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 1A

Thursday, August 25, 2016

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APPEARANCES:

CALIFORNIA WATER RESOURCES BOARD

Division of Water Rights

Board Members Present

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

Staff Present

Diane Riddle, Environmental Program Manager
Dana Heinrich, Senior Staff Attorney (a.m.)
Samantha Olson, Senior Staff Attorney (p.m.)
Kyle Ochenduzsko, Senior Water Resources Control Engr.

For California Department of Water Resources

James (Tripp) Mizell, Senior Attorney

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

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

State Water Contractors

Stefanie Morris
Adam Kear
Becky Sheehan

(Continued)

APPEARANCES (continued)

South Delta Water Agency, Central Delta Water Agency, et al.
John Herrick

City of Stockton
Kelley Taber

City of Antioch
Matthew Emrick

County of Solano
Peter Miljanich

County of Contra Costa and Contra Costa Water Agency
Stephen Siptroth

North San Joaquin and the San Joaquin County entities
Jennifer Spaletta

California Sport Fishing Protection Alliance, California Water Impact Network, and AquAlliance
Michael Bruce Jackson

Deirdre DesJardins
Deirdre DesJardins

Pacific Coast Federation of Fishermen's Associations and Institute for Fisheries Resources
Ben Eichenberg

I N D E X

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EXHIBITS

(continued)

EXHIBITS

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Thursday, August 25, 2016 9:00 a.m.

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P R O C E E D I N G S

CO-HEARING OFFICER DODUC: Good morning, everyone. It is 9:00 o'clock. Welcome back to the California WaterFix Petition Hearing.

I'm Tam Doduc. With me today are Board Chair Felicia Marcus, Board Member DeeDee D'Adamo on the far right. Also assisting us are our staff for the hearing team -- Diane Riddle on the right, Dana Heinrich, Kyle Ochenduszko on the left.

We have Ms. Jean McCue and Mr. Kevin Long, who will be helping us with exhibits today.

Usual announcements, identify the exit closest to you. An alarm goes off; we leave. Either go down the stairs or into a protective vestibule, exit, and meet up in the park across the street.

Second announcement: This is being Webcasted and recorded, so speak into the microphone and begin by providing your name, and state whom you represent.

Our court reporter is here today, again. Thank you for coming back. A transcript will be made available on the Board's website after Part 1A. If you want it sooner, please make arrangements with the court reporting service.

Take a moment, put your noise-making devices on silent, vibrate, "do not disturb." I do not want to hear one ding today.

All right. Just a couple of logistics before we resume with Mr. Herrick. We received a request from Ms. Spaletta in Group 24 that they would like to postpone their cross until this afternoon, and received a request from Ms. DesJardins, with 37, that she would like to conduct her cross this morning, even though I don't see her just yet.

So let me check in with Ms. Taber. Are you here?

Okay. And Stockton East, 23, has not been here.

All right. And -- okay. So what we'll do is, after Mr. Herrick, we will get to Ms. Taber. And then I will squeeze in Ms. DesJardins before 24, since Ms. Spaletta has already requested to conduct her cross in the afternoon.

Mr. Eichenberg, good to see you here on time.

MR. EICHENBERG: Good morning. Thank you for the reminder. I'm not completely familiar with Mr. DesJardins' request, but I thought that she was informing you that her truck broke down, so she couldn't be here yesterday afternoon because of that.

But she may have requested further --

CO-HEARING OFFICER DODUC: Yes, and she further requests, since she'll be here today, that she requests to conduct her cross in the morning. Thank you.

Mr. Herrick, welcome back. I see you're looking chipper. Hopefully we've all had a good night's sleep. I will trust, Mr. Herrick, that you will be conducting your cross-examination today in a manner that is respectful of these witnesses and their professional integrity.

And I trust that the witnesses will accord Mr. Herrick the same respect by providing answers to his questions succinctly and directly because we're all here to better understand what's being proposed and determine the best path forward.

So with that, Mr. Herrick, you have 21 minutes to convince me that your cross-examination method is effective, efficient, and productive if you are about to request more time. So you're on the clock. Please, begin.

ERICK REYES, ARMIN MUNEVAR,

GWEN BUCHHOLZ, KRISTIN WHITE,

PARVIZ NADER-TEHRANI,

TARA SMITH, JAMIE ANDERSON,

MICHAEL BRYAN,

called as witnesses by the Petitioner,

having been previously duly sworn, were

examined and testified further as

hereinafter set forth:

CROSS-EXAMINATION BY MR. HERRICK (resumed)

MR. HERRICK: Thank you, Hearing Officer and Board Members. John Herrick, again, for South Delta Water Agency, Central Delta Water Agency, and other parties.

If any of my cross was unseemly yesterday or not with respect, I apologize for that, of course. Again, I know Parviz and Tara for many years, and I hope my familiarity doesn't translate into something other than that.

So with that said, if we could pull up DWR-513 again, please. And that includes many of the charts and graphs referred to in the parties' testimony.

And Page 3, sorry, of that 513.

Right there. Thank you.

The top figure, EC 5, do you see that, Parvis?

WITNESS NADER-TEHRANI: Yes, I do.

MR. HERRICK: And without straining our ability to read the chart, it appears that Scenarios H3 and H4 have greater EC than the no action alternative

in the months of October, November, January, perhaps a little in February, a little in March, a little in April, and then the others appear to be either similar or a little less; is that correct as a general statement?

WITNESS NADER-TEHRANI: Yeah. For example, in October, just to give a numerical value, I see H3, H4 the monthly average is about 520, the way I read it from here, and no action about 500. So that would translate into about a 4 percent increase. So, yes, that then, I see, what you -- the statement you made is correct.

MR. HERRICK: Thank you. And, again, this graph has monthly averages over the 16-year period, correct?

WITNESS NADER-TEHRANI: That's correct.

MR. HERRICK: Do you mean to suggest that these numbers would be the actual numbers in any particular year or month?

WITNESS NADER-TEHRANI: No, I do not.

MR. HERRICK: Thank you. I'd like to hand out SDWA-28, please.

(South Delta SDWA-28 marked for identification)

MR. HERRICK: And, Parviz, I've handed out to

you a two-page exhibit listed as SDWA-28, and I'll assert to you that these are printouts from the CDEC site, "CDEC" being the California Data Exchange Center.

Are you familiar with the CDEC site?

WITNESS NADER-TEHRANI: Yes, I am.

MR. HERRICK: And I think this is correct, but you can correct me. That has data generally back to, say, 2006, correct, for review or analysis?

WITNESS NADER-TEHRANI: It might. I don't know the exact date. But, yeah, I take your word for it.

MR. HERRICK: I'm just explaining why the chart --

WITNESS NADER-TEHRANI: It does have an extensive database, but it goes back beyond the number of this.

MR. HERRICK: Yes. And the first chart, so Page 1 of SDWA-28, is the Old River Tracy Boulevard. And that shows the EC from -- the beginning of this chart is sometime in 2006 through the current date.

Do you see that?

WITNESS NADER-TEHRANI: I'm sorry. Can you repeat the date?

MR. HERRICK: If you look at the X axis of the graph itself, you can see the first line past the

Y axis says "1/1/08," so that the initial line is in '6, 1/1/- --

WITNESS NADER-TEHRANI: Right.

MR. HERRICK: So just want to make sure we understand what the data shows. And this is explained at the bottom there, too. It tells what dates and where it's from and everything.

WITNESS NADER-TEHRANI: Can you tell me whether this is daily average or month, because I know there are different types of data available.

MR. HERRICK: Yes, I believe this is daily average.

WITNESS NADER-TEHRANI: Okay.

MR. HERRICK: When we looked at your chart on DWR-513, you estimated that, say, in October, there was a 20 EC or 4 percent change. It is there any way to translate that predicted -- that model, just the change of 4 percent, onto an actual year, like this -- not actual -- onto an actual time frame like the one we're look at in SDWA-28?

WITNESS NADER-TEHRANI: The way -- for cases like that, my suggestion would be you take the difference between 520 and 500. That's 20. Add 20 to what the historical number would show that kind of we expected, and it's a rough estimate of what I expect to

see, what the value should be.

MR. HERRICK: So that's a reasonable thing to do to try to get a feel for the actual impact rather than the modeled impact?

WITNESS NADER-TEHRANI: Well, if we call "impact" the difference between an operational scenario and in the best case is what I showed, those are the impacts. Those are the changes I expect to see under that operational scenario.

MR. HERRICK: And the reason I'm asking this is we --

WITNESS NADER-TEHRANI: Jamie has --

WITNESS ANDERSON: As a reminder, though, those model results are at a future climate change with sea level rise, which would not be reflected in the data here. So it's -- it is an estimate, but it's an estimate with caveats of that estimate of the impact also included these other changes that are not reflected in the historical data.

WITNESS NADER-TEHRANI: There's one more thing I want to add. I think it's a good idea to first understand what the numbers are telling us, why is there a 20 EC increase in this case? So an explanation of why that is, yeah.

MR. HERRICK: I don't mean to cut you off, but

that's the issue you and I have had, is that I'm trying to get through some stuff to test your conclusions. I know your ultimate conclusion is the WaterFix will not have a significant effect on the EC generally. But I need to test those assumptions and bases or comparative things. I'm not trying to cut you off. You can answer as much as you want, but I need to test those things.

We don't have any other way, do we, to try to predict what an actual EC might be under the WaterFix scenarios than what we just went through, is there?

WITNESS NADER-TEHRANI: No.

MR. HERRICK: So you can see on this Old River near Tracy chart or graph that there are a number of times when the EC is at or above 1,000, correct?

WITNESS NADER-TEHRANI: Yes, I see that.

MR. HERRICK: Okay. Now, regardless of who may be ultimately responsible for that, would you assume, then, that any increase over 1000 EC would be some level of incremental additional damage to people using the water for agricultural purposes?

WITNESS NADER-TEHRANI: Can you repeat the question?

MR. HERRICK: Yes. If the standard is 1000 EC during some times here -- I just picked that because that's the higher one -- would you assume that a 20 EC

increase over anything at 1000 or above is an incremental additional impact to an agricultural user of that water?

WITNESS NADER-TEHRANI: I can't comment on that.

MR. HERRICK: And I wanted to explore that too. Do you have any expertise in the effect of applied water EC on crops?

WITNESS NADER-TEHRANI: I do not.

MR. HERRICK: Do you make any conclusions in your testimony with regard to that issue of the impacts to crops?

WITNESS NADER-TEHRANI: I'm not, no.

MR. HERRICK: Is there anybody on the panel who is qualified to do that?

(No response)

MR. HERRICK: Do you know of any panel member on any subsequent panel from DWR or the Bureau that has that expertise?

WITNESS NADER-TEHRANI: I don't know.

MR. HERRICK: Do you have any opinion on how, then, we might translate your modeled changes into the ultimate decision here as whether or not there's injury to legal users? Who -- do you know anybody who's going to do that?

WITNESS NADER-TEHRANI: Well, I know the EIR makes a -- you know, so -- I don't know if, Michael, you want --

WITNESS BRYAN: Yeah, in the Environmental Impact Report, there's going to be assessments on effects to ag in the ag chapter. The water quality chapter looks at, you know, exceedances of D1641 and looks at general degradation in water quality, but there will probably be more specifics in that ag chapter.

MR. HERRICK: Okay. But I don't get to cross-examine the E- -- the Final EIR. I'm just trying to find out if any DWR person, as a part of this petition, will be testifying as to the impacts to agricultural water users from the modeled changes in EC that Parviz has provided.

Again, anybody can answer that. I'm not trying to pick on anybody. I'm just trying to figure out who is making that decision on behalf of DWR, if anybody.

WITNESS NADER-TEHRANI: Generally, in past practice, when I see a change of less than 5 percent, you know, in terms of water quality, I -- I mean, a lot of parameters go into modeling. So that, to me, doesn't say it's necessarily an impact.

When I see changes that are, you know, much higher than that, then the question is what is causing it and all that. So that was kind of the basis I used for my conclusion. You know, those percent changes I see are smaller than what I typically -- when I look at the different operational scenarios and make assessments, that's kind of the threshold that I normally look at.

MR. HERRICK: But, again, you said earlier that you're not an expert on --

WITNESS NADER-TEHRANI: No, I'm not.

MR. HERRICK: -- on ag impacts.

WITNESS NADER-TEHRANI: No, I'm not.

MR. HERRICK: So what you just said about your assumption, does your assumption include the fact that whether or not this is a 4 percent or 20 EC changes the channel EC from just below to just above the standard?

WITNESS NADER-TEHRANI: I cannot comment. That's not my expertise.

MR. HERRICK: Thank you.

If we can pull up South -- SDWA-29, please.

(South Delta Exhibit SDWA-29 marked for identification)

MR. HERRICK: Parviz, I have distributed now SDWA-29, and as we went through before with other

parties, Madam Hearing Officer, I would represent that these are outputs from our modeling expert derived from data that Parviz and Mr. Munevar have noted that is deposited with the State Board and includes all of their modeling results. So this is modeling or information taken from the modeling that they've already done.

And, Parviz, this is a little confusing. And I apologize for the format it's in, but this is -- these are excerpts of daily ECs --

WITNESS NADER-TEHRANI: Daily average.

MR. HERRICK: Daily average ECs drawn from the modeling. And from the left to right we have the date, and then we have the B1 for that place, particular place; the average of the B1; the average of the B2; and then we have the average of the channel B2; and then we have the average of -- and this is the important one, the Column -- 1, 2, 3, 4 -- the fifth column, that's the Head of Old River and Middle River. So I have "HMR," which is Head of Middle River. So that's one of the compliance stations.

WITNESS NADER-TEHRANI: That's Old River and Middle River?

MR. HERRICK: Yes. And then the one after it is Middle River near Howard Road Bridge. You know

where that is, right? I mean, it's not a compliance point, but it's just a location.

WITNESS NADER-TEHRANI: Yeah, I do know.

MR. HERRICK: Okay. Then if we skip to the last two columns, then we have the average of the no action for each of those two places.

So does that make any sense? Is that clear? If we look at the 1, 2, 3, 4, 5 and 6 columns and compare them to the last two columns, we are comparing H- --

WITNESS NADER-TEHRANI: Once again, can you explain to me what the difference between the last two columns are?

MR. HERRICK: The last two columns are the average of the no action alternative for the Head of Middle River, and then the last column is the average of the no action alternative for the Middle River at Howard Road. So this is two different locations.

WITNESS NADER-TEHRANI: Okay, sure.

CO-HEARING OFFICER DODUC: Hold on. One person at a time.

Mr. Mizell?

MR. MIZELL: If I may, Mr. Herrick indicated he wants to treat this exhibit as the two treated there, their modeling exhibits. And we're happy to do

that. I just want it on the record that we'd like to make the same objection of foundation as to this being the actual facts. And we'll treat it as a hypothetical if that is okay by the Board.

MR. HERRICK: Absolutely. I was going to get to that. We will have our expert introduce -- you know, it's a huge document with all the stuff.

So I'll just say, as long as we understand what it's purported to be for Parviz, let's just take it as a hypothetical. Okay?

CO-HEARING OFFICER DODUC: All right.

MR. HERRICK: So hypothetically, if these are the numbers from your modeling for two locations under various scenarios, but I'm checking out the H3 scenario as compared to the no action. Okay?

WITNESS NADER-TEHRANI: Okay.

MR. HERRICK: Now, on the first page of this -- and I'm sorry for the coarseness of my documents here. But the first page I've just highlighted, you can see in the fifth column I've highlighted some numbers. And if you compare those to the second to the last column, you can see that there's -- you know, they're the same on the first highlight part. And then the Head of Middle River for under H3 starts going up. And it's somewhere around

2 -- 2, maybe 3 -- excuse me, 30 -- 20 or 30 EC difference, correct?

WITNESS ANDERSON: I'd like to interject here. This data is for the 1974 period, which is our one-year warm-up.

If you look across the first row, you'll see the numbers are close to zero. We start the initial salinity in the Delta at zero, and then we run the model for a year to let all of the salinity inputs come in and mix and the water come in from the ocean. So we don't do any analysis on that first year of data from the model.

So this has only warmed up for half a month.

MR. HERRICK: I understand. This is not a trick. The last page of this exhibit goes through 1979. I'm just going through numbers.

If the answer to some of my questions henceforth are "I wouldn't think that's relevant because it's the early part of the model year," that's fine. I'm not trying to trick anybody. I'm just going to go through these pages. I apologize for the time it takes.

CO-HEARING OFFICER DODUC: Actually, thank you, Ms. Anderson, for pointing that out.

Proceed, Mr. Herrick.

MR. HERRICK: And of course, we see that on 10/1 it's 3.5, and of course there's no 3.5.

On the second page, Parviz, if you could turn to that. And again, I've just highlighted portions. They're not all the portions there on all the times. One's higher than the other. There are just some portions. And you can see when Column 5 is compared to the second to the last column or Column 6 is compared to the last column, we see that the H3 scenario yields higher ECs under this modeling than the no action alternatives, correct?

WITNESS NADER-TEHRANI: So are you saying that all the ones that are highlighted are the ones that you identified as increases over the no action?

MR. HERRICK: Just some of the increases. Some of.

WITNESS NADER-TEHRANI: Some of them. Everything that's highlighted, that's what you -- okay.

MR. HERRICK: In other words. I don't want to go through 7,000 lines. I'm just trying to shorten this a little bit.

WITNESS NADER-TEHRANI: Okay.

MR. HERRICK: As you can see, we're in the middle of the data there on that page. You know, we have some places where the EC under H3 is, you know,

40 EC higher, correct?

WITNESS NADER-TEHRANI: 1976?

MR. HERRICK: Yeah. Look at, like, 3/22/76. We can see from Column 6 that it's 1,045, and the far right column is 1,005. So that's about a 40 EC change, correct?

WITNESS NADER-TEHRANI: I do see that one, yes.

MR. HERRICK: As we go through the next page, the third page, again, the same sort of thing. There's a range of the differences, whether it's from 10 EC to 20 EC; sometimes it gets up to 50 EC. I'm not trying to trick you on that. I'm just trying to go through these without wasting too much time.

WITNESS NADER-TEHRANI: Sure.

MR. HERRICK: So let's flip to the second to the last page. And now we're on 1979, October and November. There you go.

And if we go to Column 6, we can see that sometimes there's a 100 EC change; is that correct? We can see that?

WITNESS NADER-TEHRANI: Can you give me an example?

MR. HERRICK: I'm sorry. If you go to 10/23/79, we've got Column 6 is 584, and the last

column is 479. So that's approximately 100 EC difference, correct?

WITNESS NADER-TEHRANI: On that one there, yes.

MR. HERRICK: And as you go down that, same two comparisons, similar. Sometimes it's 90; sometimes it's a hundred. You can see my highlighted parts include those instances, correct?

WITNESS NADER-TEHRANI: I do see those. Also I just want to make sure the Board is also clear there are days that you see the reverse; is that correct?

MR. HERRICK: Absolutely. I've only highlighted the increases, some of the increases.

WITNESS NADER-TEHRANI: Right.

MR. HERRICK: And there are days when they're similar, and there are days where one is lower than the other and vice versa.

WITNESS NADER-TEHRANI: It can go the other way.

MR. HERRICK: As the previous cross-examiner noted, it's the bad times, not the good.

WITNESS NADER-TEHRANI: Right.

MR. HERRICK: And then finally, the last page of that has a similar -- I apologize for the chicken scratch there next to it, but I've highlighted other

parts. This is a part that shows, once you get to, say, 6/24/81, we have a 100 EC change, correct, from Column 6 to the last column?

WITNESS NADER-TEHRANI: Yes, I see it.

MR. HERRICK: Now, again, we're just assuming that that is correct. So we see in those instances that there are time frames -- and some of my highlights were a little more than just a day or two, you know. Some of those times, the EC change goes from 10 EC to sometimes 100 EC, correct?

WITNESS NADER-TEHRANI: The difference?

MR. HERRICK: Yes.

WITNESS NADER-TEHRANI: I did see examples where it was a hundred different.

MR. HERRICK: Upon what basis do you conclude that a 100 EC change in any particular time frame here that we've covered is not an adverse impact to an agricultural water user?

WITNESS NADER-TEHRANI: I was basing my conclusions based on the monthly averages. And it's kind of a normal practice when we look at modeling results because a number of the different assumptions go into the model. And it -- you know, while -- we say that the incremental difference is what's normally we look at, but it's -- you know, the day-to-day

comparisons are not always a reflection of a true difference.

And the only difference between the two scenarios, the H3 and no action, the only parameter in this case that I know that's causing the difference is the Head of Old River Gate operation.

I just want to make sure we're clear as to why we see the differences we do, that we see. I do see those daily differences and -- but I was making my conclusions based on the monthly average numbers.

MR. HERRICK: But all we have to go on is the modeling, so whether or not you think the Head of Old River barrier is the cause --

WITNESS NADER-TEHRANI: Right.

MR. HERRICK: -- all we have is modeling. We have your opinion, too.

WITNESS NADER-TEHRANI: I agree, yes.

MR. HERRICK: So do you have any opinion as to whether or not somebody who is doing his first irrigation on seedling tomatoes and it happens to be during a time when there's a 100 EC increase, do you have any opinion on whether or not that would be an effect on him?

WITNESS NADER-TEHRANI: No, I cannot comment on that.

MR. HERRICK: Thank you.

WITNESS ANDERSON: But I would like to comment that this time period seems to be a summer time period, and so, yes, there are changes of up to 100, give or take roughly between these -- it's kind of hard to see the numbers.

But these are summer values, so these are relatively -- I don't want to call them low EC, but they're below -- I believe the objective at that time of year is 700. And they're all below 700 so --

MR. HERRICK: May I -- let me just ask, since you volunteered this answer that I didn't ask for, I thought we just went through that, yesterday and this morning, that the numbers of the modeling don't reflect what's actually happening; they reflect what the model is predicting.

So the numbers could be substantially higher than that, as we went through yesterday. These are not model numbers you're relying on. It's the differences you're relying on; isn't that correct?

WITNESS ANDERSON: Yes.

MR. HERRICK: Okay. So your point was what?

WITNESS ANDERSON: That these are summer values that are lower than the standard in all of the alternatives that I can see on the screen.

MR. HERRICK: But we don't know that that's the real number.

CO-HEARING OFFICER DODUC: I think that that's point made, counterpoint made.

Mr. Herrick, you've just run out the first hour. And looking at your list of topic areas, seems like you have quite a bit left to cover.

MR. HERRICK: If I may, I'll -- I will certainly conclude before another hour. Because of the problems we had yesterday, I will -- I would address fewer topics.

CO-HEARING OFFICER DODUC: All right.

MR. HERRICK: But I do have a number of things to cover, if you will allow.

CO-HEARING OFFICER DODUC: All right. Let's give you 30 minutes to start, and then we will check in after 30 minutes.

MR. HERRICK: Thank you.

Parviz, as a final question -- and I'm not trying to test your legal knowledge because you're not here as a legal expert. But in your consideration of monthly averages and your conclusions about whether or not that's significant, did you take into account anything like state or federal anti-degradation policies?

WITNESS NADER-TEHRANI: No, I do not. I think the Board knows that the standard here is the 30-day average, numbers. So what we've seen are highlights of days that are increases, and there are days that go the other way.

So really, I think that the approach I -- which is basing my results on -- basing my conclusions based on 30-day average are kind of in line with the Board's, you know, assumption under what the D1641 water quality objective at this location is.

MR. HERRICK: That's a good answer. But if it's 100 EC more than a number we don't know over 30 days, then that could be important to somebody, could it not?

WITNESS NADER-TEHRANI: It could, but I'm just saying the Board's water quality objective clearly states it's a 30-day average.

MR. HERRICK: And just a final question on that. I won't pass out the next set of data I have. But, Parviz, you did the monthly averages; you didn't go through the daily averages and --

WITNESS NADER-TEHRANI: I did not go through the daily averages.

MR. HERRICK. We can't both talk at the same time. Thank you. You don't have to apologize.

WITNESS NADER-TEHRANI: Sorry. I do that sometimes. I apologize. My wife keep telling me.

CO-HEARING OFFICER DODUC: That might be a little too much information. Thank you.

MR. HERRICK: Okay. If we could go back to DWR-513 and go to Page 9, please.

I apologize. It's not Page 9 I'm looking for, but I certainly wrote down "Page 9."

Parviz, you answered a few questions about water stage or height, water levels --

WITNESS NADER-TEHRANI: Correct.

MR. HERRICK: -- at the new North Delta intakes, correct?

WITNESS NADER-TEHRANI: And I showed the South Delta as well.

MR. HERRICK: Yes. And in your presentation, you noted what you called "minimum water levels." I'm not sure what you're referring to as that -- by that?

WITNESS NADER-TEHRANI: Daily minimum water level. So each day --

MR. HERRICK: I'm sorry. Let me stop you there. I thought you were referring to they didn't go below the minimum level; I think you said that once or twice.

All right. I want to know, were you

suggesting that there's some standard for water levels in that area?

WITNESS NADER-TEHRANI: I was not implying there's a standard of water levels.

MR. HERRICK: And have you done any analysis of the depth in the channel at any of the intakes for either siphons or pumps in the area of the proposed North Delta intakes?

WITNESS NADER-TEHRANI: I did not do that.

MR. HERRICK: So do you know whether or not the -- I think you referred to a half-a-foot decrease in certain areas. Do you know whether or not that half-foot decrease would adversely effect any siphon or pump intake?

WITNESS NADER-TEHRANI: I do not have knowledge about the elevation of the pumps in the area.

MR. HERRICK: Upon what do you base your conclusion, then, that a change of a half a foot has no significant impacts?

WITNESS NADER-TEHRANI: I can -- I'd be happy to explain the explanation I gave before.

MR. HERRICK: Let me just stop there. What I'm looking for is, if you don't know the depth of the intakes in the area, how do you conclude that that small change of half a foot won't impact them?

WITNESS NADER-TEHRANI: The reason for my conclusion was that it's not a uniform half-a-foot drop that's going to be expected to be there all the time. My explanation was that this half-a-foot drop is -- only occurs for a very short duration. That's the first statement.

The second was that tidal -- you know, the variation at that particular location is between two to four feet. So most of the data elevation is higher than the minimum.

And the third point was that the water surface elevation at that location below the three intakes goes below the lowest no action -- representing those of no action only an average of five days in a year. And I looked at it; they're not consecutive.

So based on all those facts, that's the basis for my conclusion.

MR. HERRICK: Parviz, do you know if different stage levels in the river cause different amounts to be transported through a siphon?

WITNESS NADER-TEHRANI: Yes. Mm-hmm.

MR. HERRICK: That's due to the head difference?

WITNESS NADER-TEHRANI: That's correct.

MR. HERRICK: And that there's a similar --

would you answer similarly for pumps? You know, depending on the stage of the water, the pump would take more or less, depending on the stage?

WITNESS NADER-TEHRANI: That's correct.

MR. HERRICK: So when you say it never drops below some range or the time of range, are you taking into consideration that anybody using the siphon might be getting less water over the same period of time because of the project?

WITNESS NADER-TEHRANI: I'm not -- I don't know. I've not taken that into consideration.

MR. HERRICK: Thank you. This is for Parviz and Mr. Munevar.

It's my understanding that CalSim II did produce some water quality results and DSM2 was done for specific water quality results in the Delta. But I'm not sure what data presented is from which. So could you identify for me which data for water quality came from CalSim II that has been presented to us?

WITNESS NADER-TEHRANI: All the water quality results you see are part of DSM2.

MR. HERRICK: Okay. But you said yesterday in answer to somebody that the quality for the Delta monitoring stations were results from CalSim II, not DSM2.

WITNESS NADER-TEHRANI: Well, what I was trying to get at is that CalSim has a -- the tooling side that we call, refer to it as an artificial neural network, ANN. And it needs to have a relationship between flow and salinity in order to figure out the volume of water required to meet certain objectives.

So that's what the ANN is used for. So that's the only flow-salinity relationship that goes inside CalSim. It's only to compute the required volume of water. But it does that based on a monthly time step. So those numbers are not the most accurate numbers.

The DSM2 are the more accurate numbers because they take the effects of a number of things, and it's done in 15-minute time step. And those are what we relied on in coming up with the water quality results that was part of this testimony.

MR. HERRICK: I understand that. I'm just trying to clarify, did CalSim II produce numbers that were presented for Tracy Old River Bridge?

WITNESS NADER-TEHRANI: No. CalSim doesn't do that at all.

MR. HERRICK: But did CalSim II determine certain flows with respect to the standard at Tracy Old River Bridge?

WITNESS NADER-TEHRANI: Not -- no. The only

thing related to San Joaquin is Vernalis in CalSim.

MR. HERRICK: On another topic regarding DSM2, Parviz, it's my understanding that DSM2 is periodically -- I don't know if "calibration" is the right word -- in other words, it's checked against the actual results, and tweaks are made so it better reflects measured or monitored numbers.

WITNESS NADER-TEHRANI: Do you have a specific question on calibration? I would like Ms. Tara Smith to respond.

MR. HERRICK: Certainly.

WITNESS SMITH: That's correct.

MR. HERRICK: And what sort of changes or tweaks -- I don't know if that's the right word -- are done in order to make it better match actual numbers?

WITNESS SMITH: There's a number of different things it could be. You know, in the model when we're doing the hydrodynamics, we have parameters that we tweak, or turn knobs that we turn. For the hydro model, it's the Manning's n. In the quality model, it's the dispersion coefficient.

And we do those tweaks based on usually new data. That could be new bathymetry data, or perhaps we've improved the code to reflect a better physical modeling of something. So there's a number of things

that could happen where we -- we feel that the calibration -- we can recalibrate the model.

MR. HERRICK: Are those knob turnings always a result of something you've determined was the cause of the mistake or the inaccuracies, I'll say? How do you determine that? Maybe that's the better question.

WITNESS SMITH: You know, it depends on what comes in. So, for example, in early 2000, Liberty Island was flooded, and the previous model had been calibrated without that. So as part of the -- at the beginning of the BDCP process, the model wasn't calibrated to include that flooding.

So that bathymetry, that change in that flow was incorporated, and the model was updated for that, including some bathymetry within the Delta.

MR. HERRICK: Okay. I'm trying to get to the changes that might -- might, they may not -- but changes that might be made that are not based upon specific knowledge. And so are there things made to channel lengths in the model in order to make it produce better results compared to real numbers?

WITNESS SMITH: We -- you know, it's interesting. We have looked at the -- you know, the previous grid and updated it, you know, to check the channel lengths, but we didn't really find any

significant differences with that.

MR. HERRICK: You said that the bathymetry sometimes leads you to change something because maybe a channel has silted up or something; is that correct?

WITNESS SMITH: Well, or we just didn't have the data. You know, years ago, we were working -- you know, in the '90s, we were working with data that was from the 1930s. As we collected more bathymetry, we updated it.

