRAY: Correct, yeah.

MR. BERLINER: And so you felt that this was a fair representation at the time your comments were

submitted?

WITNESS BRAY: At --

MR. SALMON: Objection: Vague and ambiguous as to fair representation of what?

MR. BERLINER: A fair representation of the reverse flow events.

Basically, I'm repeating the title of the table. A fair representation of the reverse flow events that occurred extending upstream from the Sacramento Wastewater Treatment Plant.

WITNESS BRAY: So, these results represent the results I would have got without bias correction. And so if I had applied bias correction to the DSM-2 modeling for this, I would have had increases in all numbers shown in the table.

MR. BERLINER: But this is based on MBK's analysis; correct?

WITNESS BRAY: Partially. The foundational modeling was performed by MBK using CalSim II. As you well know, that, then, is used with processing routines to develop the boundary conditions and then run DSM-2.

And these are the DSM-2 results without applying bias correction at that time and under those assumptions.

MR. BERLINER: I don't have any other questions

for this witness.

I have no further questions for the panel.

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

Ms. Morris, are your questions just for Mr. Bray or for Mr. Williams and Miss White as well?

MS. MORRIS: I have a few questions for Miss White and most of my questions are for Mr. Bray.

CO-HEARING OFFICER DODUC: What about you, Miss Akroyd? I'm trying to determine if we can dismiss Miss White and Mr. Williams from returning tomorrow.

MS. AKROYD: I'm not sure I'd have any questions at this point, but if I do, it would be for Miss White.

CO-HEARING OFFICER DODUC: I think we'll take you first, then, Miss Akroyd.

Do you anticipate having redirect for Miss White and Mr. Williams?

MR. SALMON: I can't speak for Mr. Williams, but not at this time for the East Bay MUD witnesses.

CO-HEARING OFFICER DODUC: Okay. Well, we'll see how the cross-examination goes, but if I can, I'll try to dismiss you today.

Dr. Bray, you will be returning tomorrow, I expect.

WITNESS BRAY: Yes, ma'am.

CROSS-EXAMINATION BY

MS. AKROYD: Thank you. Rebecca Akroyd for San Luis and Delta-Mendota Water Authority.

If we could please pull up East Bay MUD 151.

(Document displayed on screen.)

MS. AKROYD: And Page 12.

(Document displayed on screen.)

MS. AKROYD: And scroll down a little bit.

Thank you. Leave that up for reference.

MS. AKROYD: Good afternoon, Miss White.

WITNESS WHITE: Good afternoon.

MS. AKROYD: In your testimony today, you discussed impacts from potential reverse flow events at the operations at Freeport diversion facility; correct?

WITNESS WHITE: Correct.

MS. AKROYD: Would you agree that not every reverse flow event leads to a full or partial shutdown at Freeport that actually leads to reduction in the amount of annual water diverted by East Bay MUD from that facility?

WITNESS WHITE: I'd like to clarify that every reverse flow that hits the trigger causes complete shutdown of the Freeport intake but not necessarily the pumping plants downstream.

MS. AKROYD: Thank you.

And with that correction, would you agree that not every reverse flow event that leads to a shutdown, with the caveat that you added, results in a reduction in the amount of annual water diverted by East Bay MUD from the Freeport facility?

WITNESS WHITE: It could result. It definitely could result.

In the years where we're taking a smaller value, there's time to make up. But in years like 2015 when we had to have the water delivered by December 31st, had we had many other instances, we would not have been able to, so it would have impacted us.

And this was when we weren't -- We could have been taking a lot more water. And so we don't know what the future holds as far as droughts.

MS. AKROYD: Thank you.

We can scroll down slightly on this page.

(Document displayed on screen.)

MS. AKROYD: Keep going, please.

(Document displayed on screen.)

MS. AKROYD: Thank you.

In keeping, I think, with what you were just speaking to, your testimony here at Lines 18 to 23, within that paragraph, states that (reading):

"With less downtime in the future, opportunities to deliver water that was stopped due to reverse flow events will become scarce."

Your testimony here doesn't provide an analysis in support of reduced flexibility; does it?

WITNESS WHITE: It's describing it, and I can go into a lot more detail if you want.

I can explain how we want a tick at 90 MGB, and each time, even when we do the partial shutdowns, it reduces our ability to deliver water to the East Bay.