MR. HERRICK: Let me just do a hypothetical because I'm trying to drill into the -- if there are times when the changes are made but we don't know why or we don't know what the actual cause of the discrepancy was. So let's just take a stretch of Old River, you know, somewhere south of the Fabian Tract. And if the data doesn't match the modeling, are there times when somebody says, "This doesn't match, but we don't know why, but we're still going to tweak something to make the model fit"? I'm just asking.

WITNESS SMITH: You know, not usually. We need to have some sort of justification for it. So our -- you know, the area we struggle with in that particular area is accurate data in terms of in-Delta uses, you know, our estimates of consumptive use, if they're totally on how the farmers are applying those

consumptive use -- or meeting those consumptive use needs. Additionally, the water quality that's coming off the land, whether or not it be the farmers or some other folks within the Delta, we're not -- we don't necessarily -- you know, unless we can figure out the cause of it, we don't necessarily tweak it to update it.

In fact, it's kind of hard to do with that area because it's fairly variable. We're aware of it, the issues, and we're aware of it in the model. So when we interpret the results, we know -- you know, we know that it may have some -- we have concerns in that area.

MR. HERRICK: I have a -- I won't go through it, but I was looking in the DICU -- Delta Island Consumptive Use -- materials, and I noted that there was one that described how the model assigned numbers to drainage in the South Delta. Are you familiar with that process or that information?

WITNESS SMITH: Yeah, generally. Yes, yeah.

MR. HERRICK: From my reading of that, it appeared that an average number for a portion of the Delta was used to determine what CalSim -- DSM2 would do, and that area was both Central and South Delta.

So they averaged some drainage for those areas

and used that for the model's treatment of drainage in the South Delta; is that correct?

WITNESS SMITH: No. Well, I'm not quite -- I may not be understanding your question correctly. But DICU basically takes evapotranspiration estimates and land use estimates from various parts of the Delta and from that, it determines the consumptive use. And then from that, it determines channel depletions. So as best possible -- during the crops, so the average of that.

But within a particular area, we may be consolidating.

MR. HERRICK: That's not the issue I was on. Sorry.

WITNESS SMITH: Oh, sorry. I didn't understand your question, then.

MR. HERRICK: I'm talking about how DSM2 handles ag drainage in the South Delta.

WITNESS SMITH: Oh, not the diversions. Okay.

MR. HERRICK: Is the drainage in the model -- is the drainage input in the model an average of drainage from areas, or is it just one number for the whole Delta?

WITNESS SMITH: The drainage, my understanding -- and I know Parviz worked on this

also -- is that based on the diversion, there's an efficiency of the -- and then based on that value, like it's 70 percent in most areas, then that's how the drainage is calculated.

CO-HEARING OFFICER DODUC: Ms. Morris?

MS. MORRIS: Thank you. Stefanie Morris, State Water Contractors. For clarity of the record, could Mr. Herrick specify whether he's talking about water quality or water quantity in the last question, because I'm not sure what he was getting at on the averages, and I'd like the record to be clear.

CO-HEARING OFFICER DODUC: Mr. Herrick?

MR. HERRICK: Well, we were talking about how DSM2 handled drainage in the South Delta. So that's a quality issue.

CO-HEARING OFFICER DODUC: Thank you.

WITNESS SMITH: So I was actually looking at it as a quantity issue, not the -- I was looking at it as amount, as the amount and not the quality coming off the island. And we do have -- our estimates of water quality tend to be more general than the drainage amounts coming off, so.

MR. HERRICK: All right. At the risk of being yelled at, the question yesterday didn't answer what I -- didn't result in answers that I understood.

So real quickly, Parviz, we all understand there was modeling done for the BDCP Draft EIR/EIS, comma [sic]. Then there was modeling done for the Recirculated EIR/SEIS. And then there was modeling that was submitted on behalf of this petition.

Is that correct that the modeling submitted by you for this petition is separate and new as compared to the modeling done for the Substitute EIR -- Recirculated EIR/SEIS?

WITNESS NADER-TEHRANI: I've shown four operational scenarios. There's Boundary 1 and Boundary 2 that was done for this, and that was not included in the past EIR or the Recirculated Draft.

And then there's the H3 and H4. Those are done, I believe, in the BA document -- is that correct? No?

Okay. So they are going to be part of the Final EIR, the H3, H4.

MR. HERRICK: I just want to make sure. So Boundary 1 and 2 are new modeling done for this petition?

WITNESS NADER-TEHRANI: That's what I understand, yes.

MR. HERRICK: The modeling for H3 and H4 were taken from the modeling done from the Recirculated EIR;

is that correct?

WITNESS NADER-TEHRANI: Well, there are a number of new assumptions.

Perhaps, Armin, could you elaborate?

WITNESS MUNEVAR: It is updated modeling for this petition, even the H3 and H4 that's being considered for the Final EIR/EIS.

MR. HERRICK: Okay. Thank you. And that updated modeling is based upon slightly different operational assumptions based upon some draft of the biological assessment, correct?

WITNESS MUNEVAR: The H3 and H4 provides a range around which the biological assessment selected one particular scenario for analysis.

MR. HERRICK: And there's not an analysis for the biological assessment as a scenario itself?

WITNESS MUNEVAR: There is. It's the one that was on the, I think, Exhibit 1, H- -- if I recall, we called it H3-plus.

MR. HERRICK: So that's -- okay. Thank you.

CO-HEARING OFFICER DODUC: See, I did not yell at you, Mr. Herrick.

MR. HERRICK: Well, I really didn't understand it from the answers and questions yesterday. So thank you for indulging me.

Let me start with Mr. Munevar for the CalSim II modeling issues.

The Boundary 1 condition as well as the H3 scenarios as well as the Boundary 2 all include climate change and sea level rise, correct?

WITNESS MUNEVAR: That is correct, in addition to the no action.

MR. HERRICK: Is there any way for us to tease out from your modeling the impacts to -- the impacts from the California WaterFix separate from any impacts from climate change and sea level rise?

WITNESS MUNEVAR: Given the fact that the climate change and sea level rise are in the no action as well as the California WaterFix, the difference between the California WaterFix scenarios and the no action represent the changes associated with the WaterFix scenarios themselves.

MR. HERRICK: That assumes that the climate change, sea level rise impacts are the same under each scenario, regardless of other actions taken by the projects, correct?

WITNESS MUNEVAR: It is a baseline assumption in all of the scenarios. I think that's the best I can respond to it.

There are a number of individual assumptions

that go part of no action, and they are identical in the WaterFix scenarios. So when we measure the difference between the WaterFix and the no action, we're measuring the impact of the WaterFix operations, not the impacts of those individual assumptions in the no action.

MR. HERRICK: Okay. But if the no action assumes sea level -- or climate change and sea level rise and then, say, Boundary 2 does the same, is it possible that Boundary 2 conditions on extra flow then change what the effects of the climate change and sea level rise are?

In other words, might the climate change, sea level rise impacts or changes be different depending upon which scenario is modeled?

WITNESS MUNEVAR: I would not expect that to be the case.

MR. HERRICK: And Parviz, same line of questions for you.

When we're trying to determine the effects on the other users from the California WaterFix, would you expect that combining the WaterFix actions with the climate change and sea level rise effects, you will be able to determine just what the effects from the California WaterFix are?

WITNESS NADER-TEHRANI: That is -- I agree with that statement.

MR. HERRICK: Thank you.

Parviz, are you familiar with -- I didn't bring the quote; so I'm not trying to trick you.

Are you familiar with the operational plans for the California WaterFix including a 14-day stretch in the fall where there are no exports from the South Delta?

WITNESS NADER-TEHRANI: I'm only generally familiar. I would -- I think Armin Munevar would be a better person to respond to specific questions about specific actions in the operational scenarios.

MR. HERRICK: Okay. I'm trying to focus on the water quality impacts. But would you expect that there would be water quality impacts if the South Delta pumps were shut down every fall sometime for two weeks?

WITNESS NADER-TEHRANI: When you say "South Delta," can you be more specific?

MR. HERRICK: The current SWP CVP export pumps.

WITNESS NADER-TEHRANI: When you say "water quality impacts to South Delta," are you talking about what -- areas upstream of the current agricultural barriers?

MR. HERRICK: Well, let's start over, then.

Mr. Munevar, what time of the year under the current project proposal is -- is there a schedule to be a shutdown of CVP and SWP pumps in the South Delta?

WITNESS MUNEVAR: I'm not aware -- I'm not aware of that.

MR. HERRICK: Parviz, I'm not trying to -- is there not that provision; do you know? Do you not know?

WITNESS NADER-TEHRANI: I don't recall that provision. It might exist, but I don't believe it's in the model.

MR. HERRICK: Thank you.

Parviz, the project includes changes to Clifton Court Forebay, correct?

WITNESS NADER-TEHRANI: I believe that's correct.

MR. HERRICK: And very basically, Clifton Court Forebay is now divided into two. The north half will receive water from the new intakes; the southern half, which is now expanded from the southern part, will be operated as before, using the Clifton Court Forebay intake, correct?

WITNESS NADER-TEHRANI: Yes. That is my understanding.

MR. HERRICK: Do you understand that the -- do you have an understanding as to the difference in surface area of the newly proposed southern part of Clifton Court as opposed to the current Clifton Court?

WITNESS NADER-TEHRANI: Probably smaller.

MR. HERRICK: It's going to be smaller? Are they going to dredge the whole of the new southern part of Clifton Court to establish some volume of capacity?

WITNESS NADER-TEHRANI: I don't know.

MR. HERRICK: Have you looked at whether or not the new Clifton Court might change the tidal prism in that area when the incoming tide is coming in?

WITNESS NADER-TEHRANI: I believe those studies were done, yes.

MR. HERRICK: Is that in the model?

WITNESS NADER-TEHRANI: You asked me whether we've done studies to see whether the same kind of operation that existed before in terms of bringing water into the Clifton Court, whether the smaller -- this is my understanding of what I think I heard from you -- that a smaller surface area would be able to accommodate the same kind of operation that exists, correct? Is that a correct --

MR. HERRICK: Yes. I'm not trying to confuse things. So the -- there are studies that determine how

big or deep it would have to be in order to still divert as desired, correct?

WITNESS NADER-TEHRANI: Right. And I think I've seen studies that looked at that and confirmed that the same operations would -- could be able to continue with the new assumptions on this, you know, smaller area.

MR. HERRICK: Does that mean the modeling -- to your knowledge, does the modeling then have that -- have any changes for the new Clifton Court southern part, or did they make changes because of that?

WITNESS NADER-TEHRANI: Are you asking me whether the model ever submitted has the -- has the revised Clifton Court on it? Is that your question?

MR. HERRICK: Yes. The models that you ran, the model that you ran, does it have any provision for changes in the Clifton Court?

WITNESS NADER-TEHRANI: I actually don't -- without looking at it, I can't say.

MR. HERRICK: I'm just trying to explore this question. When you open the tidal gates on Clifton Court Forebay, depending on the conditions in the surrounding channels, water flows in at a certain rate, correct?

WITNESS NADER-TEHRANI: That's correct.

MR. HERRICK: If the volume of the new Clifton Court were different than the old volume, would that affect the amount of water coming in when the gates are open?

WITNESS NADER-TEHRANI: What -- my understanding about how the hydrodynamics work in the area is that those intakes will not change, and the same existing intakes would continue to be there. That is my understanding. I could be wrong.

But if that is correct, then the volume of water for the same stage differential in and out, inside and outside the forebay, would bring the same volume of water inside.

What's going to be affected is that the water level inside Clifton Court Forebay would go up faster because of -- you know, for the same volume of water that's coming in, the stage would go up faster. That's the only difference. But the amount of water that can come in at a certain -- for the same stage differential would continue to be the same.

MR. HERRICK: I understand it's the same amount of water. What I'm trying to get at is will it come in at the same rate?

WITNESS NADER-TEHRANI: The rate is what I said. It's going to be the same, yes, quantity.

MR. HERRICK: Because there's a difference, right?

WITNESS NADER-TEHRANI: The volume of water coming in depends on the stage differential, the water level differential between in and -- inside and outside the forebay, and the current geometry of the five intakes, those are not changed.

MR. HERRICK: One could dig the new forebay deeper, and then when you open the gates, water would come in at a different rate than it does now, correct, hypothetically?

WITNESS NADER-TEHRANI: No.

MR. HERRICK: No?

WITNESS NADER-TEHRANI: No.

MR. HERRICK: So changing Clifton Court Forebay --

WITNESS NADER-TEHRANI: It doesn't bring --

CO-HEARING OFFICER DODUC: One at a time.

WITNESS NADER-TEHRANI: I'm sorry.

MR. HERRICK: Changing Clifton Court Forebay will not have -- could not have any effect on how much tide comes in at what rate from -- what is that -- West Canal?

WITNESS NADER-TEHRANI: I think you asked me about, if we make it deeper, does it affect the volume

of water coming in. And I said no to that. The answer was no to that question.

MR. HERRICK: But I just asked you a question --

WITNESS NADER-TEHRANI: Because you made it general. You changed the question, I think.

MR. HERRICK: I did.

WITNESS NADER-TEHRANI: Yeah, so.

CO-HEARING OFFICER DODUC: So answer the second question.

WITNESS NADER-TEHRANI: So the second question is if it makes the Clifton Court surface area smaller like it is being proposed.

And for the same water level difference in and out, inside and outside the forebay, the same quantity of water will continue to be coming in.

The difference would be that the water level inside the forebay would go up at a faster rate than the old configuration with the larger area. And I do recall we did a feasibility study to see if the Clifton Court can function based on the same existing operations with a smaller surface area. And I think based on that, you know, we reached a conclusion that that can be done.

CO-HEARING OFFICER DODUC: So based on your

understanding of the current proposal with respect to the Clifton Court Forebay, will that result in a change to the volume or rate of water that's coming into the lower portion of the forebay?

WITNESS NADER-TEHRANI: The overall volume will not change, but because the water level will increase inside the forebay faster, it may increase the number of -- the amount of time that the intakes would have to be open to bring the same quantity of water.

However, additional point I was going to say, that the assumptions that are made is that the amount of exports from Clifton Court based on California WaterFix will go down in the future. So -- and so those are the two factors that we have to consider.

MR. HERRICK: Thank you for that clarification.

What I'm trying to get at is, if there is a change in the time frame of when the gates are open, does that have an effect on the water levels or tides in the neighboring channels?

WITNESS NADER-TEHRANI: Very small change.

MR. HERRICK: But that hasn't been modeled -- or has that been modeled? Excuse me.

WITNESS NADER-TEHRANI: I -- you know, the feasibility study that I just referred to was a while

back. So I don't remember the details of -- but based on my understanding of how the hydrodynamics work in the area, you know, I don't believe that the change in the surface area or reduction in surface area of Clifton Court Forebay would have an effect on the water levels themselves.

MR. HERRICK: We're not talking about the surface level in Clifton Court, as the Hearing Officer clarified with you.

We're talking about the change that you mentioned of the time, timing of the opening of the Clifton Court gates.

WITNESS NADER-TEHRANI: Right.

MR. HERRICK: Let me see if I can harken you back to the South Delta temporary barrier project. You were involved in some of the modeling with that, correct?

WITNESS NADER-TEHRANI: Yes.

MR. HERRICK: And you recall that DWR spent quite a bit of money to deepen or lower siphon intakes downstream of the temporary barriers at one point, correct?

WITNESS NADER-TEHRANI: I was not part of that, those discussions.

MR. HERRICK: Okay. You do recall our

meetings when Alex was there and the issue was that 10ths of foot were important in changes in stage? Do you remember that?

WITNESS NADER-TEHRANI: Can you repeat that question? Sorry.

MR. HERRICK: Do you remember the meetings with Alex Hildebrand during the temporary barrier project where the concern was about 10ths of foots in change?

WITNESS NADER-TEHRANI: I don't remember that. Sorry.

MR. HERRICK: Okay. So the current project has a permanent Head of Old River barrier; is that right?

WITNESS NADER-TEHRANI: That's part of the California WaterFix.

MR. HERRICK: And it does not have permanent agricultural barriers downstream of it, correct?

WITNESS NADER-TEHRANI: That's correct.

MR. HERRICK: When you put in a barrier at the Head of Old River -- and I'll get to various scenarios, so don't jump ahead, please. But if you block off the flow of the San Joaquin River at the Head of Old River, that means points downstream on Old River are affected, correct?

WITNESS NADER-TEHRANI: Yes, technically it can.

MR. HERRICK: And those effects can be staged because there's no -- if there's no water flowing into Old River; is that correct?

WITNESS NADER-TEHRANI: Can we point -- sorry.

MR. HERRICK: Parviz, I appreciate your efforts, but I'm trying to --

WITNESS NADER-TEHRANI: You asked me a question.

CO-HEARING OFFICER DODUC: Hold on. Hold on.

MR. HERRICK: I'm trying to move up to your point, but I need to do the --

WITNESS NADER-TEHRANI: If you go to Page 79 of the same -- of my PowerPoint, sorry.

CO-HEARING OFFICER DODUC: And you need to refer to this in order to answer the question Mr. Herrick just asked?

WITNESS NADER-TEHRANI: Yes, because I'm trying to explain that the part that is on Page 79 represents a water level at this specific location. And within it, it has periods where the Head of Old River has different set of operations compared to that of no action.

What you're going to be looking at is that,

looking at the entire 16 years, you're not seeing a -- kind of a noticeable change in water level.

MR. HERRICK: Let me go back to my question, Parviz, because I'm trying to go from general to specific. And I hope you don't need to go to an ultimate conclusion first because that makes the cross-exam superfluous.

MR. LONG: Excuse me. For the record, Page 79 of which exhibit?

MR. HERRICK: It's the Errata.

MR. LONG: Number 5, Errata?

MR. HERRICK: Yeah.

CO-HEARING OFFICER DODUC: All right. Let's get back to Mr. Herrick's question.

What was your question, Mr. Herrick?

MR. HERRICK: Thank you. If there's a permanent Head of Old River barrier and it's closed, there can be effects downstream? And I believe you answered yes to that.

My next question was are one of those potential effects stage?

WITNESS NADER-TEHRANI: Based on the results on Page 79, those changes are very small because I don't see --

CO-HEARING OFFICER DODUC: But are they

staged?

WITNESS NADER-TEHRANI: This is the plot that you see. Whatever difference you see, those are the differences that --

CO-HEARING OFFICER DODUC: Answer his question.

WITNESS NADER-TEHRANI: I believe those changes are very small.

MR. HERRICK: Is one of the possible impacts changes in stage?

WITNESS NADER-TEHRANI: Yes, but those are expected to --

CO-HEARING OFFICER DODUC: Thank you.

MR. HERRICK: Is one of the possible impacts quality?

WITNESS NADER-TEHRANI: Yes.

MR. HERRICK: Are you aware -- I believe you are. Are you aware that we have response plans for both water levels and water quality that deal with barrier operations?

WITNESS NADER-TEHRANI: I believe that's the case, yeah.

MR. HERRICK: And I believe you're aware that we have stage requirements at certain times of 0.0 mean sea level, which is now something else, but on Middle

River, and there's a 0.3 somewhere on Downey Cut or something. Do you recall that?

WITNESS NADER-TEHRANI: I -- I don't recall.

MR. HERRICK: So in the operation of the barriers now, there are documents that address South Delta concerns with regards to quality and stage and the operation of the barriers?

WITNESS NADER-TEHRANI: Yes.

MR. HERRICK: Okay. Now, is there a reason why, to your knowledge, installing a permanent barrier under the California WaterFix does not also include installing permanent barriers at the three agricultural barrier sites?

WITNESS NADER-TEHRANI: I can't comment on that.

MR. HERRICK: Do you know whether or not permitting for the barriers is dependant upon fishery issue concerns?

WITNESS NADER-TEHRANI: I can't comment that.

MR. HERRICK: Do you know whether or not operation of the ag barriers is sometimes delayed pending resolution of the fishery concerns?

WITNESS NADER-TEHRANI: I don't know.

MR. HERRICK: Parviz, did you say you modeled for the Head of Old barrier [sic] operations 50 percent

coming through the barrier; is that correct?

WITNESS NADER-TEHRANI: That was for Boundary 1, H3, and H4, and certain number of months. And same with Boundary 2 except there are number of months in Boundary 2 where a complete closure of Head of Old River was included.

MR. HERRICK: And if you completely close the Head of Old River, then you would not expect to have any net flow in Old River and Middle River in those portions of those channels in the South Delta?

WITNESS NADER-TEHRANI: Would be very small.

MR. HERRICK: Well, if there's no inflow, then it's only tidal action?

WITNESS NADER-TEHRANI: No net flow due to tidal action because the strength of the tide varies, spring cycle. So you could still end up with some net flow. It will not be zero.

MR. HERRICK: It would be very small, though, wouldn't it?

WITNESS NADER-TEHRANI: Yes.

MR. HERRICK: Thank you. Parviz, the --

CO-HEARING OFFICER DODUC: By the way, Mr. Herrick, I just added 30 minutes.

MR. HERRICK: Thank you.

CO-HEARING OFFICER DODUC: So you're on your

final 30 minutes.

MR. HERRICK: I thank you, and I hope to not take that long. I can feel the disdain in the audience here.

CO-HEARING OFFICER DODUC: I see heads shaking "no."

MR. HERRICK: I don't believe that.

Parviz, are you familiar within what Term 91 means with relation to licenses and permits issued by the State Water Resources Control Board?

WITNESS NADER-TEHRANI: Very vague.

MR. HERRICK: You are familiar with what "balanced conditions" in the Delta means?

WITNESS NADER-TEHRANI: I have a very general understanding of that.

MR. HERRICK: And let me just represent to you that there are provisions under some permits or licenses that say if the Delta's in balanced conditions, that licensee or permitee can no longer divert.

WITNESS NADER-TEHRANI: Okay.

MR. HERRICK: Is that reasonable enough as a beginning point?

WITNESS NADER-TEHRANI: Okay.

MR. HERRICK: Does the California WaterFix

result in any increase in times -- excuse me.

Does the California WaterFix ever result in increases in the onset of Term 91?

WITNESS NADER-TEHRANI: Perhaps --

MR. HERRICK: Is that for Mr. Munevar?

WITNESS MUNEVAR: I can do my best on it.

We did not evaluate Term 91 in the modeling. I'll leave it there.

MR. HERRICK: You did -- did you evaluate balanced conditions?

WITNESS MUNEVAR: We have balanced conditions in the modeling, but we did not evaluate the frequency or changes.

MR. HERRICK: So you don't know whether or not California WaterFix would increase the times when people burdened by Term 91 would be burdened by Term 91?

WITNESS MUNEVAR: It's my understanding based on project and operations that when California WaterFix North Delta diversions are occurring is largely during periods of excess, in the spring and high flow periods, in which case Term 91 is not likely to be governing.

MR. HERRICK: Yes. But that's only one small scenario. There are other times other than that when previous operations might affect the onset of balanced

conditions, correct?

MR. MIZELL: Objection, vague and ambiguous. That's an awfully broad question to ask.

CO-HEARING OFFICER DODUC: Could you narrow that, Mr. Herrick?

MR. HERRICK: Yes.

In answer to my question about the Term 91, you said, well, the North Delta diversion is normally during wet times.

And then I said, well, that's only one subset of the time frame of the operation of the projects.

CO-HEARING OFFICER DODUC: Stop there.

Is that correct?

WITNESS MUNEVAR: That is correct.

CO-HEARING OFFICER DODUC: All right. Go on.

MR. HERRICK: So later times, the diversions under those wetter times, the later times might -- balanced conditions in those later times might be affected by those earlier diversions; is that correct?

WITNESS MUNEVAR: It's possible, but it's not my belief that that would be a substantial change. During the drier periods, we're changing point of diversion, not necessarily changing the conditions of balanced conditions or non-balanced conditions or excess conditions.

MR. HERRICK: Thank you. This is going to sound unfair, but it's not meant to be. Maybe this is for Mr. Munevar.

The most recently released biological assessment, which includes the -- if this is the right way to say it -- the operational scenarios proposed under that, the most recent one, the appendices are much smaller without all the charts and graphs.

Do you have any idea why that's correct, assuming that's correct?

WITNESS MUNEVAR: I do not.

CO-HEARING OFFICER DODUC: Does anyone else on the panel know why the difference?

WITNESS BUCHHOLZ: Yes.

MR. HERRICK: Thank you.

WITNESS BUCHHOLZ: No problem.

Gwen Buchholz. The biological assessment charts and figures and tables were established for the needs for the U.S. Fish and Wildlife Service and the National Marine Fishery Service for their analysis. And their analysis is smaller -- the information that they're looking for is less -- is a smaller subset than the information we placed in the EIR/EIS.

CO-HEARING OFFICER DODUC: So what information --

WITNESS BUCHHOLZ: So for instance, we -- I'm trying to remember. I have to look. But I do know it is smaller than that. And it's just because -- so the items -- when we sat down with them in the preparation of the biological assessment to say what does U.S. Fish and Wildlife Service need, what does National Marine Fishery Service need, CDFW wants to look at.

CO-HEARING OFFICER DODUC: Thank you.

MR. HERRICK: Thank you for your indulgence. I'm skimming through my topics that I've covered so that I can finish here. I think this starts with Mr. Munevar.

Does the modeling you performed for this petition include any of the habitat restoration projects proposed in the BDCP?

WITNESS MUNEVAR: No, it does not.

MR. HERRICK: So it's down to -- I forget what it was -- like, 59 acres or something, that's the current?

WITNESS MUNEVAR: Yeah, I don't recall the number, but from the Draft BDCP, through this large-scale habitat restoration has been removed from the California WaterFix alternatives.

MR. HERRICK: Okay. I know it's removed from the alternatives. I'm just trying to clarify, is it

not in the modeling? In other words --

WITNESS MUNEVAR: It's also removed from the modeling. That's what I'm trying to say.

MR. HERRICK: And is that true for DSM2, Parviz, or is that a relevant question for DSM2?

WITNESS NADER-TEHRANI: No, it has been removed from DSM2 as well.

MR. HERRICK: Thank you.

Mr. Munevar, in your presentation -- I don't remember the page number in 5 Errata; I don't think it matters -- I think you testified that carryover storage or excuse me, end-of-September storage under worst-case scenarios was something like less than 1 percent or less than 5 percent at some reservoirs; is that generally correct?

WITNESS MUNEVAR: I don't believe I gave a percentage for carryover storage.

MR. HERRICK: I thought you said that end-of-September storage in one instance was less than 1 percent, or was that deliveries to contractors?

WITNESS MUNEVAR: I believe that was deliveries to contractors I was speaking of.

MR. HERRICK: Thank you. Sorry for that.

Did you do any analysis to determine whether or not a 1 percent or 5 percent decrease in deliveries

had an adverse effect on any particular contractor?

WITNESS MUNEVAR: I did not.

MR. HERRICK: So do you have any conclusion as to whether or not that 1 percent or 5 percent decrease is an adverse effect on them?

WITNESS MUNEVAR: It is my opinion that it is not. These were, I believe, 1 or 1/2 percent in critical years that were likely the result of modeling limitations in those driest years.

MR. HERRICK: Okay. So is your conclusion, then, based upon if harm is rare, it's not harm?

WITNESS MUNEVAR: That is not what I said.

MR. HERRICK: Okay. Thank you.

I don't think this was asked. Mr. Munevar, the earlier cross-examination and earlier panel indicated that a proposal for the California WaterFix was to change the inflow-export ratio on the Sacramento River. Do you recall that?

WITNESS MUNEVAR: I do not recall that.

MR. HERRICK: Do you know whether or not the inflow-export ratio on the Sacramento River is part of the project?

WITNESS MUNEVAR: I don't recall specific testimony that you're referring to. I do recall the general discussions around it.

MR. HERRICK: Is the -- sorry.

WITNESS MUNEVAR: The inflow-export ratio is included in all of the modeling as applied to the South Delta. There was -- just for clarification for the Board, there was -- the inflow-export ratio did not -- or the export-inflow ratio did not anticipate a North Delta diversion at the time of its development.

So for this project, we had to interpret how the export-inflow ratio would be applied under a dual conveyance operation.

MR. HERRICK: And under this -- and under your treatment of that, does it assume that North Delta diversion intake -- diversions are not counted as inflow?

WITNESS MUNEVAR: It takes the inflow to the Delta that is downstream of the intakes and applies the export-inflow ratio to the South Delta associated with that adjusted inflow.

MR. HERRICK: Okay. Thank you.

If I may have one minute or pause here, and everybody can be done with me.

I don't think I should bore everybody with sensitivity analyses, so thank you very much, Board, panel Members. Thank you. I hope I wasn't abusive, and thank you.

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

We will take our 15-minute break. When we resume, it will be Ms. Taber up for Group 22. And assuming that Group 23 is still a no-show, after Ms. Taber will be Ms. DesJardins.

With that, we will resume at 10:35.

(Recess taken)

CO-HEARING OFFICER DODUC: All right. It's 10:35. Welcome back.

Slight change in the ordering; after Ms. Taber, we will go to Mr. Emrick, Group 27, before Ms. DesJardins does her cross-examination.

MS. DES JARDINS: Ms. Doduc --

CO-HEARING OFFICER DODUC: Your microphone is not on.

MS. DES JARDINS: My name is Deirdre DesJardins.

CO-HEARING OFFICER DODUC: Hold on. Get close to the microphone, and identify yourself for the court reporter.

MS. DES JARDINS: My name is Deirdre DesJardins. And I just wanted to clarify that my e-mail yesterday was about my having car problems and having difficulty making it to the hearing yesterday.

It wasn't about requesting to go out of order today.

CO-HEARING OFFICER DODUC: Ms. McCue?

MS. McCUE: I sent you an e-mail and asked if you wanted to go this morning or this afternoon, and you said this morning, so.

MS. DES JARDINS: Oh, no, I'm sorry. That was -- you just said -- I was concerned. My truck started --

CO-HEARING OFFICER DODUC: We're not getting into all that unnecessary detail.

Is it now your request to not go out of order?

MS. DES JARDINS: Yes, please.

CO-HEARING OFFICER DODUC: Thank you.

MS. DES JARDINS: I apologize for the confusion.

CO-HEARING OFFICER DODUC: Ms. Taber, please proceed.

MS. TABER: Good morning. I'm Kelley Taber. I'm here on behalf of the City of Stockton. And Chair Doduc --

CO-HEARING OFFICER DODUC: Hold on. I'm sorry. Now I see Mr. Herrick.

MR. HERRICK: Yes, I apologize for interrupting.

I just want to confirm because people are

e-mailing me. If we -- no matter when we finish this panel, the water rights panel won't start this week or next week? You said if we finish by Friday --

CO-HEARING OFFICER DODUC: That is correct.

MR. HERRICK: So if they finish today, we're still not going to start the rights panel tomorrow?

CO-HEARING OFFICER DODUC: I promised if we finished early this week, that we will take next week off, and I will keep that promise.

MR. HERRICK: That's what I understood. Thank you very much. Sorry for interrupting.

CO-HEARING OFFICER DODUC: No problem.

All right. Third time is the charm, Ms. Taber. Unless there's something else?

(No response)

CO-HEARING OFFICER DODUC: All right. You're on, Ms. Taber, finally.

MS. TABER: Great. Thank you.

As I recall, you had requested a brief summary of the issues that we intended to cover. And my questions will address the -- will be primarily addressed I think to Mr. Tehrani. And I'd like to understand his -- my questions will address his understanding of the issues raised in the City of Stockton's protest, how those issues are addressed in

the testimony and water quality modeling, and then also some additional questions regarding the modeling itself and how one would access the information in the modeling.

CO-HEARING OFFICER DODUC: Thank you. And suggest that you anticipated needing 30 minutes or so?

MS. TABER: Yes. Although I apologize, after the conclusion of yesterday's testimony, it -- I became aware of the need to ask questions on a broader range of subjects, so I might need an hour. But I will certainly hope to be shorter. A lot of it depends on the answers that I get today.

CO-HEARING OFFICER DODUC: Yes, the answers will be short, succinct, direct. Thank you.

Mr. Mizell?

MR. MIZELL: If it please the Board, we do have staff available to answer questions on access and to the modeling and how to utilize the modeling programs. Those were all in the letter that we submitted along with the link to the modeling.

So if there is an opportunity to convince the questioning in that regard, we have staff available to answer those questions.

CO-HEARING OFFICER DODUC: And would that be the staff here, or is that the additional staff?

MR. MIZELL: That is additional staff from DWR.

CO-HEARING OFFICER DODUC: Have those staff been identified in your notices?

MR. MIZELL: They're not here for -- those staff are not -- or those staff are not being provided for testimony purposes. They are for technical help in accessing the modeling that we provided for this. And the witnesses here are here for testimony.

CO-HEARING OFFICER DODUC: So you're offering those staff to provide assistance outside of the hearing?

MR. MIZELL: That's correct. It was my understanding of Ms. Taber's point that she had questions about the technical aspects of accessing the modeling. If that's incorrect, then I withdraw my statement.

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

Ms. DesJardins?

Your microphone is not on.

MS. DES JARDINS: I have a general objection to this procedure of provision of modeling information outside the hearing. It means that the entire hearing is referring to exogenous information that's not

introduced, not properly identified. It creates a lack of clarity about what's available to the protestants or if it's in human-readable format, and other issues.

CO-HEARING OFFICER DODUC: Thank you. Your objection is noted.

My understanding, Mr. Mizell, is this is simply a "how to access" the data that has already been made available.

MR. MIZELL: That is correct.

CO-HEARING OFFICER DODUC: Thank you.

Ms. Taber, fourth time's the charm.

MS. TABER: Just on that point, when we get to that point, if there are problems or objections, we can address them.

But I will say that we did learn yesterday that, in fact Mr. Tehrani's written testimony and his opinion regarding legal injury was based on information that was outside of the scope of his written testimony and supporting exhibits that were introduced and he was relying on modeling information that was posted on the website, and that was not clear.

So I think it would be helpful -- I know it would be helpful to my client and perhaps the Board members too to get a better understanding of how the protestants and the general public might find that

information. So I could talk to the staff outside of that, but I do believe it's relevant to the overall proceeding.

So I will try to be efficient in asking questions of the modeling panel, but I presume that they are the experts in this -- how to interpret this data.

CO-HEARING OFFICER DODUC: All right. Ms. Taber, let's do a fine distinction here.

The data, all data that is being relied on by all the witnesses should be made available. It should have already been made available. Whether or not it is part of a particular witness testimony or not, it is still evidence in the record that should be accessible to all. That is certainly a point that is a hearing issue.

Now, the mechanics of how you access that data is not something I particularly want to know about. And if that's something that Mr. Mizell is offering technical assistance to access the data that is already part -- made available for this hearing, then that's not an issue that we need to dwell to as part of the hearing itself.

But I will let you proceed, and we'll cross that bridge when we come to it.

MS. TABER: Thank you. Understood.

CROSS-EXAMINATION BY MS. TABER

MS. TABER: Okay. Now, once again, good morning. Let's start, first, my question to Mr. Tehrani regarding the location of the City of Stockton's drinking water intake.

Are you familiar with the location of the City of Stockton's drinking water intake?

WITNESS NADER-TEHRANI: I'm generally familiar with where Stockton is, but where the drinking water intake is, I'm not, no.

MS. TABER: Are you familiar with the location of the City of Stockton's wastewater treatment plant discharge?

WITNESS NADER-TEHRANI: Relative to drinking water, no.

MS. TABER: Just in general? Okay, great.

Could we please put up Exhibit Stockton No. 1?

(City of Stockton Exhibit 1 marked for identification)

MS. TABER: Mr. Long, do you have my -- okay. Great. Thank you.

So Stockton Exhibit No. 1 is a map of the Delta from the Delta Atlas. And on it, I have identified the location of Stockton's drinking water

intake on the southwest tip of Empire Tract, which is along the San Joaquin River. And I've also identified the location of the Stockton Regional Wastewater Control Facility, which is at the point of their treatment plant discharge, which is farther southeast on the San Joaquin River in the general area of Roberts Island. So we have that to orient ourselves.

And, Mr. Tehrani, did you read Stockton's protest of the Cal WaterFix water rights change petition?

WITNESS NADER-TEHRANI: It wasn't -- I don't recall.

MS. TABER: You don't recall if you read it?

WITNESS NADER-TEHRANI: I don't recall if I read it, no.

MS. TABER: So you wouldn't recall if you read it prior to preparing your written testimony?

WITNESS NADER-TEHRANI: No.

MS. TABER: Did anyone on the modeling team read the Stockton protest prior to conducting the modeling on which your testimony relies?

WITNESS NADER-TEHRANI: I don't know.

MS. TABER: Anyone?

MR. OCHENDUSZKO: I'm sorry. Dr. Tehrani, do you mind please moving closer to the microphone?

MS. TABER: I'm sorry. Is it "Dr. Tehrani" or "Mr. Tehrani"?

WITNESS NADER-TEHRANI: Either one is fine.

MS. TABER: I apologize, Dr. Tehrani.

So just to clarify, did anyone on the -- this is -- I would open this up to anyone of the modeling team. Did you read Stockton's protest prior to conducting the modeling on which Dr. Tehrani's testimony is based?

(No response)

MS. TABER: Hearing nothing, okay, great.

Can we please go up to Stockton Exhibit 2.

(City of Stockton Exhibit 2 marked for identification)

MS. TABER: And I do not have enough copies for everyone, but...

Stockton's Exhibit 2 are a copy of the City of Stockton's comments from 2008 on the Notice of Preparation for the BDCP on the Draft EIR/EIS.

And, Dr. Tehrani, have you read this letter?

WITNESS NADER-TEHRANI: No.

MS. TABER: Okay. Did anyone on the modeling team read this letter?

(No response)

MS. TABER: Okay.

WITNESS BUCHHOLZ: I would have read the letter back in 2009, when I prepared the scoping report for the EIR/EIS.

MS. TABER: So you did read the letter?

WITNESS BUCHHOLZ: Yes, but I don't remember it offhand. Yes.

MS. TABER: Okay. And that was roughly in 2009. All right.

Let's -- Stockton's Exhibit 3.

(City of Stockton Exhibit 3 marked for identification)

MS. TABER: And Stockton's Exhibit 3 is a copy of Stockton's comments from July of 2014 on the BDCP Draft EIR/EIS.

And I have the same question, Dr. Tehrani. Have you read these comments?

WITNESS NADER-TEHRANI: I don't recall.

MS. TABER: Okay. So you wouldn't recall if you had read them prior to preparing your testimony?

WITNESS NADER-TEHRANI: No.

MS. TABER: Moving on to Stockton's Exhibit 4.

(City of Stockton Exhibit 4 marked for identification)

CO-HEARING OFFICER DODUC: Ms. Buchholz, do you recall this, I mean, the previous document?

WITNESS BUCHHOLZ: The way we have done response to comments, I don't -- we get allocated to different tasks to different people on the project team. So we don't get a full letter. So I don't know.

MS. TABER: So would it be fair to say that it's unlikely that anyone on the modeling panel has read these comments?

WITNESS NADER-TEHRANI: Can I -- I might have read it, but I don't recall.

MS. TABER: Okay. All right. And then just to confirm, the Stockton's Exhibit 4 is the October 15th comments on the BDCP Recirculated Draft EIR/EIS.

And my question is the same, Dr. Tehrani. Have you read these comments?

WITNESS NADER-TEHRANI: Again, I might have. I don't recall.

MS. TABER: Okay. And to the rest of the panel, did anyone read these comments?

WITNESS BUCHHOLZ: I'm sure that I've responded to one or two portions of this letter in response to comments on the Final EIR/EIS, but I've not sat down with the entire letter.

MS. TABER: And this would I guess go to anyone on the panel. Did the issues that Ms. Buchholz reviewed in the letter inform any of the development of

the water quality modeling that was conducted for this proceeding, to your knowledge?

CO-HEARING OFFICER DODUC: I think it's fair to say, if they don't remember, they don't recognize and cannot recall specifics in respect to what was reviewed and what was responded to, that they're unlikely to be able to address that.

MS. TABER: Okay. I'll accept that. Thank you.

Let's move on.

Dr. Tehrani, your written testimony relied on the presentation of water quality changes as long-term monthly averages. I think we've established that, correct?

WITNESS NADER-TEHRANI: That's correct.

MS. TABER: Okay. And if I understand the testimony over the last several days, the modeling team did calculate the daily changes in water quality that would result from the project, correct?

WITNESS NADER-TEHRANI: For example, for the chloride concentration, yes, we relied on the daily average concentration of chloride.

MS. TABER: And was that calculated for every constituent -- water quality constituent that you considered, the daily averages or the daily changes?

WITNESS NADER-TEHRANI: Primarily for the calculation of the chloride objective because it -- it calls for a requirement -- for example, for Contra Costa, requires a certain number of days in a year, that would be a place where we would look at daily averages.

MS. TABER: Okay. Thank you.

Can we put up Exhibit DWR-412, please.

So this exhibit states that it shows the daily average EC at Bacon Island for a period of time, December 2015 to April 2016. And if I recall correctly, Mr. Leahigh in his written testimony stated that Bacon Island provides a good generalized representation of water quality conditions in the Central Delta.

Dr. Tehrani, would you agree with that statement?

WITNESS NADER-TEHRANI: Generally, yes.

MS. TABER: And, Dr. Tehrani, with reference to Exhibit Stockton 1 -- if we could put Stockton 1 back up -- and if you could take a look at the copy that I gave you. Could you please identify Bacon Island on this exhibit?

WITNESS NADER-TEHRANI: It is southwest of the Stockton drinking water intake.

MS. TABER: Okay. And would you mind marking that with your initials on the paper copy that I've provided you, please?

WITNESS NADER-TEHRANI: So you're asking me to mark --

MS. TABER: Would you initial the location that you've identified on the exhibit as being Bacon Island because I know that --

WITNESS NADER-TEHRANI: The whole river at Bacon Island? Because Bacon Island is an island.

MS. TABER: Correct. Well, it wasn't stated with specificity, as I recall Mr. Leahigh's testimony, exactly what location from a water body perspective he was referring -- was referred to in his testimony or in fact in that Exhibit DWR-412. So I'm just trying to establish the location of Bacon Island.

WITNESS NADER-TEHRANI: I can only guess as to what location he used in the --

MS. TABER: I understand. That's fine. I just want to identify the location for the record.

MR. MIZELL: To be clear, it will be Mr. Tehrani's guess as to the location as he just stated.

MS. TABER: Correct.

CO-HEARING OFFICER DODUC: Understood.

MS. TABER: And from what you can tell by looking at Exhibit Stockton 1, Dr. Tehrani, is Bacon Island located on the San Joaquin River?

WITNESS NADER-TEHRANI: No.

MS. TABER: Okay. Thank you. All right. Moving on -- and I know we've covered some of this ground, so I'll try to be brief.

Dr. Tehrani, in analyzing the water quality results from the modeling, you did not consider the project's effect on meeting water quality standards other than those in D1641; is that correct?

WITNESS NADER-TEHRANI: The locations that I showed in my testimony are primarily those that are reflected in D1641 water quality.

MS. TABER: Okay. And with respect to the specific standards, water quality standards, did you consider the standards in D1641?

WITNESS NADER-TEHRANI: That's correct.

MS. TABER: Did you consider any other standards that were not contained in D1641?

WITNESS NADER-TEHRANI: Can you give me some examples of what you're referring to?

MS. TABER: I think that Mr. Herrick may have touched on this, but any other applicable water quality standard other than what I understand were the specific

numeric chloride or electrical conductivity standards contained in D1641.

WITNESS NADER-TEHRANI: Well, based on my understanding of this -- the scope of this test- -- you know, hearing, which is on agriculture and municipal and M and I intakes, that my understanding was I used what I understood as to the best metric I can use to evaluate the water quality changes associated with those, and those happened to be the ones I presented that I -- I felt would be a representation of what's -- affect the legal users of water.

MS. TABER: Okay. So you didn't look at the -- for example, the California toxic's rule?

WITNESS BRYAN: In the EIR/EIS, we did look at other criteria, but if you're talking about chloride specifically, the drinking water, secondary MCL is going to be 250. It's going to be higher than the 150 in D1641. So we did, in the EIR/EIS, look at other constituents, but these should be the lower of them on D1641.

MS. TABER: So any constituents other than EC or chloride would be located -- that analysis would be found in the EIR/EIS?

WITNESS BRYAN: Yes.

MS. TABER: Okay. Thank you.

So then just to make sure I understand here -- and I believe you stated this yesterday, but why did you decide to limit your testimony regarding water quality effects to the projects's compliance with the D1641 standards?

WITNESS NADER-TEHRANI: Based on my understanding of the scope of this particular Part 1 of this hearing, which is the looking at the water quality impacts to legal users of water -- that includes ag and M and I -- and in consultation with my attorney, we used the D1641 as the best metric that's used to protect the legal users of water.

MS. TABER: Okay. And, Dr. Tehrani, does your professional experience include any experience operating a drinking water treatment facility?

WITNESS NADER-TEHRANI: No.

MS. TABER: Did you consult with any operators of drinking water treatment facilities in preparing your testimony?

WITNESS NADER-TEHRANI: I did not.

MS. TABER: And would the same answers go with respect to operators of wastewater treatment facilities? Do you have any experience in operating such a facility?

WITNESS NADER-TEHRANI: Beyond, you know, the

information -- I guess there was some question about reverse flows that we discussed yesterday on Sacramento River, the effects on the East Bay MUD facility, based on the Sacramento Regional, you know, waste discharge. And that's -- those are examples of what I've looked at.

MS. TABER: Okay. And so did you consult with wastewater treatment plant operators in preparing your testimony regarding water quality effects?

WITNESS NADER-TEHRANI: I did not consult, no.

MS. TABER: Okay. And I think we've confirmed that the modeling team present today and the modeling that was submitted as part of the petition did not evaluate specific water quality changes other than changes in salinity? And by that I'm referring to chloride and electrical conductivity.

WITNESS NADER-TEHRANI: For this portion of the hearing, that's the scope of what we looked at.

MS. TABER: So if I went to the modeling results that are posted on the State Board website that were submitted in May, I wouldn't find any analysis or output related to other constituents other than chloride and electrical conductivity?

WITNESS NADER-TEHRANI: You can do estimates, for example, for bromide, based on established

relationship between -- I'm giving example of additional analysis that can be done. And it is described in my testimony.

CO-HEARING OFFICER DODUC: Let's narrow down her question. First of all, are there additional analysis besides chloride and salinity? Analysis?

WITNESS NADER-TEHRANI: Right. I did not include any analysis, but --

CO-HEARING OFFICER DODUC: Stop right there.

But are there data other than salinity available from the modeling results? Not analysis but data, water quality data?

WITNESS NADER-TEHRANI: Yes. So they -- okay. Hold on.

Based on that, that particular question, the only information that's in the information that was provided was EC. I did show plus, for example, for chloride. And the way I was able to arrive at that was to use established relationship between EC and chloride.

CO-HEARING OFFICER DODUC: Yes, you provided analysis.

WITNESS NADER-TEHRANI: Right.

CO-HEARING OFFICER DODUC: But is there data available?

WITNESS NADER-TEHRANI: Only data that's available is EC.

CO-HEARING OFFICER DODUC: The only data that is available is EC?

WITNESS NADER-TEHRANI: And the water quality, that's it.

CO-HEARING OFFICER DODUC: All right. So I think that answers your question.

MS. TABER: That does answer my question, and that's a perfect segue to my next question.

And for this question, if I could ask Mr. Long to please put up -- from my exhibits, I provided you DWR-66 because I have some highlighting on that. And please go to Page 6.

Okay. So, Dr. Tehrani, this is your written testimony, correct?

WITNESS NADER-TEHRANI: That is my written testimony.

MS. TABER: And I've highlighted some language that states that you applied a relationship between EC and chloride that was developed based on historical water quality data to DSM2 output for EC, and I believe you characterized this as a chloride regression method; is that correct?

WITNESS NADER-TEHRANI: Yes.

MS. TABER: In that same paragraph, Dr. Tehrani, you go on to state that the chloride regression method was developed using data for the West Delta and is thus valid for that area. The chloride regression method has thus not been validated for other areas of the Delta.

WITNESS NADER-TEHRANI: Yeah, I see that.

MS. TABER: From this testimony, Dr. Tehrani, is it fair to state that the chloride regression method would not be valid for a calculation or an estimate at the location of Stockton's drinking water intake? And if we need to put Exhibit Stockton 1 back up so you can refresh your memory of the location of the intake relative to the Delta --

WITNESS NADER-TEHRANI: Are you asking me whether we can rely on that equation that I just -- we just --

MS. TABER: Yes.

WITNESS NADER-TEHRANI: I can't comment that. No. Well, I can say that EIR uses two different methodology. I only used one in this testimony, the one I just described, because I was focusing on Contra Costa Water District and Contra Costa Canal.

But in the EIR, it has two different methodology. And all those tables were -- in the EIR.

Perhaps, Mike, go ahead?

WITNESS BRYAN: Yeah, I can add a little bit to that. So when we talk about chloride and its effects on water quality in the Delta, it's really a seawater intrusion issue. The San Joaquin River water is higher in chloride as well, but not so much higher as -- not anywhere close to threatening the standards. In fact, the San Joaquin River at Vernalis averages about 81 milligrams per liter chloride versus the 150 or the 250 that we talk about in the standards.

So when we set up a relationship, because where the chloride's coming from is seawater intrusion, that's why the chloride-EC relationship is set up for the Western Delta because that's where it's coming from.

DSM2 pretty much takes over from there. When we get the fingerprinting of how much water to the Bacon Island area, for example, is coming from the San Joaquin, the Bay water, the Sac, then we can calculate or estimate chloride. So it's most important to get that chloride relationship to EC right for the Bay, which is primarily where the chloride is coming from.

MS. TABER: So was that method used to estimate changes in chloride in the vicinity of Stockton's drinking water intake in the modeling and

the analysis that support Dr. Tehrani's testimony, not the EIR?

WITNESS NADER-TEHRANI: In my testimony, I showed a number of locations. And the locations that I included I guess -- we have a list here, about four locations. And I used basically the EC-to-chloride conversion at those location.

The only -- well, for example, the Antioch was one location. I forget the other one. But, yeah, those are all using the EC-to-chloride relationship that I showed, yeah.

MS. TABER: Okay. Thank you. That is a good transition to my next exhibit and question. And this is -- if you could please put up Exhibit Stockton 5.

(City of Stockton Exhibit 5 marked for identification)

MS. TABER: Okay. This is an exhibit that shows the D1641 -- I used this creating, by the way, Exhibit DWR-405. And I took DWR-405, and I added the locations of the Stockton drinking water intake and the Stockton wastewater treatment plant discharge and, again, just so we have a sense of where we are.

And this exhibit, as I understand it, shows the D1641 Bay-Delta standards compliance stations and perhaps also monitoring stations.

And I wonder, Dr. Tehrani, could you please identify the locations on this exhibit where D1641 municipal and industrial standards must be met?

WITNESS NADER-TEHRANI: The first one I can think of is the Contra Costa Canal intake at Rock Slough.

MS. TABER: Are there any others, to your knowledge? And if anyone else on the modeling team has any input on this, I'd welcome that as well. I think I understand it, but I'd like the experts to tell me.

WITNESS NADER-TEHRANI: I'm sorry. The Clifton Court Forebay intake and the Tracy Pumping Plant.

MS. TABER: And are there any others?

WITNESS SMITH: Looks like the ones that are marked with the red squares are the ones on the graph.

MS. TABER: So would that include the City of Vallejo intake at Cache Slough and the North Bay Aqueduct to Barker Slough?

WITNESS NADER-TEHRANI: Yes, yes.

MS. TABER: Thank you. And these were the locations where the modeling team evaluated the project's ability to comply with D1641 M and I water quality standards, correct?

WITNESS NADER-TEHRANI: I used the -- I

believe -- sorry. I got a brain freeze.

MS. TABER: No problem. Take your time. I want to make sure I understand this.

WITNESS NADER-TEHRANI: The examples I provided include Contra Costa Canal, Clifton Court Forebay, and North Bay Aqueduct.

MS. TABER: So those three locations were the ones you considered?

WITNESS NADER-TEHRANI: I did include those, yes. I have looked at others, but those are the only ones that are included in this testimony.

MS. TABER: So those three were the only locations.

Were there other locations where the modeling team evaluated the water quality effects of the different operational scenarios as they relate to M and I uses?

WITNESS NADER-TEHRANI: I have looked at model results at locations throughout the Delta, and when I look at model results, the only model results that I have at my fingertips are the EC. And in my head, then, I used that as an interpretation of what other water quality constituents, such as chloride, would be affected.

So if I don't see a change in electrical

conductivity, that would tell me that I don't expect to see a change in chloride as well.

MS. TABER: Okay. Thank you. That's -- that's more information, but it's certainly helpful.

And, Dr. Tehrani, are any of the locations that we've identified on this exhibit as being compliance points for the D1641 M and I standards located on the San Joaquin River?

WITNESS NADER-TEHRANI: I have a hard time seeing the colors, but -- just give me one minute.

MS. TABER: Take your time. I appreciate this Delta is a rabbit warren of waterways.

WITNESS NADER-TEHRANI: Can you go up a little, please? Up further, I just want to see the top. Just go higher a little. Sorry.

WITNESS ANDERSON: We're trying to see the whole legend so we can see which color of squares we're looking for.

WITNESS NADER-TEHRANI: So on Sacramento -- on San Joaquin River, I see one location near Prisoners Point.

MS. TABER: Okay. And just to be clear, that is a -- according to the exhibit as I read it, that is identified under water quality as a location for fish and wildlife. And the purple boxes, I believe, are

identified as municipal and industrial locations. So my question goes to --

WITNESS NADER-TEHRANI: I have a hard time seeing the difference in colors.

MS. TABER: Right. I understand it's difficult. Is it just as difficult on your paper copy that I gave you?

CO-HEARING OFFICER DODUC: Ms. Taber, I've actually lost track. What's your question again?

MS. TABER: So my question was are any of the locations where the modeling team evaluated the project's ability to comply with the D1641 M and I water quality standards located on the San Joaquin River?

WITNESS NADER-TEHRANI: No, I don't see one.

MS. TABER: Okay. Thank you.

And in conducting the modeling for the project, did the modeling team evaluate -- let me back up.

I thought I understood your testimony yesterday to say that you -- in conducting the modeling and in forming your opinion, you in fact considered water quality changes at a broader range of locations than the ones specifically identified in your written testimony and exhibits; is that correct?

WITNESS NADER-TEHRANI: Yes.

MS. TABER: Okay. So in that vein, conducting the modeling for the project, did the modeling team evaluate water quality changes at Stockton's drinking water intake that would occur as a result of the project operations?

WITNESS NADER-TEHRANI: I have not specifically looked at that location, but I have looked at areas that are nearby.

MS. TABER: Could you identify for me -- and I understand you may not be able to do this on this map, but help me understand where the nearby locations would be that you could see.

WITNESS NADER-TEHRANI: For example, San Andreas Landing, Prisoners Point, Terminus, and then along with the river, going down, also along San Joaquin River near Turner Cut and Columbia Cut. So they are fairly near.

MS. TABER: So I apologize that this exhibit doesn't seem to have a scale on it. When you say "fairly near," could you give me just a -- your best guess as to how close the closest location of the ones you cited would be to Stockton's drinking water intake?

WITNESS NADER-TEHRANI: Few miles.

MS. TABER: A few files, okay.

And with respect to Stockton's wastewater discharge location, could you identify the locations that you consider that you felt were closest to the location of Stockton's wastewater discharge?

WITNESS NADER-TEHRANI: We've looked at a number of locations along San Joaquin River including Brent Bridge, including the Stockton Rough and Ready Island Station, and -- yeah.

MS. TABER: Okay. And where would I look to see or understand the modeling team's analysis of chloride impacts to Stockton? And by here, I guess I'm referring to either the drinking water intake or the wastewater treatment plant discharge location?

WITNESS NADER-TEHRANI: I'm sorry. Can you repeat that question?

MS. TABER: Where would I look to see or understand the modeling team's analysis of chloride impacts to the City of Stockton?

WITNESS NADER-TEHRANI: One would have to look at the model output to get that information.

MS. TABER: Okay. And where would I look to see or understand the modeling team's analysis of bromide impacts to Stockton?

WITNESS NADER-TEHRANI: Again, one would have to rely on the information in the model output to get

that information.

WITNESS BRYAN: Again, you're going to see the analyses of these things in terms of their impacts on beneficial uses in the EIR/EIS.

MS. TABER: Right. And so that bromide information, I would look to the EIR/EIS and the modeling that was done for the EIR/EIS?

WITNESS BRYAN: Yes. I mean, if you're looking at bromide impacts to the beneficial uses such as M and I, you would look in the EIR/EIS, and you'd have a discussion on that.

MS. TABER: Aside from the discussion, the specific data, and numeric changes, would I look to the modeling that was submitted in May here, or would I look to the modeling that was submitted -- or that was performed for the EIR? Because I thought I heard this morning that those are two different technical evaluations.

WITNESS BRYAN: Yeah, well, certainly the EIR/EIS will have all of the --

CO-HEARING OFFICER DODUC: Mr. Bryan, is your microphone on?

WITNESS MUNEVAR: Yes.

CO-HEARING OFFICER DODUC: Please get closer.

WITNESS BRYAN: The EIR/EIS will have all of

its technical appendices. So, for example, you were talking about bromide, Appendix AE; chloride, AG; electrical conductivity would be AH. So all of the different appendices attached to the water quality chapter are associated with different constituents. And all the data, all the analysis of the modeling data would be in those appendices.

MS. TABER: Thank you. And, Dr. Bryan, in those appendices, are there data points at the locations of the City of Stockton drinking water intake?

WITNESS BRYAN: Not exactly at that location, no.

MS. TABER: So there are other specific data points throughout the Delta?

WITNESS BRYAN: Correct.

MS. TABER: Would those include the locations that Dr. Tehrani just identified as being in his -- close to Stockton?

WITNESS BRYAN: What we tried to do in the EIR/EIS is have a battery of different locations across the Delta from the north to the south, east, west. And then, of course, when it was constituents such as EC-chloride that have D1641 standards, we then looked at those D1641 standard compliance locations.

So we can't -- you know, we have to cut it off somewhere. We can't assess every single location in the Delta. But what the EIR/EIS does, it attempts to have a broad geographic coverage and then also make sure that it covers regulatory locations, like D1641 locations.

WITNESS ANDERSON: And then I just wanted to add, to make sure it's clear, the models simulate EC, and then bromides, chlorides, and those constituents are all determined through conversion equations.

So the EC data that's available on the website could be converted to chlorides or bromides if somebody wanted to look at that.

WITNESS BUCHHOLZ: Excuse me. I wanted to add one thing, too, because this was in response to your scoping comment submitted by the City of Stockton.

There was a point -- and it's in the appendices that Dr. Bryan talked about. And we used San Joaquin River at Buckley Cove so that it was halfway between the drinking water intake and wastewater treatment plant location on San Joaquin River for the City of Stockton. And that location was specifically associated per your scoping comments.

MS. TABER: Great. Okay. But again, that was not included in Dr. Tehrani's analysis or formed the

basis for his opinion regarding injury to users of water, correct, Dr. Tehrani?

WITNESS NADER-TEHRANI: That was not specifically included in my testimony.

MS. TABER: Correct. Okay. Thank you.

So if I'm correct in summarizing what I've heard here, if I wanted to look to see or understand the modeling team's analysis of any water quality impacts to the City of Stockton, I would go to either the EIR appendices and try to identify locations that were close to the City of Stockton intake or wastewater treatment plant, or I would go to the data files that were listed on the State Board website in May, correct?

WITNESS SMITH: I believe that's correct. And I also wanted to add something in terms of the conversion that Jamie brought up.

In Maureen Sergent's testimony, she has a reference to some conversion equations. And you'll be able to do those for different locations that are outside of what's in Dr. Nader-Tehrani's testimony.

MS. TABER: Okay. So I would need to do those conversions; is that correct?

WITNESS SMITH: I don't believe it's currently in the output. But if you were looking to do further analysis, that's where you would find it.

WITNESS BRYAN: I just wanted to add that, Kelley, when you mentioned that you would need to go to the EIR appendices, you really wouldn't need to do that. You could just go to the EIR and read the section on chloride or bromide. It's going to interpret all of those appendices for you. It's going to cite back to the appendices. If you want to see the detailed data in graphics and tables of the appendices, you're welcome to do that. But obviously the EIR write-up interprets all of that for reader.

MS. TABER: And I understand that, and I have read those.

But it might -- would it surprise you if I told you that the EIR contains -- mentions the word Stockton, the City of Stockton, only once and that that location is in the description of background setting? And there, my point is I did not identify the -- any analysis that was specific to Stockton's questions and that, hence, the purpose of my clarifying questions today.

WITNESS BRYAN: I guess my response to that would be, when we write an EIR, what we're doing is we're analyzing for the proposed project how it would change water quality in the Delta at various locations that are assessment locations. And we're using the

information that we get from the models and at those assessment locations to make assessments to impact to beneficial uses.

We're not necessarily assessing impacts to every city and county across the Delta. We're looking at how the water quality in the channels of the Delta changes and how those various cities and counties that are in the Delta, whether they would or would not be impacted based on the quality of the change in that water and what effect that has on beneficial uses of water.

So it's just not -- it's never a situation where we're going to mention by name all the different cities and counties. It's a different approach.

MS. TABER: And I understand and --

CO-HEARING OFFICER DODUC: Both of your points have been made. Let's move on.

MS. TABER: Correct. I very much would like to do that. Thank you. I get it.

So -- and this is where I just want to clarify the approach that I would take because, as I understand it, I have been directed to the modeling information on the website to get information that would address the considerations and concerns raised in Stockton's protest.