So, even though we're continuing the operations, it does decrease the volume that we're taking out of the Freeport intake. So even in those partial shutdowns, where I may be able to continue to decrease the flow out of Folsom South Canal, I have shut off the 90 million gallons per day that I would be taking out of the Freeport intake for that duration.

MS. AKROYD: That's fine. Thank you.

I think I'm trying to get at a more narrow point slightly, which, with your testimony that you've provided, your written testimony, there isn't any quantitative data or analysis that -- that -- in support of the statement that there will be fewer opportunities to deliver water due to reverse -- after stoppages due to reverse flow events.

WITNESS WHITE: Correct. We're saying we're not at the full capacity yet.

MS. AKROYD: Thank you.

No further questions.

CO-HEARING OFFICER DODUC: No question on stress test?

MS. AKROYD: Not today.

CO-HEARING OFFICER DODUC: Thank you, Miss Akroyd.

WITNESS WHITE: I was ready for it.

CO-HEARING OFFICER DODUC: Miss Morris, if I could ask you to direct your questions first -- any questions you have to Miss White and Mr. Williams.

CROSS-EXAMINATION BY

MS. MORRIS: Stefanie Morris for the State Water Contractors. Good afternoon.

I don't have any questions.

So I'll -- I'll start with Miss White and then they get the get-out-of-jail-free for the rest of this hearing.

Miss White, you indicated in 2015 operations, you were only able to divert on average 72 MGD and not the 90 MGD that you preferred; correct?

WITNESS WHITE: That's correct.

MS. MORRIS: And you also indicated that that

was for a variety of reasons; correct?

WITNESS WHITE: That's correct.

MS. MORRIS: What reasons, other than reverse flow events, cause a reduction in average -- average diversion rate?

WITNESS WHITE: All I can recall is the reverse flow events and the associated impacts from the reverse flow events that we had to shut down the downstream pumps --

MS. MORRIS: Okay.

WITNESS WHITE: -- and then the restart time.

So, instead of averaging 90 over the time, as I explained, if we're delivering water to USL Reservoir and that Moraga pump needs a 48-hour advance notice to PG&E, you don't lose out on just the three hours. You lose out --

MS. MORRIS: I got that. It's very clear in your testimony. Thank you.

WITNESS WHITE: Okay. Good.

MS. MORRIS: And -- But you did say a variety of reasons, so now it's clear to me that a variety of reasons all have to do with reverse flow events; correct?

WITNESS WHITE: That's correct.

MS. MORRIS: Okay. Thank you.

And I just want to confirm that the number of

diversions at Freeport -- I'm sorry.

Oh, yeah.

I wanted to go back to a question Mr. Berliner asked you about your diversions at Freeport and you gave him some numbers for 2014 and 2015.

WITNESS WHITE: (Nodding head.)

MS. MORRIS: And my question to you is: The numbers that you provided for the diversions at Freeport, were those amounts only East Bay MUD's diversions under their dry-year contract with -- contract with the Bureau?

WITNESS WHITE: So, let me clarify.

No. In -- In the 20 -- When I cited the numbers, that was the total volume of water diverted from the Sacramento at Freeport to the East Bay by East Bay MUD. In both years, that included our CV -- some CVP whatever and transfer water.

MS. MORRIS: And do you know what amount was transfer water?

WITNESS WHITE: Yes. In 2014, it was approximately, if I recall, about 4,000 acre-feet of transfer water from Placer County, and the remaining 18,000 was our CVP water.

And then, in 2015, because of our cutbacks, 33,250 was CVP, and the remainder of the water was transfer water.

MS. MORRIS: That sounds more accurate with what I was thinking. Thank you very much.

WITNESS WHITE: Certainly.

MS. MORRIS: I have no further questions for you.

WITNESS WHITE: Thank you.

CO-HEARING OFFICER DODUC: Hold on.

Okay. Any redirect for Miss White or Mr. Williams?

MR. SALMON: No, not from me.

MR. FERGUSON: No.

CO-HEARING OFFICER DODUC: Okay. So the two of you are officially dismissed. You don't have to leave right now, but you are dismissed.

All right. Ms. Morris.

MS. AKROYD: Thank you.

MS. MORRIS: Good afternoon, Dr. Bray.

I'd like to ask you some questions about your -- the analysis that you did involving the CalSim, and I specifically want to follow up with some questions that Mr. Berliner asked you regarding Figure 5 in your testimony.

Mr. Berliner asked you if it was possible to have monthly average flow of 8,000 cfs or less at Freeport and not have any reverse flow events.