After hearing the testimony yesterday, I did go to the State Board website to locate the modeling information. And just to orient us, this is what I saw.

If you could please put up Exhibit Stockton 6.

(City of Stockton Exhibit 6 marked for identification)

MS. TABER: So I do not intend to spend a lot of time on these, but I wanted briefly to make sure that I understand. Exhibit Stockton 6 is a -- and I'm going to apologize for the poor quality of these exhibits. This was done after my technical team, which would be my children, had gone to sleep last night.

So I took a screen shot from the State Board website which showed the WaterFix exhibits. And you'll see there's an entry for May 25th, 2016, "Physical modeling to support California WaterFix Water Right Petition transmittal letter." And it indicates that are there modeling files, which it notes are very large, and it gives directions on how to access those files from the State Board's FTP site.

Dr. Tehrani, are these the modeling files you have been referring to in your testimony?

WITNESS NADER-TEHRANI: Yes, that's right.

MS. TABER: You said that you reviewed and

considered in forming your opinion that the WaterFix project would not result in injury to legal users of water from water quality effects?

WITNESS NADER-TEHRANI: Yes, that's correct.

MS. TABER: Okay. Thank you.

So from that point, I then clicked on the link to the DWR modeling files with the transmittal letter that was dated May 25th, 2016.

And if we could put up Exhibit Stockton 7, this is what came up.

(City of Stockton Exhibit 7 marked for identification)

MS. TABER: The quality's going to decrease as we go through these exhibits, but I think -- I won't ask you to -- detailed questions on the -- it didn't look like that, but it would have been great if it did.

So that -- yes, okay. So this is a screen shot of what I found when I clicked on the link to the modeling files, and it appears to indicate that the website contains six different zip files.

Dr. Tehrani, does this look correct to you?

WITNESS NADER-TEHRANI: This is not -- this is Water Board's website. That's including the information. So it looks correct to me. I did not actually myself make an attempt to download the

information from there because I had it, so.

MS. TABER: Okay. But would you -- are these the files that you mention in your testimony --

WITNESS NADER-TEHRANI: I believe they are.

MS. TABER: -- as far as you know?

WITNESS NADER-TEHRANI: Mm-hmm.

MS. TABER: Were you responsible for submitting those to the State Board?

WITNESS NADER-TEHRANI: I -- yes, I did.

MS. TABER: Okay. So we'll presume that they uploaded everything that you submitted.

And I don't have any expertise in working within modeling data files of any size, let alone large files, but I did click on one of these files to see what was in it. And my computer, which is a new computer with the highest-speed Internet connection, did tell me that it would take me up to an hour to download the smallest file seen there. In fact, it took a little less than an hour.

But, Dr. Tehrani, is this, based on your experience, what you would expect? In other words, in your experience would it be normal to expect that each file would take a long time to download and open?

WITNESS NADER-TEHRANI: That depends on your Internet speed.

MS. TABER: Okay.

WITNESS NADER-TEHRANI: But, yes, the file sizes are very large.

MS. TABER: And I did manage to download two files, the no action alternative DSM2 file and the Alternative 4 file. And when I opened the no action alternative DSM2 file, this is what I saw.

And if you would please, Mr. Long, put up Exhibit Stockton 8, which is a screen shot of the contents of that file.

(City of Stockton Exhibit 8 marked for identification)

MR. MIZELL: Hearing Officer Doduc, while we're waiting for the file to come up, as recorded in the letter that was submitted along with these files originally, we explained that they were very large, and we offered to put onto a portable hard drive the files in order to avoid these long download times.

And, again, that's an open offer. Anybody who need these files can submit to the Department a storage device, and we will put the files on there for them. And it may be much quicker than waiting for download speeds.

CO-HEARING OFFICER DODUC: Thank you.

Ms. DesJardins, do you have an objection?

MS. DES JARDINS: Yes. I object that Mr. Ochenduszko had to ask DWR for this. It is not submitted as an exhibit. You said the staff would not submit it as an exhibit.

And to the extent that she is documenting that it's difficult to access, it's not submitted for the hearing record, and it is also -- the output as she is showing is not in a human-readable form.

CO-HEARING OFFICER DODUC: Thank you. Objection overruled.

Please continue, Ms. Taber.

MS. TABER: And I assure you that I don't have a lot more on this. But these -- understanding this is important to me and my client, so I'd like to just complete my questioning.

So this -- now I've lost my place here. Are we on Stockton 8?

CO-HEARING OFFICER DODUC: Yes. You opened one of the zip files.

MS. TABER: Yes. And so, Dr. Tehrani, again, does that look like it accurately represents the contents of the files that you provided to the State Board?

WITNESS NADER-TEHRANI: It looks correct.

MS. TABER: Okay. And what I didn't see in --

well, let's go through the last one, Stockton 9. If you could put Stockton 9 up, which is the Alternative 4, with Fall X2 zip file. This, again, is a very poor-quality screen shot of that file.

But that also, Dr. Tehrani, does that look correct to you as the files that you submitted?

WITNESS NADER-TEHRANI: That looks about right. Mm-hmm.

(City of Stockton Exhibit 9 marked for identification)

MS. TABER: Okay. What I didn't see in opening either of those two files or in the list of files was any document comparing the water quality results or the data of the various scenarios.

Does any such document exist?

WITNESS NADER-TEHRANI: If you click on the output, that's where we will find the model output for water levels, flows, and water quality EC.

MS. TABER: And if I clicked on that and opened it, can you just describe briefly and generally, what would I see?

WITNESS NADER-TEHRANI: These are raw model outputs that there are utilities that are free and available to download that you can use to, you know, look at the information in -- for different locations

and so forth.

MS. TABER: So that would be a series of numbers?

WITNESS NADER-TEHRANI: Would be a series of numbers, but then there are utilities that you can use to make specific requests, looking at a daily average, monthly average, whatever you want to choose. There are utilities that are available for you to download, and you can use that information.

MS. TABER: Could you just briefly describe what those utilities are? Because -- I beg your indulgence, but as you can see, I'm legally blonde, and I -- I don't have any expertise in this area.

So I just wonder if you could tell us what would it take for me to do that analysis?

CO-HEARING OFFICER DODUC: Before you answer, hold on.

Ms. Morris?

MS. MORRIS: I'm objecting based on relevance.

I think that Mr. Mizell has made an offer for technical assistance outside of the hearing and that this isn't relevant as to Cal WaterFix. And most of -- most folks have experts that have the programs and can run this and extract this information.

And I am sure Ms. Taber has access to an

expert who can help her with this, or the Department has offered to help with technical assistance not during this hearing.

CO-HEARING OFFICER DODUC: Thank you, Ms. Morris. Your objection is noted.

Unless you have a new objection, Ms. DesJardins, I do not wish to hear anything further. I want to give Ms. Taber a chance to finish her cross-examination. Do you have a new objection?

MS. DES JARDINS: I just wanted to observe --

CO-HEARING OFFICER DODUC: No observations.

MS. DES JARDINS: -- that it's $200 an hour.

CO-HEARING OFFICER DODUC: Do you have a new objection?

MS. DES JARDINS: Uhm -- okay.

CO-HEARING OFFICER DODUC: Thank you.

Ms. Taber?

MS. TABER: So I believe that my question to Dr. Tehrani was if he could just briefly give me some indication of the types of tools that would be required to do that analysis.

CO-HEARING OFFICER DODUC: And, Doctor, I would suggest you answer that question as if I were the one to be opening this input file and wanted to do the analysis myself, which I will do.

WITNESS NADER-TEHRANI: Well, it would take a technical person to look at this information.

But there is a -- you know, a free -- a utility -- it's called HEC DSS -- where you can freely download that information. And with that, you can open all the raw output files and then make whatever. It has plotting routines. It has numerical procedures asking, for example, for daily average, monthly average, all those. And with that, you can open and -- multiple scenarios in this case.

For example, if you want no action, H3, you can basically load all those modeling scenarios and do your comparison, you know, specifically locate -- looking at specific flows, EC, whatever. Yeah.

WITNESS ANDERSON: And just to clarify, the name of the tool is H-E-C, D-S-S, Vue, and I think "Vue" is spelled V-U-E, for the tool.

MS. TABER: Okay. Thank you. And in your -- this might be a question that's better suited for the panel members who are consultants who work in private sector doing this type of work.

Could anyone give me a just order of magnitude estimate of how much would that sort of analysis cost if I were to try to engage an expert to perform that analysis, and how much time would it take?

MS. MORRIS: Objection, relevance.

CO-HEARING OFFICER DODUC: Ms. Morris, your objection is noted. I'm going overrule you.

And that just got Mr. Jackson to sit down. Whoa.

Ms. Taber has a question pending. Doctor, please answer.

WITNESS NADER-TEHRANI: My answer is I don't know.

MS. TABER: Dr. Bryan, is that something you could guess at?

WITNESS BRYAN: No. I couldn't, no.

MS. TABER: Couldn't speculate? Okay. Neither as to the amount of time it would take? And let's say hypothetically -- I only want two locations. That's all the -- I'm not going to --

CO-HEARING OFFICER DODUC: I think you made your point, and they don't know.

MS. TABER: Okay. Thank you.

And thank you. I believe if I -- just to make sure I understand, you have identified specific software that would be required to do that analysis.

WITNESS ANDERSON: I will say, if you hire somebody who's familiar with these models and these tools to open that file and that software and pull up a

plot at two locations, it's going to take half an hour, at the most.

MS. TABER: And that would be to compare the changes at particular locations. And would that comparison, could you achieve -- would that comparison cover a range of different water scenarios, year scenarios?

WITNESS ANDERSON: When you open it up, it will open the entire 16-year, 82-year data set, depending if you're looking at CalSim or DSM2 data. And then it's just up to how much you want to manipulate it and further analyze it.

MS. TABER: Okay. When did I that, how would I identify the data that represents the conditions at or closest to the City of Stockton's drinking water intake?

WITNESS SMITH: So for DSM2, on our website, we have our grid, our network that has channel labels on it. And then you would look at that. And then in the HEC DSS Vue, there are pathnames. And the pathnames say the channel number and whether it's flow or EC or something like that. And that's how you would identify it. There is an identifier within that and the particular run.

MS. TABER: Okay. I think that answers all of

my questions. Thank you for your patience. That conclude Stockton's cross-examination.

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

Mr. Emrick, you had requested to go after Ms. Taber. Do you still wish to?

MR. EMRICK: Yes. It will be very short.

CO-HEARING OFFICER DODUC: And as you're coming up, let me check and make sure -- Group 23?

(No response)

CO-HEARING OFFICER DODUC: Is still not here. all right.

Then after Mr. Emrick, we will take -- well, after Mr. Emrick, Group No. 25, are you here?

And how long do you anticipate needing?

MR. MILJANICH: Peter Miljanich for Solano County. I'm estimating about 20 minutes.

MR. SIPTROTH: Stephen Siptroth for Contra Costa County and Contra Costa Water Agency, about 15 minutes.

CO-HEARING OFFICER DODUC: And Mr. Emrick?

MR. EMRICK: Probably about five minutes.

CO-HEARING OFFICER DODUC: I think we will get to you two gentlemen before we take our lunch break at around 12:30.

CROSS-EXAMINATION BY MR. EMRICK

MR. EMRICK: Again, my name is Matthew Emrick. I'm with the City of Antioch. Good morning, Board. Good morning, Panel.

If we could have Mr. -- or excuse me, Dr. Tehrani's testimony put on the screen, Page 7. I believe it's DWR-66, again, Page 7.

If you look, Dr. Tehrani, at Line 17, you state that there are three municipal diversion locations where bromides may be of concern.

Are one of those locations the City of Antioch's drinking water intake?

WITNESS NADER-TEHRANI: Yes.

MR. EMRICK: And then you state that two of those municipal diversion locations have contracts that address State Water Project operations. You list some exhibits. Were you referring to -- in that statement, were you referring to the City of Antioch and its contract with the Department of Water Resources?

WITNESS NADER-TEHRANI: Can we open up those exhibits, 303, 310, 304?

MR. EMRICK: Sure. Why don't we just start with 304. I believe this is the 1968 agreement between DWR and Antioch.

WITNESS NADER-TEHRANI: Yes, mm-hmm.

MR. EMRICK: So you were referring to the Antioch contract when you were making that testimony?

WITNESS NADER-TEHRANI: That's correct, mm-hmm.

MR. EMRICK: Were you concluding there in your testimony -- if we can go back to that, maybe on Page 7, DWR 66.

Were you concluding that the contract, 1968 contract between City of Antioch and DWR, addresses the impacts of bromide from the State Water Project operations?

WITNESS NADER-TEHRANI: Not specifically bromide. I understand there is an agreement. I -- I've read the agreement a while back. I know there are provisions in there that calls for the projects -- the Antioch's ability to have a certain water quality certain number of days, depending upon the water quality at certain times. I don't remember there is any provision about bromide per se.

MR. EMRICK: In any of the analysis you did for the WaterFix project, did you use a drinking water standard of any type for bromides?

WITNESS NADER-TEHRANI: Are you referring to my testimony here?

MR. EMRICK: Yes, and in your modeling for

your testimony.

WITNESS NADER-TEHRANI: For the bromide, there's just a qualitative statement. But the EIR goes into more details, so --

WITNESS BRYAN: Yeah, the EIR chapter looked at some of the work that came out of the CALFED process. And I think it was CUWA that hired some experts in the late '90s, both water quality experts and water treatment experts, to look at both total organic carbon and bromide levels and what they would need to be in the Delta in order to prevent the water treatment plants from having to change how they treat water because of the disinfection byproduct concern.

So in the EIR/EIS, we looked at that. Basically the result of that effort from the CALFED program indicated that bromide levels between 100 and 300 would be suitable for water treatment plants.

MR. EMRICK: Between 100 and 300?

WITNESS BRYAN: Correct.

MR. EMRICK: And are you talking in parts per million, or are you talking micrograms?

WITNESS BRYAN: Micrograms per liter.

MR. EMRICK: Okay. Wasn't the CALFED levels, however, 50 micrograms per liter?

WITNESS BRYAN: That was the goal that the

CALFED program came up with based on -- the premise that led to that goal was the disinfectant -- EPA's disinfectant and disinfection byproduct rule, which controls the treatment of water to minimize disinfection byproducts.

It's the -- where we get the drinking water MCL of total trihalomethanes at 80 micrograms per liter, for example.

At the time that that investigation was done, it was projecting forward -- there was concern that those requirements placed on drinking water plants were going to be scaled back. So instead of 80 micrograms per liter total trihalomethanes, that was going to go down to 40. Instead of 60 micrograms per liter for total haloacetic acids, that was going to go down to 30.

So they were projecting forward in the future, and again looking at how low would TOC and bromide need to be so that they could meet those more restrictive limits and not upset their current treatment plant facilities.

So when those more restrictive limits did not come into play, we still have the 80 and the 60. So that's why the conclusion of that process indicated that, for the regulations that are in place today, as

far as bromide is concerned, levels between 100 and 300 micrograms per liter would be adequate for the treatment plants to control disinfection byproducts.

MR. EMRICK: So your testimony is that, with respect to the EIR, you used a threshold of significance for bromide of 100 to 300 micrograms per liter?

WITNESS BRYAN: Correct.

MR. EMRICK: Where could I find that in the EIR?

WITNESS BRYAN: You can find it in the Draft EIR, on Page 8-41 to 8-43. That will talk about what I just went through.

MR. EMRICK: I was hoping to not take as long, but because of this testimony, could I have -- I guess it's State Water Resources Control Board 3, which I believe is the EIR. And then it's Chapter 4, New Alternatives. The cited page number is 4.3.4-9, but the actual page number is 159.

I guess mine works differently. The cited Page is 4.3.4-9.

WITNESS BRYAN: You're in Section 4.2. You need to go down into Section 4.3.

MR. OCHENDUSZKO: Mr. Emrick, did you say that this was on pdf Page 159?

MR. EMRICK: I thought it was pdf 159, yes.

MS. McCUE: Can you say the page number again?

MR. EMRICK: Yeah. It's 4.3.4-9.

Yes. So I'm referring to, basically, Lines 8 through 26. Here, the levels used are 50 milligrams and 100 milligrams, but you're saying that that is not what is being used for a threshold of significance?

WITNESS BRYAN: No. Sort of out of respect, if you will, of the CALFED process in the coming up with that 50-milligram-per-liter goal, we looked at frequency of exceedance of 50 micrograms per liter, 100. But then we also -- and that was for informative purposes, to inform our analysis to look at how frequently different areas in the Delta would exceed those levels.

Those are not regulatory levels, however. So we went beyond that effort and looked at the outcome of the CALFED process, which I shared a moment ago. And in order to come to impact determinations, we also looked at that finding that bromide levels between 100 and 300 would be protective of water treatment plants.

So it was a culmination of all that analysis that led us to our conclusions.

MR. EMRICK: If the chloride levels are 250 parts per million at Rock Slough, what would be the

level of bromides at micrograms per liter, if you can do the conversion?

WITNESS BRYAN: I can't do it in my head, but bromide is point-0035 chloride. So take whatever your chloride concentration is and multiply it by point-0035, and you'll get the bromide.

MR. EMRICK: Would it exceed 300 micrograms per liter if you're measuring 250 parts per million chloride at Rock Slough, if you know?

MR. MIZELL: He just answered he can't do it in his head.

MR. EMRICK: All right. That's all I have. Thank you.

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

Group Number -- actually, just let me check with the court reporter.

Are you okay with going with a couple more witnesses? Okay.

Stand up. Ms. Anderson, if you need to rush somewhere, go ahead.

Please identify yourself, and then proceed.

MR. MILJANICH: Peter Miljanich for Solano County. And I have some -- we submitted an index and some exhibits, and I also have some paper copies I'd

like to hand out.

CROSS-EXAMINATION BY MR. MILJANICH

MR. MILJANICH: Okay. So I'd expect 20 to 25 minutes. Questions are going to be in three topic areas. The first set are questions about modeling results related to exports under various scenarios, and I'm going to focus on the no action alternatives.

The second set is designed to get at sort of the effects of averaging on the presentation of total export levels.

And the third set is going to explore the North Delta diversion bypass rules, which I know we've already addressed many times before, but I want to see how those relate to Sacramento River inflows into the Delta.

So my lodestar here is the all-important test of not boring the hearing officers, and I assume you'll let me know if I'm doing that.

I'd also just like -- if you don't mind indulging me, I have a couple of additional clarifying questions for the panel on the sort of version control of the modeling.

CO-HEARING OFFICER DODUC: Okay.

MR. MILJANICH: Again, I know a lot of those have been asked, but it's a complicated mix, so I just

need some clarification for the purposes of my questions here.

Okay. Mr. Munevar -- is that -- am I saying your name right?

WITNESS MUNEVAR: It's good enough, yeah. Close enough.

MR. MILJANICH: So I just want to clarify once again, so the modeling for Scenario H3 and H4 prepared for this hearing was performed using the 2015 version of CalSim II?

WITNESS MUNEVAR: That is correct.

MR. MILJANICH: The scenario H3 and H4 modeling that's going to be included in the Final EIR/EIS, will that be the same CalSim II output as used in this hearing?

WITNESS MUNEVAR: I cannot say that. I think it will be somewhere -- as indicated in Ms. Pierre's testimony, somewhere between H3 and H4. It may be the same, but I -- I don't know.

MR. MILJANICH: Okay. If it's different, if it were to be different, wouldn't it be -- isn't there a possibility they could be using an obsolete version of CalSim, the 2010 version?

MR. BERLINER: Objection, assumes facts not in evidence regarding the state of the 2010 model.

CO-HEARING OFFICER DODUC: Perhaps you can rephrase that to Mr. Munevar.

Do you know what version of CalSim will be used to model that alternative that will be submitted?

WITNESS MUNEVAR: My understanding is that, in the BDCP 2010 version, we used the best available model at the time.

For the biological assessment, which was released -- forgive me if I'm wrong -- I believe this year and finalized -- the final was last month or this month, it was using the 2015 version. It's my expectation that the EIR/EIS will use the 2015 version but also have a comparison or a comparison of the 2015 version to the continuation of the 2010 version, which has been used all along throughout the EIR/EIS process.

MR. MILJANICH: So does that mean that you've done some sort of detailed analysis to see whether there are any significant differences in the Delta outflows or the exports of other flow data between the two versions of CalSim? That can be included, that you're saying, in the Final EIR?

WITNESS MUNEVAR: We have done some comparisons. So to give a little bit of context for the Board, we've been -- as we work through a multi-year process like this, models are constantly

evolving, updated. So we are constantly tracking changes.

But in order to keep continuity with the EIR/EIS, the 2010 version has consistently been used for the EIR/EIS. We have done comparisons of the 2015 and the 2010 modeling and have found that the changes in conditions are either equivalent or less, lower amount of change as compared to the 2010 version.

That's why we've maintained that consistency with the 2010 version to determine that impacts or disclosure of impacts for the EIR/EIS would be equal or less than what was used in the 2010 version.

MR. MILJANICH: Well, which version is your favorite? I mean, which -- which one is more likely to simulate future operations with the Cal WaterFix, the 2010 or the 2015?

WITNESS MUNEVAR: I think, as I mentioned, models are always evolving. Prior to the California WaterFix, we had new updates. And I imagine in the coming years, we'll have continuous updates. I don't have a favorite.

And I think they are all used -- as long as they're used in a comparative fashion, they are useful in terms of evaluating the impacts.

MR. MILJANICH: Fair enough. Thanks.

Mr. Munevar, how many different no action alternatives for the Cal WaterFix have been modeled? Could you tell me what they are?

WITNESS MUNEVAR: What I presented here, there's only one no action alternative that's been modeled.

MR. MILJANICH: And that's the modeling that's been done for this case in chief?

WITNESS MUNEVAR: Correct.

MR. MILJANICH: Is that separate from the no action alternative for the draft biological assessment?

WITNESS MUNEVAR: There were changes between the no action, between the draft biological assessment -- or draft -- I'm sorry. Maybe I'm misquoting here.

For the biological assessment -- let me get it right. For the biological assessment, it's my understanding that the no action is identical to the no action that we're presenting here for the WaterFix hearing.

MR. MILJANICH: Okay. What about the no action alternative in the Final EIR/EIS? It's my understanding that that modeling has been made available by the petitioners as well.

WITNESS MUNEVAR: That's not correct. The

final EIR/EIS has not been prepared.

MR. MILJANICH: There's been no modeling made available at all?

WITNESS MUNEVAR: I think the modeling that's been available through this hearing is -- through this hearing for H3 and H4 is what I understand is available.

MR. MILJANICH: What about in the Recirculated Draft EIR?

WITNESS MUNEVAR: What's the question?

MR. MILJANICH: That modeling of the no action alternative there.

WITNESS MUNEVAR: Whether -- what's the question about the no action?

MR. MILJANICH: Has it been made available? And is the no action alternative the same as the others?

WITNESS MUNEVAR: I don't know whether it's been made available, so maybe some other panelists can comment on that.

WITNESS NADER-TEHRANI: I believe those modeling have been made available.

WITNESS BRYAN: Yes, all the comparisons in the EIR/EIS are to the existing condition in the no action alternative.

MR. MILJANICH: Okay. Thanks. So if we could pull up SC-1.

(Solano County Exhibit SC-1 marked for identification)

MR. MILJANICH: So this is not any new information. We've been fortunate to be able to retain a consultant that can explore the modeling results that's been made available online, and we're just displaying it in our own way.

So we'd ask that -- and plan to authenticate it at a later stage in the hearing. So just would ask it be treated in the same way that the other protestant submissions have been.

WITNESS ANDERSON: So I just wanted --

CO-HEARING OFFICER DODUC: Go ahead, Ms. Anderson.

WITNESS ANDERSON: I just wanted to ask if the light blue is indicated as the Final EIS? I don't believe that final has been released. I think that maybe should say "Draft."

MR. MILJANICH: Okay. That sounds like an important point and distinction that you've made. Let me just take a moment to review my own documents.

At the pleasure of the Board, I'd just ask that we treat the exhibit in the same way that we have

been as a hypothetical, with that changed to "Draft."

CO-HEARING OFFICER DODUC: So noted.

MR. MILJANICH: Great. Thank you.

So I imagine all the members of the panel have had a chance to take a look at this first slide.

It's -- my understanding is it's just a comparison of total South of Delta export data from these three different no action alternatives, how they've been modeled. But it's -- on the axis on the left side there, it's average export flow rate.

So, Mr. Munevar, it looks like this is tracking what you've told me earlier, that the output data for the draft biological assessment no action alternative and for the testimony here in the case in chief is the same. Does that appear to be right?

WITNESS MUNEVAR: That appears to be correct.

MR. MILJANICH: But the export data is different for what's referred here on this slide as "Final EIS" but we're agreeing to call "Draft"; is that right?

WITNESS MUNEVAR: That's correct. There were a number of changes made between the 2010 and 2015 version.

MR. MILJANICH: Could you just explain to me again briefly what the -- why we're getting different

results there?

WITNESS MUNEVAR: I think, as I indicated in my testimony, there were a number of changes that were associated with the no action. Either they were -- they were changes in some assumptions in the no action or they were updates to the model that were part of the no action and the WaterFix.

And probably the -- one of the largest ones was the addition of the Yolo Bypass as part of the no action in 2015, which was not part of the no action in the 2010 modeling.

MR. MILJANICH: Okay. Thanks.

Could we go to Slide 2 on this exhibit.

I will represent to the panel here that this is showing total South of Delta exports for this Draft BA project action and then the draft -- what we're also choosing her to call Draft rather than final.

WITNESS WHITE: Can I ask for a clarification? This says "Final EIR/EIS Alt 4A." Is that the no action?

MR. MILJANICH: Yes.

MS. MORRIS: Sorry. This is Ms. Morris. I'm sorry. I'm keeper of the record here. But it seems like these are improperly labeled. So we went from a 2010 -- I don't know what we were talking about. And

we're now talking about final which we're agreeing is Draft Alt 4A, which can only be in the recirculated environmental document because there wasn't a 4A in the draft document.

So I think the cross-examiner, to make the record clear and so that this is actually effective cross-examination, needs to identify exactly what document these tables are showing so they can answer the questions appropriately.

CO-HEARING OFFICER DODUC: Thank you Ms. Morris. I believe Ms. White's question was intending to get to that clarification.

Ms. White?

WITNESS WHITE: That's correct. I was trying to understand -- if I understand Draft BA project action, is that referring to the H3-plus scenario that was referred to?

MR. MILJANICH: Right.

WITNESS WHITE: But what is the Final EIS Alt 4A?

MR. MILJANICH: Give me just a moment to confer with my colleague, and I'll be right back.

CO-HEARING OFFICER DODUC: Mr. Miljanich, let me make another suggestion. I think you can use some time to go through your slides, so I will suggest that

we take our lunch break now so that you can confer with your colleague. And we will resume with you after our lunch break.

MR. MILJANICH: Very kind of you. Thanks.

CO-HEARING OFFICER DODUC: So we will return at 1:10.

(Whereupon, the luncheon recess was taken at 12:07 p.m.)

AFTERNOON SESSION

(Whereupon, all parties having been duly noted for the record, the proceedings resumed at 1:11 p.m.)

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CO-HEARING OFFICER DODUC: Good afternoon. It's 1:10. We are back in session.

Cross-examination by Group No. 25. Please continue.

MR. MILJANICH: Thank you.

MR. MIZELL: Hearing Officer Doduc --

CO-HEARING OFFICER DODUC: Hold on.

MR. MIZELL: Excuse me. Hearing Officer Doduc, if it would bring any clarity to the modeling question that we had just prior to lunch, I did some checking, and the Final EIR modeling was posted in February on the Web -- on DWR's website. So that has been released and is public.

And, therefore, you know, we don't want to imply that the questioners have their graphs wrong because of that labeling. We'll stipulate to the fact that the final model -- the final modeling for the Final EIR was posted in February.

CO-HEARING OFFICER DODUC: The final modeling for the Final EIR, which has yet to be submitted, has

been posted.

MR. MIZELL: The modeling for the Final EIR was posted in February.

CO-HEARING OFFICER DODUC: Are we all clear on that?

MR. MILJANICH: That is my understanding as well.

CO-HEARING OFFICER DODUC: Okay.

CROSS-EXAMINATION BY MR. MILJANICH (resumed)

MR. MILJANICH: Just to explain the source of confusion, I would like to bring up SC-7, which is an exhibit that I submitted during the lunch break with an additional supplemental index which is a communication between DWR and consultant for Solano County that explains exactly what DWR has just told us.

(Solano County Exhibit SC-7 marked for identification)

CO-HEARING OFFICER DODUC: Okay. Thank you.

MR. MILJANICH: Thank you for your patience.

Okay. So with that understanding, I'd just like to move on to Slide 2 of SC-1.

Thank you, Mr. Long.

As I mentioned before, this slide is showing the total South of Delta exports for the Draft BA Project action.

CO-HEARING OFFICER DODUC: And the project action is which alternative?

MR. EMRICK: My understanding is that it's H3-plus.

CO-HEARING OFFICER DODUC: Is that correct?

WITNESS MUNEVAR: Yes, that's correct.

CO-HEARING OFFICER DODUC: Thank you.

MR. MILJANICH: Thank you -- as well as what we have labeled here as Final EIS Alt 4A.

CO-HEARING OFFICER DODUC: Which is?

MR. MILJANICH: I'm hoping that the panel can provide some clarity as to whether that is H3 or H4 or something else.

WITNESS BUCHHOLZ: The Final EIS Alt 4A is the same as H3-plus in the biological assessment.

MR. MILJANICH: It's the same as H3-plus?

CO-HEARING OFFICER DODUC: So in other words, red and green reflects the same scenario under different modeling runs?

WITNESS BUCHHOLZ: Because the Draft BA project action or H3-plus was put on the 2015 CalSim version and the Final EIS Alt 4A was done on the 2010 CalSim version.

CO-HEARING OFFICER DODUC: But they're both H3-plus?

WITNESS BUCHHOLZ: They're the same assumptions and criteria for both runs.

MR. MILJANICH: Okay. Thank you for that clarity.

Can anybody on the panel tell me why the exports are so low in April and May in this figure?

WITNESS MUNEVAR: I think just to clarify, in this figure, the figure appears to be showing an increase or a change in exports.

MR. MILJANICH: Yes. Thanks for that clarification. The increase in total CVP and SWP exports in cfs?

WITNESS MUNEVAR: I think what the figure is showing is that there is not a substantial increase in April and May.

MR. MILJANICH: And my question is why is that?

WITNESS MUNEVAR: I think I'll start off, and then you can chime in.

In all of the H3, H3-plus, H4, we have restrictive operations during April and May for fishery purposes primarily. We would not expect to see, necessarily, a substantial increase in April and May, as we are trying to achieve outflow targets as well for biological needs.

MR. MILJANICH: Anyone else on the panel have anything to add to that?

WITNESS WHITE: No.

MR. MILJANICH: No?

Could we go to Slide 3, Mr. Long.

I'd just like to represent to you that this is showing the same Draft BA and Final EIS modeling data and also the total export data for the two scenarios in the case in chief that are H3 and H4. And I'd like to direct your attention to April and May numbers there.

Mr. -- I'm bad at this -- Munevar --

WITNESS MUNEVAR: That's okay.

MR. MILJANICH: -- why are we seeing much larger increases in April and May under the case in chief modeling results?

WITNESS MUNEVAR: And I'm going to have to ask if these, again, are showing increases, and I'm not certain what baseline they're being compared against.

MR. MILJANICH: Are you unable to answer the question, then, if you --

WITNESS MUNEVAR: Since I didn't prepare this graphic, I don't know what the baseline is.

MR. MILJANICH: I totally understand.

CO-HEARING OFFICER DODUC: What is the baseline?

MR. MILJANICH: I think we'll have to ask Mr. Denton that when he authenticates these. But I'm hoping that the panel will still be able to give me some sort of explanation of why we're showing this difference between the scenarios.

WITNESS WHITE: Maybe I'm just -- it seems like there's two different questions or lines here. One is the difference between the Draft BA modeling and the H3, H4 scenario, which has its own characteristics, and then the other is the difference between the 2010 and the 2015 modeling.

So comparing the Final EIS on the 2010 modeling to 2015 modeling for the California WaterFix isn't comparing apples and apples. It's -- they're different.

So are you asking about 2015 versus 2010? Or are you asking about H3-plus versus H3 and H4?

MR. MILJANICH: Well, I think we could take both of those questions. I suppose the broader question is doesn't those -- don't those discrepancies make it difficult for the fishery agencies or the Board or the protestants to understand how the project will operate if it's approved?

MR. BERLINER: Objection, argumentative.

CO-HEARING OFFICER DODUC: Yes. Please

rephrase that.

Let's just go back to your initial question. Given that you did not prepare this table and do not know what the baselines are, is there any comparison, appropriate comparison, between these various charts? And are there any hypotheses that you might offer in terms of this --

WITNESS ANDERSON: So I have one more clarification. When it says "Total Exports," is this the South Delta exports and the proposed facility, the intakes in the North Delta, or is this just exports from the South Delta?

MR. MILJANICH: My understanding is that it's both.

WITNESS MUNEVAR: To try to be helpful without authenticating the basis for these here, in the biological assessment and in the 4A, what I believe is listed here is H3-plus. And H3-plus has an additional outflow that is attempting to meet the same conditions that the no action is during the spring.

CO-HEARING OFFICER DODUC: Okay.

WITNESS MUNEVAR: And that's probably about as good as I can do at this point.

CO-HEARING OFFICER DODUC: Fair enough.

Move on, please.

MR. MILJANICH: Yes. Thanks.

Mr. Long, can we bring up the next exhibit, SC-2.

(Solano County Exhibit SC-2 marked for identification)

MR. MILJANICH: These are also a set of slides prepared by a consultant to Solano County. And what we're trying to show is South of Delta exports is a function of Delta outflow. And on this first one, it's the Scenario H3 as well as the no action alternative as water year averages. And it's plotted monthly. So that would be 82 data points.

And so I think what this is suggest- -- I mean, correct me if I'm wrong, but this appears to show that the project is going to increase water year averaged exports during the wetter periods when there are high Delta outflows, higher than 15,000 cubic feet per second; is that right?

WITNESS MUNEVAR: Well, this is a very difficult graphic because it's not showing monthly. What I understand it's showing is October through September annual values plotted as a cfs.

And I believe there's only -- without guessing the basis for it, it appears to be there's only 82 points, in which case, it would be the annual values,

but it's plotted again as a cfs condition.

MR. MILJANICH: Right. Thank you for that clarification. So it's 12-month averages for October through September. Okay. Yes, the answer is yes. Thank you for that clarification.

Could we bring up the next slide, Mr. Long?

Okay. This is perhaps more important. And it's the total export data from Alternative 4A, Scenario H3, plotted as the monthly averages that I had mentioned before. So for this, there's a significant number of monthly data points for those 82 years.

Doesn't plotting the data this way, Mr. Munevar, suggest that the Cal WaterFix is going to allow exports south of the Delta that are above 11,000 cfs?

WITNESS MUNEVAR: I'll take this as if it's the information plotted from our modeling runs, 4A. Again, we would compare this back to the no action, which is not done in this particular plot.

And then in the WaterFix, we would expect to see times in which we would have diversions higher than the -- what's called "existing."

MR. MILJANICH: So even when the Delta outflow is low, there are total monthly exports above 14,000 cfs.

WITNESS MUNEVAR: Again, this is a very confusing plot. The monthly average outflow on the X axis appears to be the annual values. I'm not certain if they're annual or monthly values that are plotted on the X. The green dots appear to be monthly values, and then the blue dots appear to be annuals that are averaged in cfs.

So I'm -- forgive me. I'm having a difficult time understanding the plot and what it's attempting to show.

WITNESS WHITE: Can you also clarify, what are these limits from?

MR. BERLINER: Excuse me, Hearing Officer. I think it's not our witnesses' job to figure out what these charts are. I think that Solano has to explain to the witnesses what these charts are and then ask the questions from the chart.

CO-HEARING OFFICER DODUC: Yes, and to the Hearing Officer, who is also very confused by this graph.

MR. MILJANICH: Yes, thank you. I understand. And I think it will all be clear when we're able to present them on direct and authenticate them. So I will move on.

CO-HEARING OFFICER DODUC: And it really is

not fair to ask these witnesses to answer, unless you can -- and I would suggest when you do present this in your case in chief to try to be a bit more clear as to what is it that's being plotted.

MR. MILJANICH: Certainly. Thank you.

CO-HEARING OFFICER DODUC: Let's move on.

MR. MILJANICH: Okay.

I'm going to move to my last topic that I mentioned before. It's the --

CO-HEARING OFFICER DODUC: No more graphics? Thank you.

MR. MILJANICH: There is a graphic. I'm expecting to be able to explain it better.

CO-HEARING OFFICER DODUC: Okay.

MR. MILJANICH: It's SC-3.

(Solano County Exhibit SC-3 marked for identification)

MR. MILJANICH: And I think these questions are simple. It's -- I'd like to ask about the North Delta diversion bypass rules.

Is it true that those rules that -- is it true that it's a relative standard so that the flow that's required downstream of the intakes depends on the flow upstream from the Sacramento into the Delta?

WITNESS MUNEVAR: That's correct, during the

December through June period in which the more dynamic bypass flow criteria are in place.

MR. MILJANICH: Okay. But is it your understanding that the modeling results show that operations with the Cal WaterFix could actually result in -- could result in lower flows from the Sacramento into the Delta?

WITNESS MUNEVAR: As a flow upstream of the intakes, you would expect, both under the no action and the WaterFix which has the Fremont Weir, we would have more inundation of that Fremont Weir such that there would be lower flows in the Sacramento River.

But that's been removed from the WaterFix and essentially put into the no action condition, the Fremont Weir notching. So it's -- the Fremont Weir adjustment has been to lower the elevation at which we could have flooding of the Yolo Bypass.

And I think others on the panel can describe how we got to that in the no action.

MR. MILJANICH: I think that's fine. Thank you. Thank you for your patience. I'll stop there.

CO-HEARING OFFICER DODUC: All right.

Next?

CROSS-EXAMINATION BY MR. SIPTROTH

MR. SIPTROTH: Good afternoon. Stephen

Siptroth, Deputy County Counsel for Contra Costa County representing that county and Contra Costa County Water Agency.

We will need about 20 minutes, I think. And do you want a summary of what I'm covering, or can I just get into it?

CO-HEARING OFFICER DODUC: Please.

MR. SIPTROTH: So I have some questions about the statistical significance of the 16-year period that was used for modeling. I'd also like to just get some clarity on hydrodynamics from one year to the next. And then I'd like to look at some more graphics --

CO-HEARING OFFICER DODUC: Oh, no.

MR. SIPTROTH: -- that our expert prepared based on water quality modeling at Rock Slough.

CO-HEARING OFFICER DODUC: All right. Hopefully, you wouldn't blow my mind in a bad way.

MR. SIPTROTH: I think Mr. Denton is the best person to testify about these graphics, and he will during our case in chief. But I will do my best to explain them, but I'm not an engineer.

CO-HEARING OFFICER DODUC: We can't all be so blessed.

MR. SIPTROTH: Just for staff's -- just to staff, we have submitted our exhibits on a flash drive.

Staff has uploaded them. I will not be introducing CCC-1. I will only be introducing CCC-2.

Could we please pull up DWR Exhibit 511.

And most of my questions will be for you, Dr. -- is it Nader-Tehrani?

WITNESS NADER-TEHRANI: Yes.

MR. SIPTROTH: Thank you.

Dr. Nader-Tehrani, this is an internal memorandum dated August 22nd, 2013 draft. The subject is CalSim II and DSM2 modeling for BDCP.

You were one of the authors for this memorandum; is that correct?

WITNESS NADER-TEHRANI: That's correct.

MR. SIPTROTH: On the second page of the memorandum, the second bullet point states, "The distribution of year types in the 16-year period is similar to the distribution in the 82-year period."

I believe there is a substantial amount of testimony already about this particular issue raised in this bullet point.

Do you agree with the statement made in that bullet point?

WITNESS NADER-TEHRANI: Yes, I do.

MR. SIPTROTH: Thank you.

The fourth bullet point states that, "The

16-year simulation period for DSM2 contains the driest two-year drought and also an extended drought (1987 to 1991), and provides sufficient information for necessary confidence in the modeling results."

Do you agree with that statement, even though -- I know this relates to modeling for BDCP. Insofar as we're talking about modeling for WaterFix, do you still agree with that statement?

WITNESS NADER-TEHRANI: Yes, I do.

MR. SIPTROTH: Can you explain what "necessary confidence" means?

WITNESS NADER-TEHRANI: I think I go back to the statement I already made, I believe it was yesterday. I have looked at water quality analysis, looking as an example, let's say Emmaton, look at monthly averages and the difference between an operational scenario against the baseline, no action, based on the 16-year analysis, 16-year period versus the 82, and looked at the incremental changes. And I looked at a number of locations throughout the Delta.

And I -- and I say, you would reach a similar conclusion based on -- regardless of whether you used the 16-year or the 82-year periods.

MR. SIPTROTH: Does "necessary confidence" mean some sort of statistical significance?

WITNESS NADER-TEHRANI: I based my statement on what I just described.

CO-HEARING OFFICER DODUC: So the answer is no?

WITNESS NADER-TEHRANI: No.

MR. SIPTROTH: So would you -- do you have an opinion of whether or not modeling the 16-year period that was modeled based on a universe of 82 years, whether that period -- whether the modeling results have a particular statistical significance?

WITNESS NADER-TEHRANI: It all depends on what parameter, where.

MR. SIPTROTH: Okay. How about water quality at Rock Slough, modeling results for water quality at Rock Slough that have been presented to the Board?

WITNESS NADER-TEHRANI: Are we talking about Old River Rock Slough?

MR. SIPTROTH: I believe so. If it would assist, in DWR-513, Pages 4 and 5, I believe there are tables showing modeling results, as an example, modeling results for water quality at the Contra Costa Canal, I believe, as an example.

Is there a particular statistical significance related to those results?

WITNESS NADER-TEHRANI: You're asking

regarding 16 years versus 82 years?

MR. SIPTROTH: Yeah --

WITNESS NADER-TEHRANI: I have not presented any of that in this testimony. It's just some analysis that I have done in the past.

MR. SIPTROTH: So is your answer no?

WITNESS NADER-TEHRANI: I don't have anything to show. But I -- I guess -- can you repeat the question again, so I just want to make sure.

MR. SIPTROTH: Yes. So I think we're looking for an example of modeling results, and DWR -- the panel has presented some modeling results of water quality at Rock Slough in DWR-513 in a graphic format.

WITNESS NADER-TEHRANI: That's Contra Costa Canal.

MR. SIPTROTH: Contra Costa Canal.

And my question was that -- so I think we've talked about the fact that that was based on modeling 16 years out of 82 years?

WITNESS NADER-TEHRANI: That's correct, yes.

MR. SIPTROTH: So for that particular example, are those results statistically significant?

WITNESS NADER-TEHRANI: I'm not sure if I understand the question.

MR. SIPTROTH: Do you know what "statistical

significance" means?

WITNESS NADER-TEHRANI: Yes, mm-hmm.

MR. BRYAN: Statistically significant to what?

MR. SIPTROTH: Well, I'm wondering -- I know we've modeled 16 years. And I'm trying to get to -- and I'm not a statistician.

But I'm trying to get to whether or not these years are representative. And I know you've said that they are. But in terms of model outputs, in terms of analyzing the data, is there a level of confidence that we can have in the modeling results such as, you know, describing that level of confidence in terms of a percentage error in the results or something like that?

And if you don't know or the answer is no --

WITNESS NADER-TEHRANI: I guess the question is still not clear to me.

I think what I tried to describe was, again, take Contra Costa Canal in this case. You look at the changes between no action in an operational scenario, look at the difference. And there are often -- at times it may go up, and it may go down. And then you look at similar analysis based on 82 years.

And I see it wouldn't be exactly the same differences, but the conclusions that you make based on those analysis are going to be very similar.

MR. SIPTROTH: Okay. Is the 16-year period statistically representative of the 82-year period?

WITNESS NADER-TEHRANI: I just explained that it contains the two-year drought periods in the 1976-'77; it's a similar extended drought, similar wet and, you know, dry and above normal.

So in terms of matching the exact spectrum of water year types, it may not be the exact, but as far as capturing the spectrum that's contained within the 82 years, I would consider them similar.

MR. SIPTROTH: I know you would consider them similar. I asked whether it was a statistically significant sample size.

CO-HEARING OFFICER DODUC: I don't think you're going to get more on that. I mean, we've gone through now for the second time why these witnesses believe the 16-year simulation is appropriate. He's explained that.

He's compared the results from the 16-year through a 32-year [sic] period and is confident that it's reflective.

If you're asking him to provide his quantification of significance or of his level of confidence, I don't think is he's able to. And if you push him, he'll probably say he's very, very confident

in what he did. So I would suggest you move on.

As intriguing as the idea of exploring this was to me, I don't think we can get much further on it.

WITNESS NADER-TEHRANI: But if I can add, this is nothing new to California WaterFix. We've used the same standard in -- this 16-year has been the standard practice for the last 16, 17 years that I know. So it's nothing new. It's been the standard practice.

MR. SIPTROTH: Thank you.

Just -- and I will move on, but just very quickly, do any of the panelists have an opinion on the level of confidence or the -- some sort of quantification of the statistical significance of the data that was modeled? And if none, that's fine.

MS. SMITH: I'm in agreement with Dr. Nader-Tehrani. And, you know, you're again -- and what are you comparing this to? This DSM2 is a model that models 15-minute data for over -- so the time steps are quite small, and you get a variety of information from that.

MR. SIPTROTH: Yeah, I understand. Thank you.

I guess my question is more to the relationship between the 16 years that were modeled and the 82-year universe and whether there's a statistical significance in the 16 years of data.

But I'll move on. Thank you.

Same exhibit. I believe it is the sixth page. The first heading on that page is "DSM2 16-year and 82-year Planning Studies."

CO-HEARING OFFICER DODUC: What document are you referring to?

MR. SIPTROTH: Oh, I'm sorry. Same exhibit that is up; it is DWR-511.

CO-HEARING OFFICER DODUC: Page?

MR. SIPTROTH: I believe it's the sixth page. It's not numbered, but the first heading on that page is No. 2, and then it says DSM2 16-year. Yeah, that page.

In about the middle of the first full paragraph under Subheading A, it states, "Since hydrodynamics and water quality from one year affect the results of the following year, a sequence of years that contained all needed year types was chosen."

I know that was stated in the context of BDCP. Do you agree with that statement in the California WaterFix?

WITNESS NADER-TEHRANI: Yes.

MR. SIPTROTH: Thank you.

So does this mean that, if the previous year was critically dry, that would have a different effect

on a normal year than if the previous year was normal? Is that generally what it's stating?

WITNESS NADER-TEHRANI: This memo was written a while back, so I have to refresh my memory what I meant. I'm not even sure if that part of it was written by me.

MR. SIPTROTH: Oh. But you agree with that statement?

WITNESS SMITH: I think in general -- I may have done this part. I think in general, that is correct, but there are time periods where, assuming you have a very wet winter, you're not going to see that connection as much.

MR. SIPTROTH: Okay. So is it -- would it be correct to say that, if a previous year was critically dry versus normal, that you would expect the Delta to have higher salinity? I know that's a general question.

WITNESS NADER-TEHRANI: Once you get a wet year, then it -- you know, all it takes is just a couple of weeks for Delta to get fresh again regardless of what the previous year was. In the example you just mentioned, that's what I would expect.

MR. SIPTROTH: So it would only take a couple of weeks for the --

WITNESS NADER-TEHRANI: In a very wet -- you know, if you have a very high-flow event, then in a matter of few weeks, you can get the pretty much bigger portion of the Delta fresh again.

WITNESS ANDERSON: And salinity is not correlated just to the year type. The Delta is a highly managed system, so it very much depends on what the reservoir releases were and the management was in that year.

So you may have two critical years but have different salinity conditions in the Delta because maybe in one year more water was released from the reservoirs than the other year for whatever variety of complicated reasons that our system -- how it gets managed.

So it's kind of hard to make some generalizations because the salinity in the Delta isn't just a function of what the year type is.

MR. SIPTROTH: Thank you. Thank you for that clarification.

The chart on this table shows five types of years: wet, above normal, below normal, dry, and critical. Are those generally the five -- I mean, are those the five types of water years?

WITNESS NADER-TEHRANI: That is true, yes.

MR. SIPTROTH: So if you have five types of years, and we're looking at preceding year and current year, how many combinations could there be?

WITNESS NADER-TEHRANI: I'm not sure I understand the question.

MR. SIPTROTH: If we're looking -- if we're thinking about -- well, so you have the current water year, and then you have the previous water year. And if the current water year is normal and there are five other types of water years that could have preceded it, then -- so you have those five.

WITNESS NADER-TEHRANI: Right.

MR. SIPTROTH: And then if the current year is dry, you have another five years that could have preceded it. So that's another five combination?

WITNESS NADER-TEHRANI: Twenty-five.

MR. SIPTROTH: So about 25 combinations?

WITNESS NADER-TEHRANI: Right.

MR. SIPTROTH: The 16 years that were modeled, did that include 25 combinations of year types? Or do you know how many combinations of year types were in those 16 years?

WITNESS NADER-TEHRANI: Don't remember.

MR. SIPTROTH: Okay. Thank you.

Does that mean that the 16 years that were

modeled would be insufficient to cover the 25 possible combinations of year types?

WITNESS NADER-TEHRANI: I'm not sure how best to answer that. Of course, if you choose a different 16-year, you might get a different result. This 16 years were not -- these 16 years were not chosen at random.

At the time, 16, 17 years ago, you know, we spent a great deal of time choosing this 16-year period such that we felt comfortable that it would represent that any analysis we do based on those 16 years covered the extremes and the different combinations that you would get under the 82.

CO-HEARING OFFICER DODUC: So the answer is no, it does not encompass all 25 possible scenarios, but you are still confident that it is reflective of the 82-year period?

WITNESS NADER-TEHRANI: I couldn't have said it better. Thank you very much.

CO-HEARING OFFICER DODUC: Thank you.

Move on, please.

MR. SIPTROTH: Thank you.

Same exhibit, DWR-511, and we're going to Page 9.

Under Heading No. 4, "Model Run Time," the

report or the memorandum states, "In making a decision for the best available model, run time for obtaining results is a factor."

Do you agree with that statement?

WITNESS NADER-TEHRANI: That was a parameter we took into consideration back 16, 17 years ago when we made that decision.

MR. SIPTROTH: Okay. For the modeling that was done for WaterFix, was one -- was, I'm sorry, run time a factor that was considered when determining how many years to model?

WITNESS NADER-TEHRANI: No.

MR. SIPTROTH: Was cost?

WITNESS NADER-TEHRANI: No.

MR. SIPTROTH: Do you know if cost was a factor for the Department? Maybe it wasn't a factor for you. Do you have --

WITNESS NADER-TEHRANI: Are you talking about now or in the past?

MR. SIPTROTH: I'm talking about for the modeling that was done for WaterFix.

WITNESS NADER-TEHRANI: The cost was not a factor for the choice we made on the period.

MR. SIPTROTH: For the case the chief?

WITNESS NADER-TEHRANI: That's correct.

MR. SIPTROTH: Thank you.

WITNESS ANDERSON: I think this is getting confusing. This section is about choosing different types of models, not in deciding to use the 16-year period. So -- I think.

MR. SIPTROTH: Yeah, I understand.

And this related to BDCP, and we're talking about WaterFix. There are differences, but I appreciate you answering the question.

WITNESS ANDERSON: But the run time was not an issue necess- -- well, I'm just going to -- I'm going to withdraw my comment.

WITNESS NADER-TEHRANI: The one additional comment I have is, if you read near three lines from the bottom, the space requirements, you know, 5 gigabytes you know, the existing, you know, about 4 to 5 gigabytes of information, that's within the 16 years. And then for 82, you would get a large -- much larger.

And we heard, you know -- and you know, I think when we looked at it, we just didn't get anything more informative beyond what we found. So back in the old days, storage was also a concern. It's no longer a concern now, but it was -- it used -- back in the old days, that was a concern.

MR. SIPTROTH: Thank you. Yeah, I have that underlined. That's a lot of data. Thank you.

Would staff please bring up DWR-66.

Dr. Nader-Tehrani, this is your testimony?

WITNESS NADER-TEHRANI: That's correct.

MR. SIPTROTH: So on Page 6, starting on Line 21 and going through Lines -- to Line 26.

The information that is presented in DWR-513, Figure CL1 to CL3, that shows simulated chloride concentrations at Contra Costa Canal.

Is that information presented as long-term monthly averages?

WITNESS NADER-TEHRANI: That is correct.

MR. SIPTROTH: So when we say "long-term monthly average," so for January, it would be 16 years of January averages that are averaged; is that correct?

WITNESS NADER-TEHRANI: That is correct.

MR. SIPTROTH: Thank you.

Could we please bring up Contra Costa County 2, CCC-2?

(Contra Costa County Exhibit CCC-2 marked for identification)

MR. SIPTROTH: Could we go to Slide 1, please? Spoiler alert. We'll start with Slide 1. These tables were prepared by Richard Denton, the County's expert.

Mr. Denton has a Ph.D.

The tables will be authenticated when we put on our case in chief.

CO-HEARING OFFICER DODUC: Hold on a second.

Mr. O'Laughlin?

MR. O'LAUGHLIN: Yeah, Tim O'Laughlin representing the San Joaquin Tributaries and its member agencies.

I'm going to object. I've been sitting here for the better part of a day with this type of presentation. And the point of cross-examination is not to put on your case in chief. And we're going to go through this dog-and-pony show here again, where we're going to ask these people questions; they don't know where the charts come from; they don't know the basis for the charts; they don't know the inputs for the charts.

So I have a suggestion for the Chair and for the questioners. Put this on in your case in chief and argue it later. Otherwise, all we're going to do is spend the next 15 minutes with, "I don't know," "I don't understand the assumptions," "I can't answer your question."

So I object -- and lacks foundation and a whole bunch of other stuff.

CO-HEARING OFFICER DODUC: Thank you, Mr. O'Laughlin.

Do you have an objection, Ms. DesJardins?

(No audible response)

CO-HEARING OFFICER DODUC: I will take that as a "no."

I'm sorry. I didn't hear that. You have to come to the microphone.

MS. DES JARDINS: I support that this is a Board decision, that information would come out in cross-examination.

CO-HEARING OFFICER DODUC: I am sorry. Do you support Mr. O'Laughlin's objection, or do you support this line of questioning?

MS. DES JARDINS: No, I support this line of questioning.

CO-HEARING OFFICER DODUC: Okay. Thank you.

Mr. O'Laughlin, thank you for that objection, but I have, unfortunately, opened the door down this path, starting with Mr. Lilly's cross-examination.

So we will continue down this path with all the caveats so noted associated with this.

MR. SIPTROTH: I appreciate the Chair extending to us the same courtesy that was extended to Mr. Lilly. Thank you.

CO-HEARING OFFICER DODUC: But we all recognize the limitations of going down this path. And these witnesses are certainly within -- certainly are capable of saying they do not know or they cannot answer.

MR. SIPTROTH: Of course.

So this was prepared by Mr. Denton based on the output of the DSM2 modeling. The X axis is for the WaterFix case in chief, no action alternative EC for each month.

The vertical red line represents the 250-milligram-per-liter chloride water quality standard for an urban water intake under D1641 and specifically the Contra Costa -- we're looking at Bacon Island, which is in close proximity to Contra Costa Water District's urban water intake.

The Y axis is the 16-year average for EC -- and I apologize for -- I'm sorry. The Y axis is a 16-year average EC for each month of the WaterFix project. And so Mr. Denton has found the point at which these two values intersect.

On this particular chart, you can disregard the steep blue line. That is --

CO-HEARING OFFICER DODUC: Okay. Now, I'm starting to get very -- let's do this instead, instead

trying to describe everything. What is the point of this graph that you want to bring out to which you would like these witnesses to address if they can? What is the point of this graph?

MR. SIPTROTH: This particular graph is illustrative of long-term averages, the same information that was presented in DWR-513.

CO-HEARING OFFICER DODUC: Let me rephrase my question. What is the conclusion you and your consultant drew from this graph?

MR. SIPTROTH: I don't have a conclusion about this graph.

CO-HEARING OFFICER DODUC: Then why are you bringing it up?

MR. SIPTROTH: Because the next graphs build on it.

CO-HEARING OFFICER DODUC: Let's try moving to the next graph.

MR. SIPTROTH: Thank you.

So let's go to the next graph.

CO-HEARING OFFICER DODUC: Actually, you know what? Let's do this. What is the path to which you're leading us? Regardless of all these graphs, what is the point here that you're trying to get to? Can we get to it without looking at charts that are blowing my

mind in not a good way?

MR. SIPTROTH: The point is to show that simply using long-term monthly averages is misleading.

CO-HEARING OFFICER DODUC: I think all would argue that there are limitations associated with using averages. I think previous cross-examiners have also pointed that out.

So if your argument is that long-term averages do not capture, you know, perhaps the variation of daily averages, I think that's a statement of fact that everyone could agree to.

What in particular with respect to Bacon Island EC were you trying to point out? I assume it has to do something with your concern about water quality for Contra Costa.

MR. SIPTROTH: We are concerned about water quality. We are concerned that simply showing -- simply showing long-term averages by month doesn't capture what the model shows in terms of monthly -- all of the monthly averages during the 16 period in terms of what the model shows -- it doesn't capture what the model shows for the daily average for each day during the 16-year period.

CO-HEARING OFFICER DODUC: Do you concede that showing monthly averages does not?

WITNESS NADER-TEHRANI: It does not provide all the details you need.

However, I have to expand on something. That's not the only form of information I presented to the Board. And I have an example that -- I just want to remind everybody that that's not the only piece of information that was presented.

If you can bring up Slide No. 71 in the DWR-5 Errata.

CO-HEARING OFFICER DODUC: Okay. You're not going to --

WITNESS NADER-TEHRANI: It's that the --

CO-HEARING OFFICER DODUC: Doctor --

WITNESS NADER-TEHRANI: Sorry, sorry.

CO-HEARING OFFICER DODUC: -- you're not going to argue back his case now. His point simply is that monthly averages do not adequately reflect the nuances and their roles associated from more detailed modeling output.

And do you agree?

WITNESS NADER-TEHRANI: I agree with that, yes.

MR. SIPTROTH: And if I may, more the point, if you look at the monthly -- and now I'm testifying.

CO-HEARING OFFICER DODUC: Yes, you are.

MR. SIPTROTH: Which I shouldn't be doing.

CO-HEARING OFFICER DODUC: And we're not going to argue back and forth. If that was your point, then he agrees that monthly averages do not adequately convey that.

MR. SIPTROTH: If you look at the monthly average for each month during the 16-year period and, on the next chart, the daily average for each day during the 16-year period, you see exceedances of the 250-milligrams-per-liter chloride limitation --

CO-HEARING OFFICER DODUC: That are not reflected in the averages. I understand.

MR. SIPTROTH: Okay.

CO-HEARING OFFICER DODUC: Point made.

MR. SIPTROTH: So my question is, is relying on a long-term average the best way to show the actual impacts of the project, when looking at the monthly data and the daily data paint a very different picture and actually show exceedances of the chloride standard with the project?

MR. MIZELL: I'm going to object to being asked and answered. If he's asking for the expert's opinion as to whether or not the expert's testimony is the best way --

CO-HEARING OFFICER DODUC: I think the experts

can say that. Let's let him answer that. I don't think we'll be surprised by his answer.

WITNESS NADER-TEHRANI: I didn't -- when I was showing the water quality output, I think if you look back at the record, you will see that I mentioned that this is not an indication of whether the water quality standards are met or not.

There was a separate part included in my testimony that focused on actual exceedance at several locations, including Old River -- the Contra Costa Canal. And within that picture, it includes all the daily averages for the entire 16 years.

So while I agree that just showing long-term averages is not sufficient, I presented information not just based on the 16-year monthly averages. I showed results that actually reflected the results of day-to-day variations within the entire 16 years.

CO-HEARING OFFICER DODUC: So you still believe that your testimony presenting the long-term averages are, in your opinion, an appropriate way to assess the impacts?

WITNESS NADER-TEHRANI: In its entirety because I showed beyond just the 16-year averages.

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

I believe that wraps up your cross-examination? Hint.

MR. SIPTROTH: I appreciate the hint. We will reserve the rest for our case in chief. Thank you.

CO-HEARING OFFICER DODUC: Thank you.

Ms. Spaletta, please come up.

And as Ms. Spaletta is coming up, I see Mr. Jackson in the room. Let me assure you that we will definitely get to your cross-examination tomorrow regardless of the order, knowing that you will not be here next week.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: As Ms. Spaletta is getting ready, let me just do a check-in.

Group 26?

(No response)

CO-HEARING OFFICER DODUC: 27 has gone. 28 has yet to show.

29? Okay. Mr. Brodsky is next, but he has requested to do his cross-examination tomorrow. And then Mr. Jackson is after Mr. Brodsky.

Ms. Spaletta, how much time do you expect needing?

MS. SPALETTA: I will be cross-examining on behalf of North San Joaquin and the San Joaquin County

entities, but I anticipate less than an hour.

CO-HEARING OFFICER DODUC: Okay. So let me go down the list for those who are here.

32? 33? 34? 35?

Ms. DesJardins, would you be ready to conduct cross-examination today after Ms. Spaletta? Because I'm assuming Mr. -- well, Mr. Brodsky's not here.

And I'm assuming, Mr. Jackson, that you would need more than half an hour or more than an hour?