Do you recall that question?

WITNESS BRAY: I do.

MS. MORRIS: Isn't it true that Miss White testified that the only reverse flow events that occurred in 2014 occurred in May?

WITNESS BRAY: If that was her testimony. I don't recall it but . . .

MS. MORRIS: She's here. She can correct it if it's wrong.

WITNESS WHITE: I was commenting on the -- It's -- You're correct it was May, but I want to be clear: I was only commenting on the period of our operations, which was from April 2nd through July 17 of 2014.

So, during our operating period that we operated, we had reverse flows only in the month of May.

MS. MORRIS: Then -- Well, let me ask you another question, then.

(Laughter)

MS. MORRIS: In 2015, what was the period that you operated?

WITNESS WHITE: We operated from April 15th through December 21st, 2015.

MS. MORRIS: Okay. Great. So let's -- let's talk about 2015, then.

So let's -- Miss White also testified, in 2015, that there were significant reverse flow events in the period that she operated -- that East Bay MUD was operating from April through December.

And during that period, there were only reverse flow events in April, November and December.

Do you recall that testimony?

WITNESS BRAY: Who -- Who is that --

MS. MORRIS: You.

WITNESS BRAY: -- addressed to?

MS. MORRIS: That's to you.

WITNESS BRAY: Yeah.

MS. MORRIS: Okay. So, yet, if I'm looking at the -- If I look at the average monthly flows from CDEC in the time period from April through December of 2015, I find that May, June, July, August and October all had monthly averages of less than 8,000 cfs at Freeport.

So my question, then, is: Isn't it true that you can have less than 8,000 cfs flow at Freeport and not have any increase in -- or have any significant reverse flow events?

MR. SALMON: Objection. It sounds as if Miss Morris is citing to or relying on evidence that may or may not be in the record.

MS. MORRIS: Okay. I'll ask it as a

hypothetical.

I went on to CDEC. If I hypothetically went on to CDEC, which I did, and looked at the average monthly flows at Freeport and found that there were several months, specifically May, June, July, August and October, that had less than 8,000 cfs monthly flow at Freeport, isn't it true in my hypothetical that there were no reverse flow events that occurred during that time frame?

MR. SALMON: Objection: Vague as to "reverse flow events." What --

MS. MORRIS: I'm sorry. I'll use your terminology.

You used -- we can do this the hard way -- significant reverse flow event; correct? That's what you used in your testimony.

WITNESS BRAY: Correct. That's a term to try to discern a reverse flow event's --

MS. MORRIS: I know. There's some that shut the plant down and there's some don't.

And the significant reverse flow --

CO-HEARING OFFICER DODUC: Hold on.

MS. MORRIS: -- shuts the plant down; correct?

CO-HEARING OFFICER DODUC: Miss Morris, hold on.

Dr. Bray.

WITNESS BRAY: Yes, ma'am.

CO-HEARING OFFICER DODUC: Is it possible that flows less than 8,000 at Freeport would not result in reverse flow events?

WITNESS BRAY: Yes.

MS. MORRIS: Okay. That's all I have for you. Thanks.

WITNESS BRAY: Oh.

CO-HEARING OFFICER DODUC: Were there any other cross-examination of Dr. Bray?

Is there any redirect of Dr. Bray?

MR. SALMON: No.

CO-HEARING OFFICER DODUC: In that case, Dr. Bray, you are also dismissed.

This panel is completed. Thank you very much.

We are adjourning today. I will ask Mr. Ferguson and Mr. Salmon that you wait until the completion of Group 7 and Group 15's case in chief before introducing -- before submitting all your exhibits into the record; okay?

With that, then, we are done for the day and I will see everyone at 9 o'clock tomorrow, everyone except Miss White, Mr. Williams, and Dr. Bray.

(Proceedings adjourned at 4:39 p.m.)

State of California)
)
County of Sacramento)

I, Candace L. Yount, Certified Shorthand Reporter for the State of California, County of Sacramento, do hereby certify:

That I was present at the time of the above proceedings;

That I took down in machine shorthand notes all proceedings had and testimony given;

That I thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes, and a full, true and correct transcript of all proceedings had and testimony taken;

That I am not a party to the action or related to a party or counsel;

That I have no financial or other interest in the outcome of the action.

Dated: November 7, 2016

_____
Candace L. Yount, CSR No. 2737