MR. JACKSON: Probably I'd like an hour. I intend to be finished as soon as I can, depending on the length of the answers.

CO-HEARING OFFICER DODUC: Okay. If Ms. Spaletta finishes by 3:00, would you like to conduct your cross-examination today?

MR. JACKSON: I would be delighted.

CO-HEARING OFFICER DODUC: All right. Then we will go for that.

Please begin, Ms. Spaletta.

MS. SPALETTA: All right. Thank you.

CROSS-EXAMINATION BY MS. SPALETTA

MS. SPALETTA: Good afternoon. And thank you to the parties and the hearing team for allowing me to go out of order. Much appreciated.

I'm going to start with looking at DWR Exhibit

66, which I believe is Dr. Nader-Tehrani's testimony.

Just to introduce myself to the panel, my name is Jennifer Spaletta. I'm counsel for North San Joaquin Water Conservation District, and I've coordinated -- I'll be asking questions on behalf of both that district and the San Joaquin County entities.

Okay. I want to turn to Page 2 of Exhibit 66, and I want to look at Lines 18 through 20. I want to call your attention to the sentence that was actually just highlighted. Says, "The testimony provides an overview of the computer modeling performed to evaluate changes in the water quality and water levels associated with the California WaterFix and any possible effects on legal users of water."

Two questions, Doctor, about that sentence.

The term "California WaterFix," which scenario did you intend that acronym to mean?

WITNESS NADER-TEHRANI: The entire spectrum from Boundary 1, H3, H4, and Boundary 2.

MS. SPALETTA: So are you intending to express an opinion that the modeling showed that there were no impacts of water levels or water quality on legal users of water under any scenario?

WITNESS NADER-TEHRANI: Based on the information, yes.

MS. SPALETTA: And then the second part of the sentence says, "and any possible effects on legal users of water."

I'm trying to figure out if your testimony is conjunctive, if you have some other analysis of possible effects on legal users of water or if the only thing you did was analyze the modeling results.

WITNESS NADER-TEHRANI: I analyzed the modeling results.

MS. SPALETTA: So to the extent that you express an opinion about lack of injury to legal users of water, your opinion is based solely on the modeling results?

MR. MIZELL: Objection, misstates his testimony. He uses the word "effect" not "injury."

CO-HEARING OFFICER DODUC: Fine. Then we'll -- Ms. Spaletta, would you like to substitute that word?

MS. SPALETTA: Actually, no.

Let's go ahead and look at Page 3, Lines 18 through 19, where you state, "It is my opinion that there will not be negative effects to legal users of water due to water level changes."

So were you expressing an opinion about negative effects to legal users of water?

WITNESS NADER-TEHRANI: That's correct.

MS. SPALETTA: Okay. And what did you understand "negative effect" to mean?

WITNESS NADER-TEHRANI: I was looking at the fact that, whether the water levels at different locations in the Delta will go down -- you know, will be reduced or increased a substantial amount.

MS. SPALETTA: And which legal users of water were you concerned about when you undertook that analysis?

WITNESS NADER-TEHRANI: As an example -- well, the example I can think of, any farmer that may be irrigating water from -- you know, from the river.

MS. SPALETTA: And how many different farmers with diversions from the river were in the zone of impact that you analyzed?

WITNESS NADER-TEHRANI: I don't know the answer to that question.

MS. SPALETTA: And what type of diversion methods did those farmers or do those farmers use in this zone of impact?

WITNESS NADER-TEHRANI: I don't have the answer to that question.

MS. SPALETTA: So you don't know if the farmers near the North Delta diversions divert with

siphons or pumps?

WITNESS NADER-TEHRANI: I'm assuming a mix.

MS. SPALETTA: Do you know at what level the water needs to be for their diversion to operate?

WITNESS NADER-TEHRANI: I don't have an answer to that question.

MS. SPALETTA: Have you ever operated a siphon?

WITNESS NADER-TEHRANI: I have not.

MS. SPALETTA: Have you ever operated a river diversion pump?

WITNESS NADER-TEHRANI: I have not.

MS. SPALETTA: Did you or anyone else associated with your group interview the diverters located in the zone of impact for which the water level changes?

WITNESS NADER-TEHRANI: I can't answer on anybody else's behalf. I have not.

MS. SPALETTA: Anyone else on the panel?

(No response)

MS. SPALETTA: Okay. The record should reflect that none of the other panel members indicated that they had interviewed any operators in the zone of impact.

I do have a question about how DSM2 works for

purposes of your water level analysis.

First of all, let me confirm that your analysis of the impact on water levels was based on DSM2; is that correct?

WITNESS NADER-TEHRANI: That's correct.

MS. SPALETTA: So if I understood the conclusion, the conclusion was that, within a certain distance of the North Delta diversions, there was a water level impact, but you believed it to be of a limited size and also the impact dissipated the further you got away from the North Delta diversion points; is that correct?

WITNESS NADER-TEHRANI: Yes.

MS. SPALETTA: And what is it about Delta hydrodynamics that causes that result?

WITNESS NADER-TEHRANI: It's just the laws of physics. You take water, take -- a reduction in flow causes a reduction in water level.

MS. SPALETTA: And what causes --

MS. RIDDLE: Mr. Nader-Tehrani, can you please speak up? It's hard to hear.

WITNESS NADER-TEHRANI: I'm sorry. Yes.

As I said, a reduction in flow is expected to lead to a reduction in water levels.

MS. SPALETTA: What causes the reduction in

water levels to be temporary?

WITNESS NADER-TEHRANI: The water level at this location is also very much affected by the tides. So during the course of natural tide, the water will just go up and down.

And the information I provided was based on the minimum daily water level. And what I was explaining, that those minimum water levels only last for a short duration.

MS. SPALETTA: Is it also the effect of the tide that causes the water level change to dissipate the farther you get away from the diversion point?

WITNESS NADER-TEHRANI: No. It's just the -- once you get beyond a certain point, then the tides become more predominant.

MS. SPALETTA: And when the water is removed from the stream system by the North Delta diversion points, does the effect of the tide and the physics of the Delta essentially mean that other molecules of water move in to replace the area that was devoid by the reduction in flow?

WITNESS NADER-TEHRANI: I guess the answer is yes.

MS. SPALETTA: Okay. Now I have a question for Mr. Munevar.

There's a description in your testimony -- which is DWR Exhibit 71 -- on Page 9 about the process that was used to compare the CalSim II output to historic information and the percent differences.

Do you recall that part of your testimony?

WITNESS MUNEVAR: I believe you're referring to a historic quasi validation run that was prepared. That's not a run that was prepared for the WaterFix.

MS. SPALETTA: But it's something that was done to validate the usefulness of the model, correct?

WITNESS MUNEVAR: It was conducted in response to comments on the -- on the validity of the model.

MS. SPALETTA: Is that the same thing as finding out what the margin of error is in the model, or is margin of error a different concept for this model?

WITNESS MUNEVAR: That would not be the same as a margin of error.

MS. SPALETTA: So what is the margin of error for CalSim II?

WITNESS MUNEVAR: We don't express a margin of error. Again, we're using the models in a comparative sense such that, when we're comparing the WaterFix to the same no action -- or to the no action that only has the changes associated with WaterFix, those are

reflective of the changes we would expect under future operations.

MS. SPALETTA: And what about DSM2, does it have a margin of error?

WITNESS NADER-TEHRANI: There is no simple definition of "margin of error" that I know of for DSM2.

MS. SPALETTA: Is there anything similar?

WITNESS NADER-TEHRANI: Well, for example, if you're referring to -- I mean, calibration validation would be an example of where you compare model results to observed data.

MS. SPALETTA: Okay. Now I have a question about the CalSim II assumptions, and anyone on the panel can answer this question.

My understanding is that you started with the 82-year hydrology, and various adjustments were made to it. And I'm particularly interested in how the hydrology for the basin where my clients are located was treated.

So North San Joaquin is in the watershed of the Mokelumne River. So can someone describe to me what assumptions were made about surface water use in the Mokelumne River for purposes of your CalSim II run?

WITNESS WHITE: Can you be more specific? Are

you asking about the climate-change adjustments to the historical hydrology, or are you asking about where we got the historical hydrology from?

MS. SPALETTA: I'm actually not asking about the hydrology. I'm asking about surface water demand numbers.

So how did you determine the surface water demand numbers for the Mokelumne Basin?

WITNESS REYES: I believe the numbers come from folks at East Bay MUD.

MS. SPALETTA: So did you only include East Bay MUD's demand in the model run? Or did you also include the surface water demands of all of the other water right holders in the basin?

WITNESS REYES: We essentially get the outflow from the East Bay MUD sim model. So anything upstream of that is really whatever is contained in the East Bay MUD sim, and I'm not aware of what they have in that model.

MS. SPALETTA: So as you sit here today, you don't know what level of development is reflected in the outflow numbers that you got from East Bay MUD?

WITNESS REYES: It's meant to be 2020, I believe.

MS. SPALETTA: For the 2020 time period, does

that assume full build-out of all of the water right permits on the Mokelumne River or some different level of build-out?

WITNESS REYES: I'm not aware.

MS. SPALETTA: And where would I find the East Bay MUD sim outputs in the data?

WITNESS REYES: It's input as Mokelumne River inflow into our model.

MS. SPALETTA: Is that in the data files that Ms. Taber went over with the panel earlier today that were produced in May?

WITNESS REYES: Yes, it should be a part of that data set.

MS. SPALETTA: Now, there are some -- is the same -- I guess the answer might be different.

What about the surface water demands in the Consumnes Basin? Where did that information come from?

WITNESS REYES: I think it's the same type of answer. It's, I believe, just an input into CalSim.

MS. SPALETTA: Do you know the source of the information?

WITNESS REYES: I do not at this moment, no.

MS. SPALETTA: You think that's in your input files?

WITNESS REYES: It's in the input files, yes.

MS. SPALETTA: And did you use an input file for surface water demands in the Calaveras River Basin?

WITNESS REYES: The same, same type of answer, yeah.

MS. SPALETTA: You don't know as you sit here today? I'd have to go look for it in the input file?

WITNESS REYES: That's correct.

MS. SPALETTA: There are some treatment plant discharges into the channels of the Delta in San Joaquin County. Probably the most significant one is the City of Stockton.

What were the assumptions about the level of that discharge for purposes of your modeling?

WITNESS WHITE: Can you clarify "level"? Are you talking about water quality or the volume of discharge coming out?

MS. SPALETTA: Both.

WITNESS NADER-TEHRANI: Can you repeat the question? Sorry.

MS. SPALETTA: Sure. It's my understanding that your model accounted for significant wastewater discharges into channels of the Delta.

Is that assumption correct?

WITNESS NADER-TEHRANI: You're talking about the effects of -- I'm sorry. Are you talking about a

specific discharge?

MS. SPALETTA: Well, let me ask a more general question. There are wastewater treatment plants that discharge water into the Delta?

WITNESS NADER-TEHRANI: Yes.

MS. SPALETTA: Did the model take into account those discharges?

WITNESS NADER-TEHRANI: I don't recall, you know, whether a specific one is modeled or not. But there are -- and I believe there may be a few of them at least that are modeled. But I don't -- offhand, sitting here, I don't remember.

MS. SPALETTA: So then you probably -- would any of the panel members be able to explain to me how the model treated the amount of wastewater discharges into the Delta in the no action alternative versus the other alternatives?

WITNESS NADER-TEHRANI: If they were included, they would be the same.

Michael?

WITNESS BRYAN: Yeah, they would be treated the same.

MS. SPALETTA: As what?

WITNESS BRYAN: Among the alternatives.

MS. SPALETTA: Uh-huh.

WITNESS BRYAN: And one way to look at it is when the Department does a calibration of the model, based on a hindsight to historic to calibrate and verify, those wastewater treatment plants would have been discharging. So that's how they could be accounted for.

MS. SPALETTA: But as you sit here today, for example, the City of Stockton's wastewater discharges, do you know whether or not those were accounted for in the modeling?

WITNESS NADER-TEHRANI: I don't know the answer to any specific discharges.

WITNESS SMITH: I just want to clarify. A lot of the CalSim hydrology is not quite explicit to say "this discharge came from this source." It's -- a lot of it is more varied, where we have the Mokelumne River coming in, we have the Consumnes River coming in, and we have accretions that are coming in.

So I think there's a little bit of confusion on the panel exactly teasing out which part of the accretions may have come from the treatment plant. I'm not sure that we can answer the details on that. But what we can answer is that they're the same between the no action and all the alternatives.

MS. SPALETTA: So one of the concerns of the

constituents in our area is there are some water rights that are still in a buildup period; there are treatment plant discharges that are likely to increase over time. And we anticipate these things are going to happen. They're already the subject of existing waste discharge requirements or existing water right permits.

How did the modeling account for those known changes over time in water right diversions or wastewater discharges? Or did it?

WITNESS NADER-TEHRANI: Can you be specific to -- as to whether these places that you're referring to, are they within the Delta or upstream?

MS. SPALETTA: They would impact the Delta. So, for example --

WITNESS NADER-TEHRANI: The physical location, are they in the Delta?

MS. SPALETTA: So, for example, North San Joaquin Water Conservation District has a permit to use 20,000 acre-feet on the Mokelumne River. It's still in the buildup period of that permit. So over time, it's expected to use more water under the permit.

Was that accounted for in the modeling for your time sequence?

WITNESS NADER-TEHRANI: I don't know the answer to that question.

MS. SPALETTA: And a similar question for the City of Stockton's wastewater discharge. It's expected to get larger over time as the city grows.

Was that accounted for at all in the modeling?

WITNESS MUNEVAR: I think what you're hearing is that many of us don't know the details of that. There is a description of the detail demand assumptions that are part of Appendix 5A, I believe it is, where it outlines the major demand assumptions that are part of CalSim.

MS. SPALETTA: I did review that appendix after your testimony earlier this week, but I couldn't find those details, so hence my questions today.

Okay. Let's move on.

CO-HEARING OFFICER DODUC: Before you do, Ms. Anderson, did you have something to add?

WITNESS ANDERSON: So what I was going to say is the way this modeling is done is it's a level-of-development analysis.

So, Armin, is 2030 the right level of development?

So whatever assumptions were made for 2030 are what is in every alternative. So it would not -- because it's a static level of development, it's not going to do something like look at how a city grows

over time. It's assuming the city has grown to 2030, and then all of the demands have been determined at that level.

I don't know if that --

MS. SPALETTA: So then I guess what I would take away from that is that your modeling results are reflective of that assumption, correct?

WITNESS ANDERSON: (Nods head affirmatively)

MS. SPALETTA: So to the extent that there are increased wastewater discharges or increased upstream groundwater, surface water uses that were not reflected in your 2030 land use assumptions, the impacts of those things are not going to be reflected in your model results, correct?

WITNESS WHITE: Again, the no action is the same as all the alternatives. So if there were land use that wasn't accounted for in CalSim, it wouldn't be accounted for in any of the alternatives. So those impacts wouldn't have shown up in this analysis, if that's clearer.

MS. SPALETTA: It is clear.

WITNESS WHITE: But the answer to your question is, if there was something we didn't consider in the development of the 2030 land use assumptions in CalSim, then, no, it would not be included in the 2030

land use assumptions in CalSim.

MS. SPALETTA: And it would not be reflected in the results for any of the alternatives, including the no action alternative?

WITNESS WHITE: Correct.

MS. SPALETTA: Okay. This is kind of a similar question about the treatment of a particular demand. I understand that DSM2 and maybe CalSim utilize an in-Delta consumptive use quantity.

Am I correct in that?

WITNESS SMITH: That's correct.

MS. SPALETTA: Was the in-Delta consumptive use figure also based on a 2030 land use?

WITNESS SMITH: That's my understanding, yes.

MS. SPALETTA: Anyone on the panel disagree?

(No response)

MS. SPALETTA: Was the in-Delta consumptive use quantity adjusted for climate change as well?

WITNESS SMITH: That, I'm not sure about. We adjust it for the land use. We run it -- you know, we start off with a consumptive use model with historical and we run it through a program called ADICU that adjusts it for the level of development, but the climate change, I'm not sure about. So I'll have to see if any of the other panel members know.

WITNESS MUNEVAR: In the climate change analyses, none of the demand numbers were adjusted for climate change. It was hydrology adjustments, so adjustments to stream flow or accretions but not demand numbers.

MS. SPALETTA: Okay. So that's helpful for me to understand.

So to the extent that the in-Delta consumptive use that was used in your modeling reflects the use of water on riparian lands in the Delta, for example, your modeling does not reflect any increased demand for water on those lands as a result of climate change, correct?

WITNESS MUNEVAR: That's correct. But climate change impacts on demands are quite complex, and it's not just that warming increases demands. It has a -- CO2 has an impact on the demands as well.

So the complexity is not just warming, therefore increase in demands.

MS. SPALETTA: Never as simple --

WITNESS MUNEVAR: Yep.

MS. SPALETTA: -- as we might like it to be.

Also, to the extent that the in-Delta consumptive use number -- let me ask this question. Does it reflect evaporation and riparian vegetation

water use as well?

WITNESS SMITH: Yes.

MS. SPALETTA: And were those numbers adjusted for climate change?

WITNESS SMITH: Not that I know of.

MS. SPALETTA: I have a question about how the model works. And some of these questions, you're being asked because I tried to ask the operations panel and they deferred me to you. So I think that happened a few times, probably, over the course of the week that you guys are getting what others said you were the right people to ask.

So one of the questions I asked was how much water would be supported from the North Delta intakes in different months or different year types.

And I've gone back through and looked at your Exhibits 513 and 514, and I don't recall seeing a chart or a table that was specific to how much water would be taken from the North Delta diversion points in different years in different year types.

So is there such a table in your testimony or in your exhibits?

WITNESS MUNEVAR: I believe in our exhibits, we reported the total exports as an exceedance so you could get a feel for the drier years on the left and

the wetter years on the right of that exceedance plot.

And then we showed a comparison that had north and south diversions split out, but they were not prepared by year type.

MS. SPALETTA: And those are in the exceedance charts?

WITNESS MUNEVAR: They were part of my -- of DWR-5, in the exports.

MS. SPALETTA: But you don't have it by year type?

WITNESS BUCHHOLZ: We do in the EIR/EIS in Appendix 5A for the draft and also for the recirc and also for the biological assessment.

MS. SPALETTA: In that document, I would find it by year type, split out between North Delta and --

WITNESS BUCHHOLZ: By year type, by month for North of Delta, South of Delta, as well as total.

MS. SPALETTA: So then I have a question about how the model selected those quantities. And this relates to something I asked the operations panel about.

In the modeling assumptions for H3, there was a statement that during the July through September months up to a total pumping of 3,000 cfs, to minimize potential water quality degradation in the South Delta

channels, would be done from the South Delta intakes as a preferred pumping location, but there was no specific intake preference assumed beyond 3,000 cfs for the South Delta pumps; is that correct?

WITNESS MUNEVAR: That's correct. That applies, I believe, to all of the WaterFix scenarios, not just H3.

MS. SPALETTA: Okay. So then for that assumption, how did the model choose where to export the water from after the 3,000 cfs level?

WITNESS MUNEVAR: That depends on a variety of factors. So, if San Joaquin flow were high and water quality in the South Delta were meeting standards, then there may be a diversion from the South Delta.

If Old and Middle River constraints were controlling the South Delta operations, then the diversion would come from the North Delta as long as the bypass flows were being met.

MS. SPALETTA: I think what you've just described to me is that there may be other parameters controlling which one of the locations the model would select to use?

WITNESS MUNEVAR: Correct.

MS. SPALETTA: Now, in those situations where there wasn't a controlling parameter, where one of the

water quality standards or the flow standards was not controlling and the export could occur from either location, how did the model treat it? Where did it make the export? Or did it make it from both all the time?

WITNESS MUNEVAR: It could have been exporting from both. At that point, we believe, I believe that the operators would have discretion on their operations. And the modeling essentially operates towards its discretion in the priorities of the model.

MS. SPALETTA: But you don't know which way the discretion was exercised to reflect in the modeling results?

WITNESS MUNEVAR: I think it's rare that there's a case where -- where we really don't have a control in the South Delta, for example, or a water quality control, when we're moving -- this is primarily when we're moving, say, stored water.

MS. SPALETTA: Now I had a question about the San Joaquin River inflow-to-export ratio.

Who is the right person to ask about that?

WITNESS WHITE: I think it depends on your question.

MS. SPALETTA: Okay. So my understanding is that, for purposes of the modeling, there was a change

to how the export-to-inflow ratio was computed with respect to the exports from the North Delta diversion intakes in that the quantity of those exports was essentially subtracted from both the numerator and the denominator in the ratio; is that correct?

WITNESS MUNEVAR: You started off your questioning with San Joaquin IE ratio.

MS. SPALETTA: I'm sorry.

WITNESS MUNEVAR: I believe you mean the Delta export-inflow ratio.

MS. SPALETTA: Yes. Sorry, delta export.

WITNESS MUNEVAR: And then to rewind, that -- the export term was treated as the diversion from the South Delta; the inflow term was the inflow minus the diversion at the North Delta.

MS. SPALETTA: Okay. So I just want to make sure that I understand what this means from the standpoint of how the math works.

So I'm going to give you an example, and I want you to tell me if I'm getting it right or if I'm getting it wrong, and this is really just so I can understand what the effect of the change was.

So right now, today, if there's -- let me make sure I get it right. If the exports at the South Delta are 4,000 and the inflow to the Delta is 10,000, then

you have a ratio of 40 percent. And if you're in the relevant time period, you have to cut back your exports because the limit is 35 percent, correct? So the model would have cut the exports back to get down to the 35 percent ratio?

WITNESS MUNEVAR: Total if -- I'll repeat it back so I understand the numbers.

Total inflow to the Delta was 10,000 cfs?

MS. SPALETTA: Right.

WITNESS MUNEVAR: And you were saying that the baseline exports are 4,000 cfs?

MS. SPALETTA: Correct. And the parameters in place were in a relevant time period. And because the parameter is you can't export any more than 35 percent of Delta inflow, the model would essentially have you reducing exports to get down to 35 percent, right?

WITNESS MUNEVAR: That's correct. This would be an extremely low inflow during the period of export and import.

MS. SPALETTA: I'm just using easy numbers because we don't have a chalkboard.

WITNESS NADER-TEHRANI: You would probably want to double them to represent the springtime flows.

MS. SPALETTA: Okay. So then let's just take, though, an example of where you have the North Delta

diversion and it is now diverting, let's say, a thousand acre-feet. So the total exports are still 4,000. You have a thousand at North Delta, and you have 3,000 at the South Delta.

WITNESS MUNEVAR: I'm sorry. You're switching units on me now. You went from cfs to acre-feet.

MS. SPALETTA: I'm sorry, cfs.

A thousand cfs at the North Delta and 3,000 at the South Delta. So you still have 4,000 cfs of exports, right?

But what you did, I think, in the change in methodology of the ratio is you said, okay, I'm going to subtract one from the numerator and I'm going to subtract one from the denominator. So my new ratio is 3,000 cfs over 9,000 cfs, which is 30 percent.

WITNESS MUNEVAR: I'm not -- a couple points to make here.

I think first off, if you had inflow of 10,000 cfs, we would not be diverting even 1,000 cfs at the North Delta intake. We would not be achieving the bypass flow criteria.

MS. SPALETTA: You could triple or quadruple these numbers. It's not going to make a difference, so.

WITNESS MUNEVAR: It makes a difference to my

understanding of the point we're trying to make.

MS. SPALETTA: At any rate, what I'm trying to understand is if I'm correct in understanding that your methodology of reducing the ratio, both the numerator and the denominator, by the amount of the North Delta export, is that the ratio essentially gets smaller.

WITNESS MUNEVAR: So I want to be clear on this. We did not change the ratio. We are not changing the ratio.

The inflow number -- so I'll be very brief on the background. The EI ratio was put in 1641 largely as a protection for South Delta entrainment issues. It did not envision a North Delta intake.

So as part of the process here, we had to interpret how would you apply an EI ratio under the new operations. And in trying to keep with what we believe is the objective of the EI ratio was to limit the South Delta exports dependent upon the inflow.

We reduced the inflow value by the amount that's diverted. So we essentially take the inflow as the flow below the diversion and then limit the South Delta exports which are an indicator of the protections that the EI ratio was trying to achieve.

We keep the same ratio. We've just done a calculation of inflow that is our best interpretation

of the desire of the EI ratio as put forth in the D1641.

MS. SPALETTA: I appreciate that you had to make some subjective decisions about how you thought the ratio should be applied.

But my question is what is the impact of that mathematically on how much water the model allows you to export from the South Delta? My understanding when I do the math is that mathematically, with the changes that you have made, it allows you to have an increase in total net exports, all other conditions being equal.

WITNESS MUNEVAR: I believe we've done a comparison. And there's -- I believe even in the Draft EIR there's a comparison if we were to make a different assumption of the EI ratio that -- where you would take the inflow upstream of the intakes and use the North Delta as an export. I believe the numbers were something like 50- to 70,000 acre-feet of change in export by making that assumption.

MS. SPALETTA: Additional export?

WITNESS MUNEVAR: Additional under the assumption that we've carried forward in the California WaterFix scenarios, which is we believe the best interpretation of the EI ratio as per 1641.

MS. SPALETTA: But that's an internal

interpretation by DWR or by both projects or by your firm? By who?

WITNESS MUNEVAR: It's an interpretation by the group that has been developing DWR and Reclamation.

MS. SPALETTA: And have you discussed that interpretation with State Board staff?

WITNESS MUNEVAR: I have not, personally.

MS. SPALETTA: So my understanding, then, of how this interpretation would be applied is, regardless of the quantity of exports that were occurring at the North Delta diversion points, as long as there was no export occurring at the South Delta pump, then the ratio would be computed as zero.

WITNESS MUNEVAR: If there were no exports at the South Delta, then the EI ratio, as per this calculation, would be zero.

But just to be clear for the Board here, because the Board will certainly weigh in on this issue, the North Delta intakes and the bypass flows that are associated with it are essentially an EI ratio associated with the North Delta facility.

The bypass flows are a percent of the flow that's coming in on the Sacramento River.

MS. SPALETTA: Okay. Now I wanted to ask you a couple questions about the slides that were in your

PowerPoint presentation, which is 5E.

CO-HEARING OFFICER DODUC: Ms. Spaletta, before you switch topics, I need to give the court reporter a break. If you think you'll take another 10, 15 minutes or so -- how much more time do you think you'll need?

MS. SPALETTA: Probably another 10 or 15 minutes.

CO-HEARING OFFICER DODUC: Let me look at the court reporter. Right now, or in 10 or 15 minutes? Okay.

MS. SPALETTA: Okay. I wanted to look at DWR-5E, which was your PowerPoint presentation. And specifically Page 26.

Okay. And I think this question might be most appropriate for Dr. Nader-Tehrani, but we'll see. It's a DSM2 question. In this exhibit, you have the North Delta diversion plotted as the green line. So we can see that there are spikes in the amount of Sacramento River water diverted from the Delta in February and March. Do you see that?

WITNESS NADER-TEHRANI: Yes, I do see that.

MS. SPALETTA: In DSM2, it actually has the ability to track where that water goes in the Delta when it comes from the Sacramento River by month,

right?

WITNESS NADER-TEHRANI: I'm not sure when you say "track." Can you elaborate?

MS. SPALETTA: Sure. Are you familiar with the term "source fingerprinting"?

WITNESS NADER-TEHRANI: I am, yes.

MS. SPALETTA: And what does that mean?

WITNESS NADER-TEHRANI: "Source fingerprinting" means -- if you look at the water at any location in the Delta, if you do a fingerprinting analysis, you would be able to say what fraction of the water at that location, for example, came from Sacramento River or San Joaquin River.

But on the other hand, if you have just, you know, a volume of water, you know, adding at a certain location, we don't have the ability to track where it goes. That would be a different model.

MS. SPALETTA: Mm-hmm. The fingerprinting, it also is a step more sophisticated, right? The model not only can track that the water at a particular place is from the Sacramento River, but it can actually tell you what month it came into the Delta, right?

WITNESS NADER-TEHRANI: Depending on the mode that you use that approach, there would be ability to say what month, yes.

MS. SPALETTA: That's related to this concept of residence time?

WITNESS NADER-TEHRANI: You could infer some information regarding residence time from that, yes.

MS. SPALETTA: So when the modeling was done for the California WaterFix and you were modeling these scenarios where you were actually taking chunks of water out of the San Joaquin River in March and February --

WITNESS NADER-TEHRANI: Sacramento.

MS. SPALETTA: I'm sorry -- Sacramento River in February and March, did you utilize DSM2 to see how that impacted the fingerprinting of the water in the Delta channels for days, weeks, maybe even months later?

WITNESS NADER-TEHRANI: The fingerprinting approach was used for a number of different reasons. One of them was to look at other water quality constituents.

And perhaps Mike can elaborate on some of that if you like. And maybe -- I think you may be able to better respond as far as -- do you recall what areas the fingerprinting approach was used for in the EIR?

MS. SPALETTA: I'm not asking all of the ways it was used. I was asking if it was used for that

specific purpose.

WITNESS BRYAN: For which purpose?

MS. SPALETTA: To compare. So in this situation, you're removing quantities of water from the Sacramento River in February and March that would otherwise have flowed into the Delta, correct?

WITNESS BRYAN: Right.

MS. SPALETTA: So were you able to use DSM2 to analyze the effect of that on how long that Sacramento River water that was removed would have otherwise stayed in the Delta channels and where it would have gone?

WITNESS BRYAN: Well, one of the things that's in the Draft EIR/EIS is, in the water quality chapter, Appendix 8(d) is the fingerprinting results.

So what we did with the fingerprinting results is we looked at the major source waters: the Bay water, Sacramento River, San Joaquin, eastside tributaries, and ag return waters. And the model tells us what percent of the water at any given location in the Delta on a monthly average basis is made up by each of those five source water fractions.

And then we could multiply those source water fractions out times the long-term average of the constituent concentrations -- whatever constituent you

were interested in -- to estimate, through a mass-balance approach, how the water quality would change at those various locations.

MS. SPALETTA: So going back to my question about being able to identify the time period in which the water enters the Delta from the Sacramento River, for example, did you do an analysis of how long that water stays in the Delta channels?

WITNESS BRYAN: No, not from a -- not from a time frame that you are describing.

MS. SPALETTA: But isn't it true that the water quality results that you just described are actually produced as a result of the model keeping that Sacramento River water in those Delta channels and moving it around different places for a certain period of time?

WITNESS BRYAN: I'll defer to the modelers. They know the DSM2 model better than I. But I was just explaining how we used the fingerprinting from the water quality analysis.

But I'll defer to them for their expertise in how the model actually tracks and produces the fingerprinting information that we used.

WITNESS NADER-TEHRANI: So in general, all the model results that were presented today would take into

account the fact that during dry times, it takes a longer time for the water to move through the Delta; during wet years, it takes a shorter time to.

And all of that is actually reflected in the model results that were shared in the testimony.

MS. SPALETTA: And just so that we can be educated on these timelines, in a wet time, how long does it take the Sacramento River water to get from Freeport out Martinez?

WITNESS NADER-TEHRANI: I don't have an actual number to tell you. But all I can tell you, subjectively, between the wet year and -- I mean, high Sacramento River, high-flow periods versus low-flow periods, low-flow periods just takes much longer for the water to move from Freeport to Martinez. And -- make sure I say that correctly. It's the end of the day; I'm sorry.

High-flow periods takes less time. Low-flow period takes longer time.

MS. SPALETTA: You don't know the magnitude, as you sit here today?

WITNESS NADER-TEHRANI: No, because then it really varies, very much depends on a number of factors; what flow ratio you assume and what kind of a tide exists and that sort of information. So there's

no simple answer I can give.

MS. SPALETTA: Okay. My last line of questioning is about how the model kept track of or placed rules on the amount of water that could be exported through Banks and Jones.

So my understanding is there's some rules that allow exports to be moved into San Luis Reservoir. And the model utilizes storage limits in San Luis; is that correct?

WITNESS MUNEVAR: Yeah, that's correct.

MS. SPALETTA: Then how does the model keep track of where the rest of the water goes if it's not going to San Luis?

WITNESS REYES: There are diversion locations along the aqueduct that we track how much water is going down the aqueduct at each reach and then how much is being diverted off at each diversion point.

MS. SPALETTA: I think you said that the model used 2030 demands for the service areas.

Did that also apply to the service areas from where the contractors take water off the aqueduct?

WITNESS REYES: For the contractors, we assume that they're at full entitlement for everything south of the pumps.

MS. SPALETTA: So for south of the Delta, you

didn't look at demand. You looked at contract entitlement?

WITNESS REYES: That's correct.

MS. SPALETTA: So then, the model is delivering water to the contractors when it's available to pump, regardless of whether there's an actual demand there. It's just based on contract entitlement?

WITNESS REYES: It is based on contract entitlement, but virtually all of the contractors have demands that exceed the entitlements.

MS. SPALETTA: I understand that on an annual basis, but now I'm more curious about the months.

So one of the things I asked the operators about was the large quantities of water that are going to be moved during the excess-flow period.

Is there anything in the model that matched up the amount of water that was being delivered to contractors during this excess-flow period with their actual demand to put the water to beneficial use?

WITNESS MUNEVAR: All of the contractor demands have monthly patterns that are derived from historic observations or requests that they have provided historically.

MS. SPALETTA: And those are demands to take the water off the aqueduct, correct?

WITNESS MUNEVAR: That's correct.

MS. SPALETTA: And some of that water goes to groundwater storage or banking, correct?

WITNESS MUNEVAR: Correct. We do not treat -- the endpoint of the modeling is where the aqueduct delivers to a particular contractor.

MS. SPALETTA: So the modeling doesn't keep track at all of whether the contractors are taking water to put it in storage, for groundwater recharge, or for direct beneficial use?

WITNESS MUNEVAR: That's correct. We -- we don't -- from the modeling standpoint, we don't have knowledge of where the -- how that water is used within the contractor's service area.

MS. SPALETTA: Thank you. I have no further questions. Thank you to the panel.

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

Let me do one more rundown to make sure. Group 26 is not here.

27 has already conducted his cross-examination.

28, not here.

29, not here.

30, Mr. Brodsky has requested

cross-examination tomorrow.

So that means we are up to Mr. Jackson. And he'll conduct his cross-examination after we take a 15-minute break. We will resume at 3:05.

(Recess taken)

CO-HEARING OFFICER DODUC: All right. It's 3:05, at least by my clock. Welcome back.

We will now turn to Mr. Jackson for his cross-examination.

MR. JACKSON: Thank you, Madam Chairman.

Mr. Long, I have just a few thing to put up. And the order in which I want to put them up is DWR-114, and it's Page 10 from Exhibit 1. It's the notorious schematic.

MR. JACKSON. Thank you.

CROSS-EXAMINATION BY MR. JACKSON

MR. JACKSON: Most of my questions will be for water supply folks.

Mr. Munevar, you've seen this alternatives comparison that was in the chart -- the chart prepared, evidently, for the testimony of the first DWR witness, I believe, Jennifer Pierre. Have you seen this before?

WITNESS MUNEVAR: Yes, I have.

MR. JACKSON: Can you tell me why you didn't model -- what the differences are between Alternative 1

in the green and the NAA that we've been talking about for the purposes of this hearing?

WITNESS MUNEVAR: Well, the Alternative 1 is -- was one of the alternatives considered in the California WaterFix EIR/EIS that includes a North Delta diversion. And what we've been calling "NAA" is the no action alternative.

MR. JACKSON: And is that the only difference?

WITNESS MUNEVAR: There are a number of differences in Alternative 1 compared to no action that are described in the EIR/EIS.

MR. JACKSON: All right. And in terms of Alternative 8, why was that not modeled for this hearing?

WITNESS MUNEVAR: For this hearing, it was -- Alternative 8 had -- my understanding is -- my recollection is it had impacts to upstream storage that Boundary 2 reflected a -- I guess a more close modification of Alternative 8 for this hearing.

MR. JACKSON: All right. Can you tell me the difference -- under Alternative 8 and Boundary 2, what the difference in the -- these are toward the high-outflow area; is there modeling that reflects the difference in outflow between those two?

WITNESS MUNEVAR: There is modeling that's

part of the EIR/EIS, but I don't -- I don't have that readily available.

MR. JACKSON: And which EIR/EIS? Which iteration of the EIR/EIS?

WITNESS MUNEVAR: I'm going to ask my colleague to --

MR. JACKSON: Fine.

WITNESS BUCHHOLZ: Alternative 8 is in the Draft EIR/EIS.

MR. JACKSON: And I take it that the 2010 Public Trust State Water Resources Control Board document was not modeled either for the -- for this hearing?

WITNESS BUCHHOLZ: That's true.

MR. JACKSON: Was it modeled in the BA?

WITNESS BUCHHOLZ: No.

MR. JACKSON: Was it modeled in the WaterFix Revised EIR?

WITNESS BUCHHOLZ: No.

MR. JACKSON: Was it modeled in the BDCP EIR?

WITNESS BUCHHOLZ: No.

MR. JACKSON: What was the reason for eliminating it from consideration under CEQA and NEPA?

WITNESS BUCHHOLZ: So we looked at it, and it's described in Appendix 3A of the Draft EIR/EIS. We

looked at the CalSim output runs that were published with the draft 2010 flow report by the State Water Resources Control Board and determined that, to achieve the -- the outflow numbers and the instream flow numbers, we would need to either affect upstream storage to a point that we would have substantial temperature issues. And plus we would also need to modify deliveries to senior water rights holders along the Sacramento River and the Sacramento Valley.

And these were not consistent with the project objectives and the purpose and needs statements of the -- at that time, Bay-Delta Conservation Plan.

MR. JACKSON: So the purpose of this particular project is not to restore the public trust?

WITNESS BUCHHOLZ: Those words are not specifically in the project objectives and purpose and need. However, we understand the public trust is certainly an important aspect and will be considered by regulatory agencies.

MR. JACKSON: Including the State Board?

WITNESS BUCHHOLZ: Including the State Water Resources Control Board.

MR. JACKSON: And who made the -- when you say "we made the decision," exactly who made that decision?

WITNESS BUCHHOLZ: Those decisions are all

made by the lead agencies. And at that time, the lead agencies were Department of Water Resources, Bureau of Reclamation, National Marine Fishery Service, and U.S. Fish and Wildlife Service.

MR. JACKSON: So those decisions were made by the leaders of those organizations?

WITNESS BUCHHOLZ: I'm not aware of how -- which people within the organizations. We have representatives of those organizations working with the consulting team.

MR. JACKSON: Does anyone else who's on the panel know who made the decision to eliminate consideration of the 2010 document?

CO-HEARING OFFICER DODUC: Ms. Morris?

MS. MORRIS: Objection as to relevance. This has been covered. And Mr. Jackson's asked the same questions of Ms. Pierre in the project description. This has nothing to do with modeling. It has to do with eliminating alternatives in the EIR/EIS.

CO-HEARING OFFICER DODUC: Mr. Jackson?

MR. JACKSON: Yes, I didn't get an answer from Ms. Pierre because she didn't know either. So I was assuming that the people who made the decision -- let's just use Director Cowin as a potential person -- did so with advice from the modelers.

CO-HEARING OFFICER DODUC: Answer if you know. and if you don't know, you may answer that as well.

WITNESS BUCHHOLZ: As part of the -- as I said, as described in Appendix 3A of the Draft EIR/EIS, we relied upon the CalSim output that was included in appendix to the 2010 -- draft 2010 document prepared by the State Water Resources Control Board.

MR. JACKSON: And that would be Appendix C?

WITNESS BUCHHOLZ: I don't remember the letter number of that document. I apologize.

MR. JACKSON: Thank you.

Calling your attention to -- well, I'll leave that for a minute.

Mr. Munevar, in your testimony, you indicate on Page 20 -- if we could go to Page 20; it's DWR-71.

You talk about, "The results from CalSim modeling suggest the following conclusions." And I want to ask you some questions about those conclusions.

At Line 10 through Line 14, is what you're saying here that -- for the purposes of these questions, you can consider me addressing Boundary 1 and Boundary 8 -- or, excuse me -- Boundary 2.

For Boundary 1, your finding was that things were the same under all of the alternatives; is that correct?

WITNESS MUNEVAR: If we're referring to the Bullet No. 1 of my statement here, it was referring to the -- to all of the alternatives and that they were essentially identical except in some critical years there was a difference of less than 1 percent.

MR. JACKSON: And that includes Boundary 2?

WITNESS MUNEVAR: The statement was meant to be robust around all of them, but that would include No. 2.

MR. JACKSON: So for those contributors, assuming that your modeling is correct, you determined that they were not harmed in terms of water supply if Boundary 1 -- or if Boundary 2 flows as outflow, correct?

WITNESS MUNEVAR: I did not make a statement of harm.

MR. JACKSON: All right.

And you, as a modeler -- it will save a little time -- made no determination of harm to anyone in terms of legal injury?

WITNESS MUNEVAR: Yeah, I think the next panel that will follow this one will talk about the water rights and the legal aspects, which are beyond my area of expertise.

MR. JACKSON: All right. So I don't need to

pound away at this panel.

WITNESS MUNEVAR: Yes.

MR. JACKSON: Thanks.

Now, there were a group of settlement contractors listed. So that also, in terms of Boundary 2, includes no -- no differences except this less than 1 percent to the Exchange Contractors, even though they're located south of the Delta; is that right?

WITNESS MUNEVAR: Just a moment. Actually, for the Exchange Contractors, there was no change in any of the year types.

MR. JACKSON: Thank you.

You indicate in the second bullet, Lines 15 to 19, that for simulated long-term deliveries to the CVP and SWP North of Delta service contractors, as different from settlement contractors, that there would be a less than 5 percent reduction if you use Boundary 2 and also H4; is that correct?

WITNESS MUNEVAR: No, that's not correct. I think we might need to separate these out here.

MR. JACKSON: Well, that was going to be my next question. But what did you mean by the year type reductions for Boundary 2 and H4 were always less than 5 percent?

WITNESS MUNEVAR: That's what I'll try to

explain succinctly here. For the North of Delta ag service contractors, there were increases in all water year types for Boundary 1, H3, and H4. There were decreases in dry and critical years only in Boundary 2, and those decreases were less than 5 percent in those two year types.

MR. JACKSON: So when it says, "Reduced deliveries did result under Boundary 2 and H4 in some year types," was that -- is that inconsistent with what the results were?

WITNESS MUNEVAR: I'm just reviewing here.

MR. JACKSON: Sure.

WITNESS MUNEVAR: I think that is consistent. My statement is consistent there. The M and I contractors -- North of Delta M and I water service contractors did show a decrease under H4 as well as Boundary 2.

MR. JACKSON: Okay. But less than 5 percent with both?

WITNESS MUNEVAR: Yeah. For M and I, it was about 1 percent.

MR. JACKSON: What was the model difference for outflow for H4 and Boundary 2?

WITNESS MUNEVAR: I don't know if I know that answer right now.

MR. JACKSON: All right. But I can find it by -- well, I couldn't find it, but somebody smarter than me could find it in the modeling that you were talking about earlier today?

WITNESS MUNEVAR: Yes.

MR. JACKSON: Thanks.

In the third bullet point, you point out that the model simulations suggest significant changes to South of Delta deliveries to SWP and CVP water service contractors; is that correct?

WITNESS MUNEVAR: That's correct.

MR. JACKSON: And I take it, to sort of cut to the chase, that that Boundary 1 scenario reflects this 1,200,000-acre-feet increase, and that all goes to the South of Delta SWP and CVP contractors, South of Delta?

WITNESS MUNEVAR: If we're referring to the last -- are you referring to the last bullet on this page?

MR. JACKSON: Yes, I am.

WITNESS MUNEVAR: So this is reporting Delta exports, not necessarily deliveries. So the 1,200,000 acre-feet per year is associated with Boundary 1 and is a net long-term average Delta export increase associated with that scenario as compared to no action.

MR. JACKSON: And that's -- are there other reasons for that in the modeling other than the decreased outflow?

WITNESS MUNEVAR: I'm not sure I understand your question. This is a result of the modeling outcome associated with all the assumptions that go into it.

MR. JACKSON: And the assumptions you have for Boundary 1 are you're going to build a diversion and you're going to cancel Fall X2 and you're going to get rid of the IE ratio on the San Joaquin River and you're going to use temporary barriers? Are those your assumptions?

WITNESS MUNEVAR: No. I'm going to correct a few of those.

So for Boundary 1, it is the North Delta diversion as described in the previous documents, I think Exhibit 514. It also describes that it's a permanent Head of Old River Gate in that -- in the Boundary 1 scenario as opposed to a temporary.

There are also Old and Middle River requirements that are per the no action.

MR. JACKSON: Per D1641? Is that what you mean?

WITNESS MUNEVAR: Well, no. D1641 did not

have Old and Middle River requirements. So it's per the biological opinions.

And then the Fall X2 was not included in the Boundary 1 scenario.

MR. JACKSON: Who made the decision to drop the -- excuse me.

Fall X2 is presently required under D1641?

WITNESS MUNEVAR: No, it's --

MR. JACKSON: Or under the BiOp, excuse me.

WITNESS MUNEVAR: My best understanding -- I'll allow Kristen to come in here. Fall X2 is required under the Fish and Wildlife biological opinion, but has -- my understanding, has yet to be operated to, historically.

MR. JACKSON: Is that right?

WITNESS WHITE: Yes, it has yet to control any operations.

MR. JACKSON: And is that because of the drought?

WITNESS WHITE: It's an above-normal and wet-year action only.

WITNESS BUCHHOLZ: May I add something, if I could? Boundary 1 was based upon Alternative 1 from the EIR/EIS days and steering committee days. And it was decided at that time by the lead agencies to have

an alternative without Fall X2. So it was a proposal to say, okay, let's have an alternative without Fall X2. And that's why we have it.

MR. JACKSON: So it is possible to go outside the present rules under CEQA and NEPA --

WITNESS BUCHHOLZ: Under NEPA, yes.

MR. JACKSON: -- to examine various aspects of projects?

WITNESS BUCHHOLZ: Yes.

MR. JACKSON: So you could have gone outside by using the 2010 document?

WITNESS BUCHHOLZ: We can go outside of the existing regulatory compliance under NEPA; however, both NEPA and CEQA have the range of alternatives to be consistent with the project objectives and purpose and need.

MR. JACKSON: Is the project objective, in your opinion, Ms. Buchholz, to increase delivery south of the Delta?

MS. MORRIS: Objection. Stefanie Morris, State Water Contractors.

This again is irrelevant to this panel or modeling. These are questions that have been asked and answered by other panels.

MR. JACKSON: I'm sure, if you go at No. 41 or

31 or wherever I am, somebody somewhere asked them. But this is important. It's in his testimony, and it's important to the line of questioning that's coming up and important to my clients.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: And I do intend to finish in the hour.

CO-HEARING OFFICER DODUC: I will allow you some leeway to get to that line of questioning.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: That question was directed to Ms. Buchholz, was it?

MR. JACKSON: Yes.

WITNESS BUCHHOLZ: I lost the question.

MR. JACKSON: All right.

WITNESS BUCHHOLZ: I apologize.

MR. JACKSON: Do we read them back here?

CO-HEARING OFFICER DODUC: Why don't you just ask it again, please.

MR. JACKSON: You could, then, have modeled -- oh, is the purpose and need for the project to increase delivery south of the Delta?

WITNESS BUCHHOLZ: The purpose and need in project objectives talks about increased water supply reliability, not specifically to increase in exports

and inflows, and we had alternatives that did not.

MR. JACKSON: Do you -- do you take "reliability" to mean more water?

WITNESS BUCHHOLZ: No. There's a definition of "reliability." I don't have it at my fingertips right now. It's in the Draft EIR/EIS glossary. And that's how we defined "reliability."

MR. JACKSON: And to your knowledge, as you sit here today, it doesn't -- reliability does not require increased reliance on Delta, correct?

MS. MORRIS: Objection.

CO-HEARING OFFICER DODUC: Hold on, Ms. Morris. Yes, this is the third time it's been asked. If you would stop interrupting, perhaps we could get through this a little bit faster.

Mr. Jackson, I think Ms. Buchholz will give you a "yes" to that. So let's move on.

WITNESS BUCHHOLZ: Please say it again.

MR. JACKSON: The -- does improved Delta reliance automatically mean more South of Delta deliveries?

WITNESS BUCHHOLZ: We weren't addressing improved Delta reliance. We were addressing improved water supply reliability.

MR. JACKSON: Does improved Delta water

reliability mean increased exports?

WITNESS BUCHHOLZ: Again, we were addressing total improved water supply reliability. And improved water supply reliability in total does not necessarily mean more exports.

MR. JACKSON: Thank you.

Back to Mr. Munevar. In the last bullet point on your conclusions, Boundary 1 would result in similar or higher than the NAA for storage levels of concern in the major SWP and CVP reservoirs; is that right?

WITNESS MUNEVAR: Could we go to the correct page of the testimony? The one that's showing here doesn't talk about reservoirs.

MR. JACKSON: Sure. Number 21. It's the -- sorry about that.

WITNESS MUNEVAR: Okay. Thank you.

Yeah, so my statement was that end-of-September storage levels were similar or higher than the no action under the California WaterFix scenarios for the range of storage levels of concern.

MR. JACKSON: So is it fair to say from these conclusions that the -- that increased export does not always cause lower end-of-September water storage north of the Delta in the upstream reservoirs?

WITNESS MUNEVAR: I think that's a fair

statement. You can increase exports without affecting upstream storage.

MR. JACKSON: Could we go to Page 1 -- no, Page 2 of Mr. Munevar's testimony.

Mr. Munevar, calling your attention to Lines 6 through 10 -- or 9, you were evaluating projected changes in water supply that may affect legal users of water for this hearing with this testimony; is that correct?

WITNESS MUNEVAR: That's what it says, in conjunction with Mr. Nader-Tehrani's testimony.

MR. JACKSON: He was working on water quality and levels, correct?

WITNESS MUNEVAR: Delta conditions, yes.

MR. JACKSON: All Delta conditions?

WITNESS MUNEVAR: Water quality, water levels as he presented.

MR. JACKSON: Who decided that legal injury was the same as water supply, water quality, and water levels?

MR. MAIZE: Objection, misstates the testimony. We make no conclusions about legal injury.

MR. JACKSON: Mr. Mizell, doesn't this language say that he's trying to determine water levels, water supply -- excuse me -- water supply that

may affect legal users of water?

CO-HEARING OFFICER DODUC: That's what it says.

On what basis did you decide to focus on water supply, water quality, and water levels? Did you consider other factors?

MR. BERLINER: I would just point out this is just one part of our testimony. The testimony doesn't say this was the only issue that we looked at. So this is one witness testifying about one of a multitude of factors that you have to consider for legal injury.

So that's all we've addressed here. So it would be misleading to say we're equating these three factors as the universe of potential injury.

CO-HEARING OFFICER DODUC: Fair enough. But these are the only factors that these witnesses can testify to.

MR. BERLINER: Correct.

CO-HEARING OFFICER DODUC: Okay. These are the only factors that they considered.

MR. JACKSON: And my question is, is it just that -- having to cut to the chase, is it just that CalSim can't do other factors?

WITNESS MUNEVAR: I think we were asked to present results that -- as I indicated here, that may

affect legal users of water, and we focused on the water deliveries, the water supply component, the water quality, and water levels. That is what the two models that are presented here, CalSim II and DSM2, are primarily producing as outputs.

MR. JACKSON: And thank you for the answer.

My question was did somebody up above tell you to do that, or was that just a limitation on the models?

WITNESS MUNEVAR: In discussions with our attorney team, we decided to focus on the variables that are in the models that are indicators of water supply, water quality, and water levels.

MR. JACKSON: And I certainly don't want to know anything about what you talked about with your attorney team.

Was there anybody who is not an attorney that had input into that?

WITNESS MUNEVAR: These are the typical outputs that we would normally present for modeling results.

MR. JACKSON: In your testimony, same page, at Lines 16 to 17, you are talking about Alternative 4A, which you say is described by initial operational criteria referred to as Scenarios H3 and H4.

Who assigned that limitation to you as the initial operating parameters?

WITNESS MUNEVAR: Again, these scenarios have been developed in terms of describing initial operational range. They were developed by the management team as a representation of where the proposed project may be heading.

MR. JACKSON: So this was a decision made by the management team.

And could you tell me who that is?

CO-HEARING OFFICER DODUC: Let me ask a question of you, Mr. Jackson. Since I've humored you, now it's your chance to humor me.

I'm curious as to why it is important to you to have the Board consider who it is that's making these initial decisions that are then being modeled? Why is the "who" important? Isn't what's important the results of the modeling of the project that's being proposed?

MR. JACKSON: I can see the results of the modeling and the testimony. The "who" is important to me because this is a quasi judicial hearing, and I may need to use a subpoena. And I'm trying to figure out who it was who limited the evaluation so that I can ask that person questions.

MR. BERLINER: Well, he can send us a subpoena and indicate he wants the person most knowledgeable about a given subject, and we'll respond accordingly with whoever that is.

MR. JACKSON: That will do. I'll go on.

CO-HEARING OFFICER DODUC: Okay.

MR. JACKSON: You indicate on Line 18 that the operational criteria could subsequently change based upon adaptive management.

Do you have particular expertise in adaptive management?

WITNESS MUNEVAR: I do not.

MR. JACKSON: Well, what did you mean by "adaptive management," then, in your testimony?

WITNESS MUNEVAR: I think the purpose of the Scenarios H3 and H4, as indicated by Ms. Pierre in the very first panel, was to represent an initial operational range from which -- from which operations could be -- could range for the initial operations.

So there's an adaptive management program which I am not the expert in, so I won't dive into it. But I believe that was also discussed with Ms. Pierre.

MR. JACKSON: So was Ms. Pierre the person who was giving instructions about what should be included in your modeling?

WITNESS MUNEVAR: There was a team of DWR working with consultants, of which Ms. Pierre was one of them, in terms of determining what levels of assumptions should be included in specific alternatives.

MR. JACKSON: And did that team mostly work for ICF?

WITNESS MUNEVAR: No, I would say not. There was many agency representatives as well as consultants.

MR. JACKSON: All right. And bearing -- I won't ask.

Calling your attention to Line 26 and 27, you indicate that these scenarios were evaluated considering climate change and sea level rise effects at the year 2025.

Were you present when the engineering group testified?

WITNESS MUNEVAR: I was not.

MR. JACKSON: As a hypothetical, if I told you that they said it would take them four years to finish design and engineering and 13 years to build the project and that that would take us, by my math, to 2034, why did you use the year 2025 before the project could be built?

WITNESS MUNEVAR: I believe the year 2025,

this was the period that was selected in the initial early -- what was called "early long-term" of the Bay-Delta Conservation Plan, which was meant to reflect the period in which the project could begin operation. 2025 was called "early long-term" as that first period of operation.

I don't have knowledge of the time frame of construction and whether that specifically matches up with 2025. I believe it was -- it was thought to, at the time, that that would be the initial operation of the project.

MR. JACKSON: Okay. You could manage -- you could model for climate change in regard to water supply for this hundred-year project at intervals of 25 years, couldn't you?

WITNESS MUNEVAR: I think as the future plays out, the operation of the project will adapt to the changes that occur every 25 years or every handful of years.

MR. JACKSON: Yes, I'm sure you're right. But have you considered the fact that we're going to determine legal injury within the next year or so and a model result that says here's what climate change is going to do to flows and quality is more useful for those trying to determine whether or not they've been

injured if it's periods of time that are actually relevant to the project?

MR. MAIZE: Objection. That was a statement, not a question. So there is no question pending.

CO-HEARING OFFICER DODUC: Oh, there is a question. I heard it.

WITNESS MUNEVAR: Maybe you can repeat. I did not hear it.

MR. JACKSON: I'll shorten it.

Would it be more relevant to go back and do some modeling about 2050 which may be only 15 years into the project, and 2060 which will be 25 years into the project, and 2100 which will be --

CO-HEARING OFFICER DODUC: I don't think that's shorter, Mr. Jackson.

MR. JACKSON: All right.

CO-HEARING OFFICER DODUC: Have you considered additional -- are there any considerations to evaluate climate change and sea level rise at years other than 2025?

WITNESS MUNEVAR: Yeah. Let me -- so I'll cut to the chase so we get to the answers.

In the initial BDCP, in the draft, the analyses were conducted at what we called "late long-term," which is roughly 2060. Gwen will chime in

and correct me if I get the language wrong.

But when the California WaterFix was separated from the restoration components, it was decided to use the early long-term, which was 2025. As part of the analyses -- I think it's Attachment D2 in the draft -- we had some modeling runs that looked at sea level rise all the way out through 2100 and its impact on the Delta. So those were considerations that were taken into account.

I think it's important to realize that that climate change will happen with and without this project, and the -- so whereas the project would be impacted, the no action will be similarly impacted.

MR. JACKSON: Let me ask a question on that, if I can.

The -- I live above Oroville in a place called Quincy. It's -- it appears to us by the crops we can grow, that summers are getting longer and drier and that the evapotranspiration rate has gone up in the forest. Is any of that modeled?

MR. JACKSON: I think in consideration of the climate change that we included in the modeling, we had detailed hydrologic modeling of the entire watershed, the upper watersheds in particular, and characterized the change in soil moisture, the change in snow pack,

and its resulting change in runoff volume and timing.

And that has all been considered in the early -- what we're calling the "early long-term" or the 2025 condition for no action and the California WaterFix scenarios.

MR. JACKSON: Have you looked at modeling from the Pacific Gas & Electric Company on the Oroville project that indicates that they're down about 400,000 acre-feet per decade?

WITNESS MUNEVAR: I have not looked at that.

MR. JACKSON: But you could model again, right?

WITNESS MUNEVAR: Model what? I'm not sure what the question is.

MR. JACKSON: You could model flows expected within a different time period?

WITNESS MUNEVAR: It's possible. And the results that are in the draft show the -- the anticipated changes at 2060 as well as 2025.

MR. JACKSON: Do you use more than one of the climate change models to do that with?

WITNESS MUNEVAR: Yeah. So we went through a lengthy process of going through over 112 individual model projections and distilling them into a range of scenarios to consider.

MR. JACKSON: Well, I'm going to leave it at that, figuring that other people are going to do that.

So in terms of what you modeled in terms of water supply, did you consider only the surface water supply, or did you consider groundwater in various areas of the state?

WITNESS MUNEVAR: The CalSim modeling includes a groundwater component which is recharged from rainfall as well as stream aquifer interactions. So the upper hydrology stream flow was adjusted for climate change. And its impacts on the regional groundwater system are included in the modeling, at least at the level that the CalSim model was able to characterize groundwater, which is fairly coarse.

MR. JACKSON: Thank you for that.

And now I want to ask a couple questions about the geographical limits of that model. We obviously looked at the surface water levels in Shasta and Oroville and Folsom and New Melones -- and I guess not Friant.

But the -- my question is do you have any data within CalSim that would allow you to model whether there's going to be an effect on the legal water users of groundwater in the Sacramento Valley?

WITNESS MUNEVAR: CalSim -- CalSim, again, has

a very coarse groundwater component to it. I don't know if others on the panel want to chime in, but the CalSim model would not likely be the adequate tool for effect -- for understanding changes in groundwater at specific locations.

MR. JACKSON: And do those specific locations include even the Delta?

WITNESS MUNEVAR: I believe Ms. Buchholz talked about the specific modeling for groundwater in the Delta region and the Central Valley.

Do you want to add to that?

WITNESS BUCHHOLZ: (Shakes head negatively)

MR. JACKSON: Is it your understanding that releases from rim dams replenish aquifers?

MR. BERLINER: Objection, relevance.

MR. JACKSON: How much water can be moved out of the -- I mean, No. 7 did a lot of that.

But how much water was likely to be moved out of the dams, when it was likely to be moved -- we're talking about trying to pick up excess water that many of my clients believe is their groundwater. And I'm just asking whether the model covers that.

CO-HEARING OFFICER DODUC: Please answer.

WITNESS MUNEVAR: So the model covers the stream aquifer interaction particularly on the

Sacramento River, and the resulting flows at Freeport are an outcome of that ground-stream-aquifer interaction.

MR. JACKSON: Do you believe -- you used the word "coarse." Do you believe that your CalSim modeling captures what happens in that interaction throughout the Sacramento Valley?

WITNESS MUNEVAR: I think on a very coarse scale. I personally would -- if you're looking at groundwater impacts, I think there are -- DWR and others have more refined tools for looking at groundwater impacts.

MR. JACKSON: Thank you, sir. I totally agree.

To make sure I keep my word, I'm going to move for a minute to Dr. Nader-Tehrani.

Dr. Tehrani, what my clients are worried about in the Delta, some of them, is that when some of the water exported from the Delta no longer goes through the Delta, that it ceases acting as dilution flow for a whole group of pollutants that are not chloride and salinity.

Does DSM2 -- is it capable of determining what the loss of water through the Delta will do to the concentration of chemicals in the Delta?

WITNESS NADER-TEHRANI: Perhaps, Mike, you may be better able to respond as to how the EIR went about assessing.

WITNESS BRYAN: Yeah. So in the water quality chapter of the EIR, that's one of the things we looked at is -- both upstream and, you know, within the Delta is the magnitude to which, under the alternatives relative to the no project, the magnitude of flow changes in the river and how that dilution factor would change for pollutants coming into those waterways.

MR. JACKSON: Before we talk about that, which EIR are we talking about for that?

WITNESS BRYAN: It would be in both the Draft EIR and the Recirculated Draft.

MR. JACKSON: The Draft EIR for BDCP?

WITNESS BRYAN: Correct.

MR. JACKSON: I guess -- but as you sit there today, do you know the magnitude of the water that will be no longer capable of diverting these pollutants because it's in tunnels, on a yearly basis?

WITNESS BRYAN: Well, when we looked at upstream of Delta, we looked at the inflows, so the flows in the rivers at Freeport at Vernalis, and assessed it that way.

Within the Delta, you have kind of a different

situation because of all the tidal effects within the Delta.

MR. JACKSON: But in removing -- in removing some number of millions of acre-feet of Sacramento River flow, what document can you point me to that will allow us to evaluate whether or not we're harmed by the new point of diversion?

MR. MAIZE: Objection, asked and answered.

CO-HEARING OFFICER DODUC: Answer again, please.

WITNESS BRYAN: I would refer to you the Draft EIR and the Recirculated Draft EIR.

MR. JACKSON: That's something I guess I can ask you, and you can pass it on to somebody else.

We've spent a lot of time commenting on this project, and this has been one of our issues all the way through, and we've never received a response to comments. Are we going to get one before this project's approved?

MR. MAIZE: Objection, relevance. The EIR is still under --

CO-HEARING OFFICER DODUC: I'm confused. What specific questions?

MR. JACKSON: The question is, is there going to be a response to any of the comments so that --

CO-HEARING OFFICER DODUC: And how is that relevant to the petition before us?

MR. JACKSON: Well, see, I do believe it's the EIR process that you're using to make the decision. And you're going to be the first approval. And I think it's important that you see our comments before you make it -- and their responses.

CO-HEARING OFFICER DODUC: All right.

Mr. Mizell?

MR. MAIZE: And the Department is committed to providing this Board with the Final EIR/EIS and ROD/NOD prior to the beginning of Part 2, which means you will have all that, including the response to comments, before you have to make your decision.

CO-HEARING OFFICER DODUC: All right. You got your answer, Mr. Jackson.

MR. JACKSON: Well, let me waste a little of my time, then.

CO-HEARING OFFICER DODUC: But it's also my time, Mr. Jackson. What is your question?

MR. JACKSON: That I think you're going to -- I think you're going use the gavel on me if in Part 2 I try to do legal harm.

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

MR. JACKSON: Well, we've segmented the

hearing.

CO-HEARING OFFICER DODUC: But, Mr. Jackson, we've also said that, to the extent that we need to revisit Part 1 issues in Part 2 as a result of that revised document, we would. So I would not use the gavel on you unless absolutely necessary.

MR. JACKSON: Thank you.

And while we're at that, is -- is Part 1 or Part 2 the place that we make our public interest arguments about this not being a good decision?

CO-HEARING OFFICER DODUC: Has that prevented you from making that argument?

MR. JACKSON: No. I mean, but, it's okay if we present evidence on the public interest?

CO-HEARING OFFICER DODUC: As part of your case in chief?

MR. JACKSON: Yes.

CO-HEARING OFFICER DODUC: Okay. Yes.

MR. JACKSON: Thank you.

MR. MAIZE: If I may seek some clarity, it was our understanding that Part 1 was not going to be considering the public interest but that was going to be in Part 2. Is that -- are we shifting?

CO-HEARING OFFICER DODUC: I was under the impression, Ms. Heinrich, that public interest was

included.

MS. HEINRICH: Public interest generally is an issue for Part 2, except to the extent that it relates to impacts to human uses, which we have allowed to be a topic of Part 1 as well.

MR. MAIZE: Thank you for the clarity.

MR. JACKSON: Mr. Munevar, you indicate that the CalSim model incorporates base assumptions in your testimony. The -- what are the base assumptions of CalSim?

WITNESS MUNEVAR: I think the base assumptions are as described under the no action alternative. That's what we're calling "base assumptions."

MR. JACKSON: Okay. It's not the architecture of CalSim II that you're talking about in terms of these base assumptions?

WITNESS MUNEVAR: No. What I was referring to -- and I'm assuming you're referring to my testimony.

MR. JACKSON: Yes.

WITNESS MUNEVAR: The base assumptions are the assumptions that go into the no action alternative, not the model algorithms itself or the logic.

MR. JACKSON: All right. So let's talk a little about the model algorithm.

In thinking about CalSim's use for this project, is it true that there is a hierarchy in CalSim, that the first thing you do is meet particular constraints?

WITNESS MUNEVAR: Yes. So CalSim operates through a set of constraints and then priorities of allocation of water.

MR. JACKSON: All right. So the first constraint is, I guess, to meet D1641?

WITNESS MUNEVAR: In general, that's correct. But every aspect of 1641, in-stream flows are also constraints. So 1641, in our modeling application, is a handful or a dozen or maybe more than a dozen specific constraints.

MR. JACKSON: It also includes constraints that are in the biological opinions; is that what you mean?

WITNESS MUNEVAR: Well, no. I mean, like, the D1641 has water quality requirements at various locations. It has cross-channel gate control. So all of those make up 1641 from our modeling standpoint.

MR. JACKSON: And have you -- for the purpose of modeling for this particular hearing, have you changed anything in D1641?

WITNESS MUNEVAR: We've not changed anything

in D1641. We've implemented D1641 as we've described.

MR. JACKSON: And in the implementation, you've -- we've talked about changing the EI ratio?

WITNESS MUNEVAR: Again, that was an interpretation of D1641.

MR. JACKSON: And the Board gave you leeway to do that.

MR. MAIZE: Objection, asked and answered.

CO-HEARING OFFICER DODUC: Mr. Jackson -- well, that particular question was not asked, but the whole issue of the ratio has been discussed extensively.

MR. JACKSON: It has. I just want to know why they did it.

CO-HEARING OFFICER DODUC: He has answered that was the best interpretation, given that D1641 did not envision the north facilities, and therefore, it was their interpretation, and that's how they modeled it.

MR. JACKSON: And this -- the Head of Old River barrier that is in Boundary 2, H4, and H3, and I guess -- yeah, those fall, winter, and spring full closures, is that something that has been in CalSim II from the beginning?

WITNESS MUNEVAR: Might defer to Parviz on

this one, but the Head of Old River Gate is -- the permanent gate is part of the California WaterFix alternatives; it's not part of the no action. Thus, its operation is different than what's in the no action, which is the temporary barrier.

MR. JACKSON: So is there going to be any testimony on the effects -- on the environmental effects of that in Part 2?

WITNESS MUNEVAR: That would be my understanding.

MR. JACKSON: But there was none in Part 1?

WITNESS NADER-TEHRANI: The effects of Head of Old River Gate operation was reflected under, for example, the water quality results that I presented.

MR. JACKSON: Yes, Dr. Nader-Tehrani. As you explained the high levels in Boundary 1 of salt, you relied on the fact that it had closed Head of Old River barrier as the reason for the sudden elevation in salt.

What I'm asking for is where is the environmental analysis of that?

WITNESS NADER-TEHRANI: It's not part of this testimony.

CO-HEARING OFFICER DODUC: By "environmental," what do you mean? The modeling analysis is included in his testimony.

MR. JACKSON: The modeling analysis is included, but it includes only water quality and not navigation and all of the other things that my clients in the Delta are interested in.

MR. MAIZE: It's my understanding navigation would be a component of recreation, which was for Part 2.

CO-HEARING OFFICER DODUC: All right. So it will be Part 2.

MR. JACKSON: Thank you.

CO-HEARING OFFICER DODUC: I forgot to ask you at the beginning, Mr. Jackson, what topic areas you will be covering. So let me ask you what remains?

MR. JACKSON: The next -- there are many things that remain, but I'm trying to keep this in mind. So I'm going to move right to the -- if I have the time, I might do two things. If I don't, this is the one I think I need to do.

There's been a lot of -- and then this is for Mr. Munevar and anybody else who wants.

There's been a lot of conversation about the difference between comparative and predictive in CalSim modeling runs. Do you have that in mind?

WITNESS MUNEVAR: Yes.

MR. JACKSON: It's part of your testimony?

WITNESS MUNEVAR: Correct.

MR. JACKSON: Would it be appropriate to make decisions about whether people have -- will be injured by the building of the new North Delta diversions using CalSim?

WITNESS MUNEVAR: I'll stick to what is my area of expertise. And what we've presented are the projected changes associated with operation of the North Delta diversion and all the other criteria.

MR. JACKSON: But you are not predicting what the result will be, are you?

WITNESS MUNEVAR: I think we are projecting what we anticipate the change would be from not operating the project as compared to operating the project.

MR. JACKSON: So would you tell me your definition and include the difference between a projection like that and a prediction?

WITNESS MUNEVAR: Yeah, I think they're quite different. A prediction is something we might do in a predictive weather forecast model, where we're looking at what is the rain in the next seven days or the seasonal patterns of snow pack.

What we are trying to do in the CalSim and the DSM2 modeling that's presented here is to look over a

long range of hydrology in a variety of conditions and describe what we anticipate the impacts would be under those range of conditions. They're very different.

MR. JACKSON: And so for my clients on their land, the tool, if I understand it, should not be used to predict what's going to happen to them and their businesses?

WITNESS MUNEVAR: I think both tools are useful in articulating or identifying the changes that could occur with the project. But the fact that you may have different tide conditions or flooded islands, we're not trying to predict those absolute conditions.

And that's the distinguishing point we were trying to make through this testimony.

MR. JACKSON: So on Page 12 [sic] of your testimony, where you say in the first sentence, "CalSim II cannot be calibrated" -- is that correct?

WITNESS MUNEVAR: I'm not seeing what you're referencing right now.

MR. JACKSON: Top of Page 13, first sentence, "...and therefore should not be used in a predictive manner." That means by the modeler or by anybody else, correct?

WITNESS MUNEVAR: That's true. But I think -- be sure and read it in context with the preceding

aspects of that sentence that talk about historical hydrology, current regulatory environment, projected changes, et cetera.

MR. JACKSON: So let's talk about the current regulatory environment.

If I'm using the 2010 document of 75 percent unimpaired flows out of the Sacramento streams for January through -- to June, would that change cause damage to this project?

WITNESS MUNEVAR: We've not analyzed that, so I can't say.

MR. JACKSON: Is there anything about this project that you know of that has been modeled to improve conditions in the Delta in terms of water flows and dilution water?

WITNESS MUNEVAR: I think, as we've indicated through a number of the panels here, a substantial element of the project is that we are reducing reliance on South Delta flows. So in virtually all of the alternatives, the exports from the South Delta are cut in half or approximately half.

We anticipate that that would have substantial benefits for certain fishery species.

MR. JACKSON: And the words "adaptive management" and the concept of more operational

flexibility would indicate that, while your results reveal that, there's nothing that requires anybody to follow them; is that correct?

WITNESS MUNEVAR: That's not correct. I don't -- I think that's mischaracterizing --

MR. JACKSON: Let me try it a different way.

There have been four or five times that attorneys have come up here in the long days before me and efforts made by the Board Chair and the Hearing Officer to kind of tie this project down in terms of operational parameters. Is there anything that would require -- and people have refused to do it yet.

Is there anything that would require your modeling to even inform reality over the next hundred years, your present modeling?

MR. MAIZE: I'm going to object to that as being vague, but to the extent that Mr. Jackson is trying to get to the same point we've gone over a number of times on whether or not the Department is proposing terms and conditions for this project at this time, as we've stated a number of times before, the answer to that is no.

CO-HEARING OFFICER DODUC: I acknowledge that, but let me see if I can help here.

And that is my understanding is that the

Department is proposing to operate under H3 and H4 as windows, I guess you will, and between Boundary 1 and Boundary 2 with the additional adaptive management, operational flexibility factors built in.

So I think, to answer your question, Mr. Jackson, at least as I understand the proposal, they are proposing to operate between Boundaries 1 and 2 with adaptive management, operational flexibility conditions.

MR. JACKSON: And I guess the point I'm trying to make and to get confirmed is that, between Boundary 1 and Boundary 2 is 2.2 million acre-feet of water. And I'm not sure -- and everything I've seen as results indicate that that 2.2 million acre-feet of water doesn't affect anything except Delta exports.

CO-HEARING OFFICER DODUC: I don't know if I follow that.

MR. JACKSON: I will call your attention to Mr. Munevar's --

CO-HEARING OFFICER DODUC: Given in mind that the environmental analysis is part of Part 2, so any benefits associated -- fishery benefits, for example, associated with reduced southern exports is still yet to be discussed.

MR. JACKSON: And I'm trying really hard not

to say the word "fish" because I've been told.

And so I guess my question is, is there anything that the modeling does to identify differences in the 200 -- or the 2.2 million difference between Boundary 1 and Boundary 2 that you mention in your testimony?

WITNESS MUNEVAR: Yeah, I think I described the differences in upstream storage as a result. I described the differences in the amount of North Delta diversion and South Delta diversion as a result of those conditions.

And then just to clarify, I believe the proposed initial operation range is between H3 and H4.

MR. JACKSON: Well, that's a proposal I have proposed. Luckily, when I proposed to my wife, she said yes, but she could have said no.

So I'm trying to -- I'm trying to figure out this wide range in the boundary and determine which of these two numbers -- or maybe that's going to be decided by the Board.

WITNESS MUNEVAR: The wide range was developed -- Boundary 1 and Boundary 2 were developed specifically for this hearing in order to demonstrate that from our standpoint, from water delivery, storage, and water quality, and the results associated with a

much broader range than the H3 and H4; that's what they were specifically developed for.

MR. JACKSON: All right. Last question because I've only got a few -- a minute and some seconds.

Would you pull up Page 15 on Mr. Munevar's testimony. And I'm particularly interested in Line 8 through 10.

"The boundary scenarios should not be considered as the proposed operational range of the WaterFix but reflect bookends to illustrate the effects on other legal users [sic] of water."

How does a farmer in the Delta learn anything about what's going to happen to his land within a range that wide?

WITNESS MUNEVAR: I think that was the -- that was the purpose of doing the modeling. And both Parviz and myself have presented modeling across the range of those -- those conditions, a very wide range of Boundary 1 and Boundary 2 and a more narrow range of H3 and H4.

MR. JACKSON: So the modeling doesn't -- is it fair to say that the modeling doesn't show us what's going to happen to our individual pieces of land?

WITNESS MUNEVAR: I think that the modeling

shows the anticipated changes associated with the project, both upstream, throughout the Central Valley, and within the Delta. At an individual location, I cannot say.

MR. JACKSON: Thank you, sir, for giving me ten seconds.

But thank you all, and thank the Hearing Officer.

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

MR. BERLINER: Before we depart on this questioner, there was an issue that had come up earlier about subpoenas for depositions if necessary.

I just want to make sure that it was understood that Mr. Jackson could send a request for deposition, but we weren't waiving any defenses that we might have to it if it was overbroad or whatever reasons we might have.

CO-HEARING OFFICER DODUC: All right.

MR. JACKSON: And I will respond that I did not expect that Mr. Berliner was not going to be Mr. Berliner and that Mr. Mizell was not going to be Mr. Mizell. I just wanted to point out what I was trying to do.

CO-HEARING OFFICER DODUC: Thank you all.

Let me -- let's stand up and stretch. Okay. Actually, before I give you five minutes, let me run down the list here.

Mr. Brodsky will do his tomorrow.

32? 33? 34? 35?

(No response)

CO-HEARING OFFICER DODUC: Ms. McCue, have we received e-mail from any of those parties? Assuming we have not received emails from any of those parties by now --

MS. McCUE: I only saw the one from Mr. Brodsky.

CO-HEARING OFFICER DODUC: I saw that, and Ms. Suard, who is not up yet. We will consider them waiving their cross-examination.

And after a five-minute break, we will get to Ms. Des Jardins. Looking at the clock, we will resume at 4:25.

(Recess taken)

CO-HEARING OFFICER DODUC: Couple quick things before Ms. DesJardins gets started. I think at the rate we're doing, it is very possible that we might finish with this panel tomorrow, assuming that there is no redirect?

MR. MAIZE: Not at this time.

CO-HEARING OFFICER DODUC: Okay. Given that, I would like to honor the requests from some of the parties to have next week off to work on their exhibit submittals. I would like to, to the extent that we can, do our best to finish tomorrow.

We'd still have a few cross-examinations left, and Ms. DesJardins we'll be getting started on. Mr. Brodsky will be doing his.

Mr. Eichenberg, I assume you will have cross-examination.

We know that Ms. Suard has cross-examination. Mr. Porgans will have cross-examination and potentially Ms. Womack as well.

So those are the parties that I still have remaining on my list. Just a heads-up; it's possible that we may go a little bit after 5:00 if necessary to complete this panel. I would rather not have to bring you back unless absolutely necessary.

So are any of the witnesses going to have trouble staying if we go beyond 5:00?

(Panel indicating negatively)

CO-HEARING OFFICER DODUC: Okay. All eager to get done. All right.

With that, then, Ms. DesJardins, please begin. How long do you think you'll need? And your topic

areas that you'll be covering?

MS. DES JARDINS: Okay. I may need -- there's a great deal of information that I tried to get out of the protestants in the prehearing process, and it hasn't been provided.

And I may need two to three hours. I hope I can get through it in less than two, and I hope that you will answer quickly and succinctly, and I hope to move on.

There are some very specific things that I need to cover in cross-examination that are very relevant and material and have not been covered.

CO-HEARING OFFICER DODUC: Well, I will strongly advise you to be very direct in your questions. In your previous cross-examination, I noticed that you spent quite a bit of time laying foundation.

Let's just get to the questions. If we need to go back and lay some foundation, we will. But it's best in the cross-examinations that have been conducted to date to get your specific points out there first and see if the witnesses are able to address them succinctly and directly without a lot of background information.

MS. DES JARDINS: In this case, there -- it

may -- I believe it will be necessary to cover some background information, but I will try to cover it as quickly as possible.

CO-HEARING OFFICER DODUC: So what are the points that you will be covering?

MS. DES JARDINS: I want to cover who did what.

CO-HEARING OFFICER DODUC: I'm sorry?

MS. DES JARDINS: Who did what on the modeling.

CO-HEARING OFFICER DODUC: What do you mean by "who did what"? Why does it matter who does what as long as they are able to answer the specific modeling questions in terms of the model and the output of that model? Why is that relevant to us?

MS. DES JARDINS: It's relevant if the water agencies were involved, the water export agencies were involved in writing some of the CalSim models. That actually -- there's an opinion that you cite in the BBID ruling that -- that has -- you know, there's an issue of the BDCP modeling was done by the BDCP parties. There were a number of people. Mr. Munevar is the integration lead. And I'd like to know who specifically did the -- did the BDCP models, the CalSim and DSM2 models. Was it DWR? Was it the water

agencies? Who did it?

CO-HEARING OFFICER DODUC: Based on the testimony received today, the people you see sitting here who are serving as expert witnesses for the modeling are the best people -- or the people who worked on the modeling and who are the ones that would be best to answer the specific technical questions that you have.

MS. DES JARDINS: Yeah, I just -- there is a question because Mr. Munevar's resume -- I think it would be quicker to just ask the question rather than argue about it. I just want to say --

CO-HEARING OFFICER DODUC: Well, the thing is --

MS. DES JARDINS: -- his resume says he's integration lead for the modeling. That does not imply that CH2M Hill did the modeling. It's possible it was done by DWR. It's possible it was done by somebody else.

CO-HEARING OFFICER DODUC: Ms. DesJardins, the reason I'm going into this is I will hear objection, I'm sure, from Mr. Mizell, Mr. Berliner regarding the relevancy of this line of questioning. And I'm unclear as to the relevancy of this line of questioning.

MS. DES JARDINS: Ms. Doduc, there's an

opinion in the BBID ruling, and it says that to the extent that -- it has not been clear -- DWR and USBR are presenting this modeling. It has not been clear who has been involved and who has written it. And that could go to the weight that you would give it.

There is one thing if this is all written by public agencies which hold the waters of the state in public trust or if it's written by water export agencies.

So that was why I felt that it was relevant.

CO-HEARING OFFICER DODUC: Hold on a second.

Your thoughts, Mr. Mizell, Mr. Berliner?

MR. MAIZE: I believe you would accurately predict an objection based on relevance as to the exact individuals who ran the modeling.

To the extent that we have presented witnesses who are the most informed individuals to explain the modeling results and answer questions and inform the Board, they are sitting here before you.

If the question is a simple question of did ICF prepare the modeling, I suppose we could take those 30 seconds to ask that particular question. I just -- I do not see the relevance of it.

CO-HEARING OFFICER DODUC: Mr. Eichenberg?

MR. EICHENBERG: It seems to me that it might

be relevant to bias and the cross-examination of the witnesses as to their qualifications.

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

MR. O'LAUGHLIN: Would you like to go first?

Thank you. Tim O'Laughlin, San Joaquin Tributaries Authority.

Not only is it bias, but it also goes to the underlying foundation of the witnesses' testimony because if other people are coding the model, doing the model, doing the work on the modeling, it goes to the sufficiency and expertise of the witnesses that have been offered. I think it's why -- in the scheme of relevancy --

CO-HEARING OFFICER DODUC: I don't want to get into a huge debate now.

Ms. Morris, you, I'm sure agree with the Petitioners.

MS. MORRIS: No, actually, I was just going to offer to the Hearing Officers that I would represent to you that I represent the State Water Contractors, and none of the State Water Contractors or their member agencies did any of the modeling for this project that's being presented before the Board.

CO-HEARING OFFICER DODUC: Thank you.

Mr. Porgans?

MR. PORGANS: Yes, I -- I'm getting sick. I would say if it was just going to be another half hour I could probably do it. But I can't stay here another hour. I'll be throwing up.

CO-HEARING OFFICER DODUC: We will not get to you today.

MR. PORGANS: Okay. Well, I --

CO-HEARING OFFICER DODUC: Please leave if you feel the need to.

MR. PORGANS: Would you let me -- I'm going to go then because --

CO-HEARING OFFICER DODUC: Yes, please go. I hope you feel better.

All right. Ms. DesJardins, what is your next topic?

MS. DES JARDINS: May I read you just the section -- I have a section from the opinion.

CO-HEARING OFFICER DODUC: No, I do not need it. I'm going to allow you to ask those questions. What is the next line of questioning?

MS. DES JARDINS: Okay. So I just want to bring up -- you're not going to, or you're going to?

CO-HEARING OFFICER DODUC: I'm sorry. What?

MS. DES JARDINS: You're not going to, or you're going to?

CO-HEARING OFFICER DODUC: I'm going to allow you some limited time to ask those questions.

MS. DES JARDINS: Okay. It's very short.

CO-HEARING OFFICER DODUC: Before you go, though, what are your other lines of questioning? You mentioned three to four hours. I would like to know what you are exploring.

MS. DES JARDINS: Okay. Sorry we got off on that.

So the other of it was error checking.

CO-HEARING OFFICER DODUC: I'm sorry. Error checking?

MS. DES JARDINS: Yes, error checking and spreadsheets for error checking. The -- a prior statement by DWR about CalSim being calibrated and validated. And questions about the Sacramento Valley hydrology, which are related to that. Questions about the historical simulation. Questions about the validation in the historical simulation. Questions about the changes to the reservoir model -- reservoir module.

CO-HEARING OFFICER DODUC: Reservoir module.

MS. DES JARDINS: One of the -- yeah, that -- I can explain it later.

CO-HEARING OFFICER DODUC: Well, I am not

promising you three or four hours.

MS. DES JARDINS: I will try to get through this as quickly as possible. I do want to get through this as well.

CO-HEARING OFFICER DODUC: All right.

MS. DES JARDINS: Thank you.

CO-HEARING OFFICER DODUC: Let's go ahead and focus on your first line of questioning for today.

MS. DES JARDINS: Yes.

CO-HEARING OFFICER DODUC: And I'll give you, I'd say, about ten minutes to do that. So do that as efficiently as possible.

MS. DES JARDINS: Thank you.

CROSS-EXAMINATION BY MS. DES JARDINS

MS. DES JARDINS: Please bring up DWR-30, and scroll down a little. At the bottom -- or we can just say it says "Bay-Delta Conservation Plan. Integration."

So, Mr. Munevar, it says your position was integrated lead for a cascade of physical modeling analysis -- analyses.

So did CH2M Hill also develop the CalSim BDCP models?

WITNESS MUNEVAR: CH2M, in collaboration with Reclamation and DWR, developed the BDCP models and the

WaterFix models.

MS. DES JARDINS: Okay. So I'm specifically asking about the CalSim models. Who -- who made -- so I understand the BDCP parties were giving you notices to proceed in the contracts.

WITNESS MUNEVAR: DWR was -- DWR through -- we are a subcontractor to ICF currently and SAIC before that. And we were getting our notices to proceed from them.

MS. DES JARDINS: So you were getting your notices to proceed from ICF.

Is there anything from ICF here?

MR. BERLINER: Objection, relevance.

MS. DES JARDINS: So, Mr. Munevar, so you shared the model between you, DWR and USBR. I'm just, like, wondering who did the first draft of changes to the model?

MR. BERLINER: Objection, relevance.

MS. DES JARDINS: Who did the changes to the model that was the basis for the first EIR?

CO-HEARING OFFICER DODUC: Can I just perhaps cut to the chase here.

Mr. Munevar, when you say CH2M Hill and the Bureau and the Department jointly worked on this together, what do you mean? Was there a specific task

assigned to each? What does that mean, to work together?

WITNESS MUNEVAR: Well, there was initial effort of building the no action, and that is -- was doing -- was performed with Reclamation and DWR ensuring that the no action run was sufficient and met the criteria in their operation.

Then the WaterFix was built on top of that based on the input that we're given from the steering committee, which was the initial 2009-or-so operations. And those implementations were conducted primarily by myself, DWR, and other CH2M modeling team staff.

MS. DES JARDINS: Okay. So you're saying that the implementation of CalSim II, the changes that were made to assimilate the proposed project were primarily done by yourself at direction of the steering committee? For the first or --

WITNESS BUCHHOLZ: That was the steering committee alternative, which has become Alternative 1 in the Draft EIR/EIS. Subsequent to that, all of the alternatives were developed by the EIR/EIS lead agencies, which was DWR, Reclamation and, through Alternatives 1 through 9, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. California WaterFix 2D, 4A and 5A alternatives were

developed by DWR and Reclamation under the Environmental Impact Report.

MS. DES JARDINS: So -- and so the -- there was a series of code changes. The WaterFix Code that is here now is derived from that original code by -- part of it modeling the proposed project is derived from the original code that was done at the request of the steering committee; is that correct?

WITNESS MUNEVAR: It was derived from that initial implementation at the steering committee, but many modifications have occurred since.

MS. DES JARDINS: Thank you.

And some of it was also from the 2015 delivery reliability report; is that correct?

WITNESS MUNEVAR: I believe you're referring to the updates for 2015 model, and some of those were incorporated from the 2015 delivery capability report that DWR releases.

MS. DES JARDINS: Did you do a code merge from the delivery DRR into the WaterFix modeling or vice versa?

WITNESS MUNEVAR: I believe we took the aspects from the delivery capability report -- and Eric can chime in -- that were pertinent to the WaterFix for the no action, and those were used to develop the 2015

model code for the no action.

MS. DES JARDINS: Then you made changes to implement the biological assessment, correct?

WITNESS MUNEVAR: For the California WaterFix, is that what you're referring to?

MS. DES JARDINS: Yes. Did you -- because the biological assessment is related to that -- is that correct? So then the chain of -- the development chain, the next phase was the biological assessment code; is that correct?

WITNESS MUNEVAR: Yeah, let me just be clear. The changes that were brought into the 2015 code were changes that affected both the no action and any of the WaterFix modeling. So those changes were incorporated into both.

MS. DES JARDINS: And the no action alternative for this hearing, is that the same as the no action alternative for the biological assessment?

WITNESS MUNEVAR: Yes, it is.

MS. DES JARDINS: Okay. And so -- but you didn't make changes to the preferred project from the biological assessment -- or the project modeling? Is the -- does not the -- not Boundary 1 and Boundary 2, but is the project modeling the same as the biological assessment?

WITNESS MUNEVAR: The biological assessment evaluates a scenario called H3-plus. What we've described here for the testimony is H3 and H4, which is roughly on either side of H3-plus.

MS. DES JARDINS: Are there any other changes than to the components that model outflow scenarios between the two models?

WITNESS MUNEVAR: I don't think I understand your question.

MS. DES JARDINS: Are there any other changes than to outflow scenarios between the biological assessment and the model presented for this hearing?

MR. MAIZE: Objection, vague and ambiguous. "Other changes" as compared to what, please?

MS. DES JARDINS: The baseline is the biological assessment code. Are there any other changes besides changes to the outflow modeling which -- or the changes to the scenarios, the components of modeler scenarios?

WITNESS MUNEVAR: It's a bit of a vague question. I'll just go ahead and answer it so we can get to it.

The no action implementation for the biological assessment, and what we've shown here are identical. The H3-plus was evaluated through the

biological assessment. And what we've presented here are H3 and H4. And under H4, there are different outflow criteria than H3-plus as well as H3. And those are included in the Exhibit 51- -- I believe 514 or 515.

MS. DES JARDINS: I understand that the outflow conditions are different. Are you saying there's no other differences?

WITNESS MUNEVAR: There's a list of assumptions that we've presented that indicate the differences as compared to the no action. And they're not specifically only outflow.

MS. DES JARDINS: Oh, okay, yes. But are there any changes outside that list of assumptions?

WITNESS MUNEVAR: I don't believe so. Those were the main changes.

MS. DES JARDINS: Okay. Thank you.

CO-HEARING OFFICER DODUC: Does that complete your "who does what" line of questioning?

MS. DES JARDINS: Yes, that's it.

CO-HEARING OFFICER DODUC: Thank you.

But you know what? Now that you've raised the question, let me just make sure I get this on the record.

In your modeling work, all the various

changes, all the various scenarios and alternatives and versions, did you receive direction from anyone else than the Bureau, the Department, and the other agencies that you have identified, meaning fishery agencies?

WITNESS MUNEVAR: No.

CO-HEARING OFFICER DODUC: Thank you.

WITNESS MUNEVAR: DWR, Reclamation, and fishery agencies on the BDCP.

CO-HEARING OFFICER DODUC: Thank you.

Move on, please.

Actually, let me check in. I think -- Ms. DesJardins, I think we'll call it a day. And we will continue at 9:00 o'clock tomorrow.

MS. DES JARDINS: Thank you very much.

(Whereupon, the proceedings recessed at 4:46 p.m.)

STATE OF CALIFORNIA)
) ss.
COUNTY OF MARIN)

I, DEBORAH FUQUA, a Certified Shorthand Reporter of the State of California, do hereby certify that the foregoing proceedings were reported by me, a disinterested person, and thereafter transcribed under my direction into typewriting and is a true and correct transcription of said proceedings.

I further certify that I am not of counsel or attorney for either or any of the parties in the foregoing proceeding and caption named, nor in any way interested in the outcome of the cause named in said caption.

Dated the 31st day of August, 2016.

DEBORAH FUQUA

CSR NO. 12948